RASHTRASANT TUKDOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR

Directon No. 23 of 2017

DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF Bachelor of Business Administration (BBA) (CREDIT BASED SEMESTER PATTERN) (FACULTY OFCOMMERCE AND MANAGEMENT)

(Issued by the Vice-Chancellor under section 12(8) of the Maharashtra Public Universities. Act, 2016)(Mah. Act No. VI of 2017)

WHEREAS, the Maharashtra Public Universities Act, 2016 (No. VI of 2017) (hereinafter Act) has come into force with effect from 1st March, 2017;

AND

WHEREAS,the Faculty of Commerceand Managementin its meeting held on 14.3.2016 have decided to restructure the syllabus for the award of the degree of Bachelor of Business Administratoin (BBA) Examination commensurate with the curricula existing in the various Universities in India and with a view to include the latest trends in the commerce stream as well as to design it to suit to the needs of the industries and corporate houses as provided under Section 38(a) of the Act;

AND

WHEREAS,all the Board of Studies in Faculty of Commerce and Management in its meeting held on 5.4.2016 restructured the existing syllabi and recommended the new scheme of examination;

AND

WHEREAS,the recommendations made by the all four Board of studies under Faculty of CommerceandManagementwere approved by the Academic Council, in its meeting held on 8.6.2016;

AND

WHEREAS,no ordinance is in existance prescribing THE EXAMINATION LEADING TO THE DEGREE OF Bachelor of Business Administration (BBA) (CREDIT BASED SEMESTER PATTERN);

AND

WHEREAS,the Special Task Committeein its meeting on 23-11-2016 decidedto prepare a draft of new direction & syllabus of BBA (CBS);

AND

WHEREAS,the Special Task Committeein its meeting on 04-01-2016considered and approved the draft of new direction and syllabus of BBA (CBS) submitted by the sub-committee & recommended it to the Hon'ble Vice-Chancellor for his approval;

AND

WHEREAS, Direction No. 1 of 2017 entitled 'Examination leading to the Degree of Bachelor of Business Administration (BBA) (CREDIT BASED SEMESTER PATTERN) in the Faculty of Commerce & Management, was issued by the Vice-Chancellor;

AND

WHEREAS, certain difficulties regarding implementation of the absorption scheme under the Direction No. 1 of 2017, were encountered by the colleges and the University administration, necessitating clarification and sutable modifications in the said scheme;

AND

WHEREAS, in the meeting of the task force in the Faculty of Commerce and Management, held on 3.8.2017 certain decisions were taken which are required to be incorporated in the Direction No. 1 of 2017;

AND

WHEREAS,the matter involved is required to be implemented urgently for the purpose of prescribing examinations leading to the degree of Bachelor of Business Administration (BBA) (CBS)in the Faculty of Commerce and Management;

AND

WHEREAS, the preparation of Ordinance to regulate the matter relating to the examinations leading to the degree of Bachelor of Business Administration (BBA) (CBS) is time consuming process;

Now, therefore, I,Dr. SiddharthvinayakP. Kane, Vice-Chancellor, Rastrasant Tukdoji Maharaj Nagpur University, Nagpur in exercise of the powers vested in me under Section 12(8) of the Maharashtra Public Universities Act, 2016 (VI of 2017) do hereby issue the following direction:-

1. This Directionmay be called **'Examination leading to the Degree of Bachelor of Business Administration (BBA) (CREDIT BASED SEMESTER PATTERN) in the Faculty of Commerce & Management, Direction, 2017,**---Number----------
2. This Direction shall come into force with effect from the date of its issuance.
3. There shall be Six Examinations leading to the degree of Bachelor of Business Administration (BBA)namely :

   (1) The **Bachelor of Business Adminstration (BBA) –** 1st Semester Examination,
   (2) The **Bachelor of Business Adminstration (BBA) –** 2nd Semester Examination,
   (3) The **Bachelor of Business Adminstration (BBA) –** 3rd Semester Examination,

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(4) The **Bachelor of Business Adminstration (BBA)** – 4th Semester Examination,
(5) The **Bachelor of Business Adminstration (BBA)** – 5th Semester Examination and
(6) The **Bachelor of Business Adminstration (BBA)** – 6th Semester Examination.

4. The duration of the Degree Course under this shall be of three academic years divided into six semesters with the BBA 1st and 2nd Semester Examinations during the first academic year, the BBA 3rd and 4th Semester Examinations during the second year and the BBA 5th and 6th Semester Examinations during the third year.

5. The examinations specified in paragraph 3 above shall be held twice a year at such places and on such dates as may be fixed by the University.

6. The details of eligibility for **BBA Sem I** examination:

(A) For the **BBA 1st Semester,** Examinee shall have Passed the 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education, with English at Higher or Lower level and any Modern Indian Language at higher or lower level with any combination of optional subjects;

OR

XII Standard Examination of Maharashtra State Board of Secondary and Higher Secondary Education in Vocational Stream with one language only; OR any other examination recognized as equivalent thereto; in such subjects and with such standards of attainments as may be prescribed Minimum Competition vocation course (MCVC).

OR

Any other Equivalent Examination of any State in (10+2) pattern with any combination of subjects.

7. A collegiate candidate shall have pursued a regular course of study for not less than 90 days of the academic session before being examined for any semester examination of **BBA** in any recognized institution and or college affiliated to RashtrasantTukdojiMaharaj Nagpur University where the course is conducted.

8. An applicant for the Bachelor of Business Administration 1st, 2nd, 3rd, 4th, 5th or 6th Semester Examination shall have passed an examination specified in Clauses (A), (B), (C), (D), (E) and (F) of paragraph 6 respectively, not less than one academic year prior to his admission to the respective examination.

9. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to every collegiate candidate.

10. The fees for the examination shall be as prescribed by the University from time to time and whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information of the examinees concerned.

11.With the issuance of this Direction, The Direction No 15 of 2014 , 47 of 2016 and 1 of 2017shall stand repealed.

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12. Teaching and Examination Scheme for examinees of Bachelor of Business Administration 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examinations shall be as mentioned below:

Teaching and Examination Scheme
Bachelor of Business Administration (BBA)
Three Year Degree Course (Semester Pattern)
With effect from 2016-17

(A)

BBA 1st Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	English	1T1	5	80	20	100	40	100	4
2	Fundamentals of Business Management	1T2	5	80	20	100	40	100	4
3	Computer Applications for Business	1T3	5	80	20	100	40	100	4
4	Cost Accounting	1T4	5	80	20	100	40	100	4
	Total		**20**	**320**	**80**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4. There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.
6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

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(B)

BBA 2nd Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	Principles of Marketing Management	2T1	5	80	20	100	40	100	4
2	Financial & Management Accounting	2T2	5	80	20	100	40	100	4
3	Micro-Economic Fundamentals	2T3	5	80	20	100	40	100	4
4	English	2T4	5	80	20	100	40	100	4
	Total		**20**	**320**	**80**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4. There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.
6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(C)

BBA 3rd Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	Principles of Financial Management	3T1	5	80	20	100	40	100	4
2	Basic Statistical Techniques	3T2	5	80	20	100	40	100	4
3	Evolution of Business & Commercial Geography	3T3	5	80	20	100	40	100	4
4	Environment Management	3T4	5	80	20	100	40	100	4
	Total		**20**	**320**	**80**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4.There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

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6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(D)

BBA 4th Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	Principles of Human Resource Management	4T1	5	80	20	100	40	100	4
2	Money, Banking & Finance	4T2	5	80	20	100	40	100	4
3	Introduction to Sociology & Psychology	4T3	5	80	20	100	40	100	4
4	Business Legislations	4T4	5	80	20	100	40	100	4
	Total		**20**	**320**	**80**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4. There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.
6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(E)

BBA 5th Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	Entrepreneurship Development	5T1	5	80	20	100	40	100	4
2	Principles of Operations Management	5T2	5	80	20	100	40	100	4
3	International Business Environment	5T3	5	80	20	100	40	100	4
4	Research Methodology	5T4	5	80	20	100	40	100	4
	Total		**20**	**320**	**80**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40.
4. There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,

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For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

(F)

BBA 6th Semester Examination

Sr. No.	Subjects	Course Code	Teaching Scheme	Examination Scheme				Total Marks	Credits
			Total Periods per Week	Max. Marks(TH)	Max. Marks (IM)	Total Marks	Min. Passing Marks		
1	Elective Paper – 1	6T1	5	80	20	100	40	100	4
2	Elective Paper – 2	6T2	5	80	20	100	40	100	4
3	Project Work	6P1	10	150	50	200	80	200	8
	Total		**20**	**310**	**90**	**400**	**160**	**400**	**16**

Note : 1. Duration of each theory class should be minimum 48 minutes.
2. TH = Theory, IM = Internal Marks.
3. Minimum marks for passing the subject will be 40 and for Project Work it will be 80.
4. There would be combined passing for theory and internal assessment taken together.
5. One credit is equivalent to one hour of Teaching, that is to say,
For each subject, 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.
6. Each semester will consist of 15 to 18 weeks of Academic Work equivalent to 90 actual teaching days.

Elective Subjects (Any one of the following to be selected by the student):

Every student appearing for BBA – 6th Semester Examination has to select any one of the specialization as elective subject before commencement of the academic session:

a) Elective A - Financial Management
   a. Paper 1 – Fundamentals of Business Finance
   b. Paper 2 – Advanced Financial Management

b) Elective B - Human Resource Management
   a. Paper 1 – Fundamentals of Human Resource Management
   b. Paper 2 – Advanced Human Resource Management

c) Elective C - Marketing Management
   a. Paper 1 – Fundamentals of Marketing Management
   b. Paper 2 – Advanced Marketing Management

12. Assessment

- The final total assessment of the candidates is made in terms of an internal assessment (Sessional) and an external assessment for each course/subject taken together.
- For each paper, 20 marks will be based on internal assessment and 80 marks for semester end examination (external assessment) to be conducted by the R T M Nagpur University,

- unless otherwise stated.

1a	Attendance of the student during a particular semester	05 marks
1b	An assignment based on curriculum to be assessed by the teacher concerned	05 marks
1c	Subject wise class test conducted by the teacher concerned	05 marks
1d	Subject presentation/viva-voce seminar conducted during the semester	05 marks
1	**Internal assessment Total marks**	**20**
2	**Semester wise End Examination marks**	**80**
Total Marks Per Course		**100**

- There shall be no separate / extra allotment of workload to the concerned teacher. He/ She shall conduct the internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
- The internal marks will be communicated to the University at the end of each semester, but before the semester end examinations / as instructed by University. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & result should be maintained for a period of one year by respective institute/college for verification by competent authority.
- The maximum and minimum marks which each subject carries in BBA Semester - I, Semester - II, Semester – III, Semester – IV, Semester - V & Semester - VI Examination are as indicated in Paragraph 11. A, B, C, D, E & F respectively.

13. (A) The scope of the subjects and pattern of examination shall be as indicated in the Syllabus.

(B) The Medium of instructions and examinations shall be in ENGLISH only.

(C) The Maximum/minimum marks which each subject carries & workload in BBA 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examination shall be as indicated in Examination & Teaching Scheme (item no 11) "A", "B", "C", "D", "E" and "F" respectively.

14. Evaluation of Project

- Project Work shall carry 200 marks
- Evaluation Pattern

	Max. Marks
Project Report Evaluation by External Examiner appointed by the University	100
Presentation and Open Defense Seminar (External Examiner)	50
Presentation and Open Defense Seminar (Internal Examiner)	50
Total	200

(i) For Project worka batch of Maximum **TWENTY**students per guide /supervisor has to be allotted by the Institute. The Guide/Supervisor shall act as an internal examiner for project Examination.

(ii) The guide or the supervisor shall be appointed by the institute and should be full time approved faculty to BBA / MBAProgramme or PhD supervisor in Business Management.

(iii) **The External examiner shall be appointed from the list of full time approved teaching faculty of the BBA/MBAprogram by the University.**

(iv) **Each such External examiner shall examine a maximum of TWENTY students.**

(v) One copy of Project work (Printed or Type Written) shall be submitted to the University through the supervisor of the candidate and the Principal/ Director / Head of the Institute, at least **One Month** prior to the date of commencement of Semester-VI Examination **or**following the

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instructionsissued by Universityat that time and one copy will be retained by the college/Department for internal evaluation purpose.

(vi) A Candidate shall submit with his/her project work, a certificate from the Supervisor to the effect-

a. That the candidate has satisfactorily completed the Project work for not less than one session and

b. That the Project work is the result of the candidates own work and is of sufficiently high standard to warrant its presentation for examination.

(vii) Candidate shall submit his declaration that the Project is the result of his own research work and the same has not been previously submitted to any examination of this University or any other University. The Project shall be liable to be rejected and /or cancelled if found otherwise.

(viii) The Project work shall be evaluated through seminar and open defense and Viva-voce at the College/ Department by internal and external examiners appointed by university **beforeSemester-VI** Examination.

A student appearing for BBA Semester VI Examination will have to pay additional fees as prescribed by the University from time to time.

15. Standard of Passing

The scope of the subject, percentage of passing in Theory and Project and Internal Assessment will be governed as per following rules:

(i) In order to pass at the Bachelor of Business Administration (B.B.A.) 1st, 2nd, 3rd, 4th, 5th and 6th Semester Examinations,**an examinee shall obtain not less than 40 % marks in each paper, that is to say combined in the written Examination conducted by the University and in internal assessment put together.**

(ii) An examinee who is unsuccessful at the examination shall be eligible for admission to the subsequent examinations on payment of a fresh fee prescribed for the examination together with the conditions of the ordinance in force from time to time.

16. Credit and Grade Point System:

Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average): In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows:-

Abbreviations and Formulae Used

G: Grade

GP: Grade Points

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of credits & Grades)

SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points

SGPA: Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)

CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

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After calculating the SGPA for an individual semester and the CGPA for entire programme, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A+, A, B+, B, etc.

Marks	Grade	Grade Points
80 and above	O (Outstanding)	10
70–79	A+ (Excellent)	9
60 –69	A (Very Good)	8
55 –59	B+ (Good)	7
50–54	B(Above Average)	6
45–49	C (Average)	5
40 –44	P (Pass)	4
00 –39	F (Fail)	0
	AB (Absent)	0

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

(A) There shall be no classification of examinees successful at the Bachelor of Business Administration (BBA) Semester - I, Semester - II, Semester - III, Semester - IV, Semester - V and Semester - VI Examinations whereas SGPA will be notified.

(B) Division at the Bachelor of Business Administration (BBA) Semester - VI Examination shall be declared on the basis of the aggregate marks at the BBA Semester - I, Semester - II, Semester - III, Semester - IV, Semester - V and Semester - VI Examination taken together and the CGPA will be calculated and notified.

(C) Successful examinees at the Bachelor of Business Administration (BBA) Semester - VI Examination shall be awarded division based on CGPA as follows :

CGPA	Grade	Division
8.5 - 10	O	Distinction(Outstanding)
7.5 – 8.4	A	Distinction
6.0 – 7.4	B	First
4.5 – 5.9	C	Second
4.0 – 4.4	D	Pass
00 – 3.9	F (Fail)	Fail

17. The percentage of passing marks in each subjects shall be as indicated in Examination Scheme (item no 11) "A", "B", "C", "D", "E" and "F" respectively.

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18. Unsuccessful examinees at the above examinations can be readmitted to the same examination on payment of a fresh fee and such other fees as may be prescribed.

19. Provisions of Ordinance No. 3 of 2007 relating to the award of Grace Marks for passing an examination, securing higher division / class and for securing distinction in subject(s) shall be applicable.

20. Notwithstanding anything to the contrary in this Direction, no person shall be admitted to an examination under this Ordinance, if he/ she has already passed the same examination or an equivalent examination of any other University.

21. Examinees passing all the **Bachelor of Businesss Adminsitration (BBA)**Examination shall on payment of the prescribed fees shall receive a Degree in the prescribed form signed by the Vice-Chancellor.

22. The aforesaid Amendment shall come into force from the date of its issuance and shall remain in force till the relevant Ordinance come into being in accordance with the provisions of the Maharashtra University Act, 1994.

23. The marks for internal assessment should be communicated to University within time limit as per University norms. The record of conduct of such examination, evaluation and marks for internal assessment should be maintained for a period of at least **one** year by the respective college / Department for the verification by the competent authority.

24. Promotion to Higher Semester (A.T.K.T.): The unsuccessful candidate of any semester examination shall be ALLOWED TO KEEP THE TERM (ATKT) in accordance with the following table: (Theory and Internal assessment of that theory subject shall be jointly considered as single passing head).

Admission to academic year	Candidate should have passed All Subjects of the following examination	Candidate should have filled the examination form and appeared for the following examinations	Candidate should have passed in Minimum **50%** **Subjects**of the following examination
1st Semester	H.S.S.C/equivalent	-----	-------
2nd Semester	------	**1st Semester**	**-----**
3rd Semester	**-----**	**2nd Semester**	**4 subjects of 1st and 2nd Semesters taken together**
4th Semester	**-----**	**3rd Semester**	**As Above**
5th Semester	**1st and 2nd Semesters**	**4th Semester**	**4 subjects/ passing heads of 3rd and 4th Semesters taken together**
6th Semester*	**As Above**	**5th Semester**	**As Above**

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Note: (*) A candidate admitted to Final Semester can appear for Final Semester examination however the result of the Final Semester examination will be withheld unless the candidate clears all the lower examinations of the **BBA Course**.

25. Pattern of Question Papers of BBA year end Examination:

a. The question paper should be set in such a manner so as to cover the complete syllabus as prescribed by the University.

b. The Semester End examination shall be held as per the schedule notified by the University.

c. The question paper shall be of 80 marks & the time duration of the Semester End examination would be 3 hours.

d. The question paper shall have 4 long answers questions corresponding to Four Units of each course. Each long answer question shall carry 8 marks. There will be internal choice for each question for these long answer questions which means that the student has to mandatorily attempt one question from each unit of the syllabus. Hence, there would be 8 long answer questions in the question paper but the student has to attempt 4 questions with an internal choice for each question from each unit of the syllabus. The students shall get due credit for precise answers as per Marking Scheme given by the paper setters/ moderators.

e. Question no. Five shall include Four compulsory questions from any of the six units carrying 4 marks each.

f. The paper setters /moderators shall submit the proposed marking scheme (Memorandum of Instructions) along with question paper so that the students can be given due credit for precise answers.

Illustrative Question Paper for BBA Program*

Question No.	Unit	Nature	Max. Marks
1	I	a. Long Answer Question b. Long Answer Question OR c. Long Answer Question d. Long Answer Question	8 Marks each
2	II	a. Long Answer Question b. Long Answer Question OR c. Long Answer Question d. Long Answer Question	8 Marks each
3	III	a. Long Answer Question b. Long Answer Question OR c. Long Answer Question d. Long Answer Question	8 Marks each
4	IV	a. Long Answer Question b. Long Answer Question OR c. Long Answer Question d. Long Answer Question	8 Marks each
5	I II III IV	a. Short Answer Question b. Short Answer Question c. Short Answer Question d. Short Answer Question	4 Marks each
TOTAL MARKS			80

(*) This pattern of question paper is not applicable for the following papers for which the question paper patterns are prescribed separately along with the detailed syllabus of respective subjects.

- BBA 1st Semester Examination – Cost Accounting

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- BBA 1st Semester Examination – English
- BBA 2nd Semester Examination - English
- BBA 2nd Semester Examination – Financial & Management Accounting
- BBA 3rd Semester Examination – Basic Statistical Techniques
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26. Absorption Scheme for Examinees of BBA Old Course (Introduced in 2014):

1. The students of the BBA Course (Introduced in 2014) immediately preceding the new course under this direction shall be given chance to appear for three more consecutive examinationsaccording to old syllabus (Introduced in 2014). The University shall conduct the examination of old course for three more consecutive examinations after the new scheme of examination is introduced as per following table:

BBA Examination	Attempt 1	Attempt 2	Attempt 3
BBA Part I	Winter 2016	Summer 2017	Winter 2017
BBA Part II	Winter 2017	Summer 2018	Winter 2018
BBA Part III	Winter 2018	Summer 2019	Winter 2019

The students are required to clear all their papers within the stipulated time. The students clearing all the papers of old scheme of Examination (Introduced in 2014) shall be awarded Degree according to old scheme of Examination. But, the students who failed to clear their course in three consecutive attempts as per this clause, will be required to appear afresh for BBA (CBS) examination provided under this direction.

a)The failure students of BBA I and BBA II of old course (Annual Pattern - Introduced in 2014) can be admitted to the 3rd and 5th semester of BBA Course respectively under this direction under the ATKT rules prevailing in Old Course (Introduced in 2014). However, they will be required to clear papers of annual pattern course in which they failed in 3 attempts as mentioned above.

b) The candidates who have cleared BBA Part I of old course (Annual Pattern - Introduced in 2014) examination shall get admission to Third Semester of BBA Part II of the new course directly.

c) The candidates who have cleared BBA Part II of old course (Annual Pattern - Introduced in 2014)examination shall get admission to Fifth Semester of BBA Part III of the Semester Pattern directly.

2. The absorption of students of old course (Introduced in 2014) referred above shall be made to the new course in the following manner:

   A. A student who has passed all subjects BBA I of old course (Introduced in 2014),under Direction No.15 of 2014, shall be admitted to BBA 3rd Semester course without any restriction.
   B. A student who has failed in some subjects of BBA I of old course (Introduced in 2014) but qualifying the conditions of ATKT prevailing under the Direction No. 15 of 2014 can be admitted to BBA 3rd Semester course. Such a student shall clear those subjects of BBA I in maximum three attempts, as shown in the above table. Where a student fails to clear those subjects in the maximum permissible attempts he/she will have to take casual admission in the first and second semesters of the new course under this Direction, by

paying fee of Rupees Five Hundred for each semester, and clear the papers of those semesters. However, such a student shall be given exemption in the equivalent subjects of the first and second semesters.

C. A student who has passed all subjects BBA II of old course (Introduced in 2014) shall be admitted to BBA 5th Semester course.

D. A student who has failed in some subjects of BBA II of old course (Introduced in 2014) but qualifying the conditions of ATKT prevailing under the said direction can be admitted to BBA 5th Semester course. Such a student shall clear these subjects in maximum three attempts, as shown in the table above. Where a student fails to clear those subjects in the maximum permissible attempts he/she will have to take casual admission in the Third and Fourth semesters of the new course under this Direction, by paying fee of Rupees Five Hundred for each semester, and clear the papers of those semesters. However, such a student shall be given exemption in the equivalent subjects of the Third and Fourt semesters.

E. Similarly, a student of BBA III of old course (Introduced in 2014), if not able to pass all the subjects till Winter 2019 examinationhe/she will have to take casual admission in the Fifth and Sixth semesters of the new course under this Direction, by paying fee of Rupees Five Hundred for each semester, and clear the papers of those semesters. However, such a student shall be given exemption in the equivalent subjects of the Fifth and Sixth semesters.

3. Declaration of Result and Preparation of Marklist

The final year Marklist of students absorbed from BBA Old Course (Introduced in 2014) shall be prepared on the following guidelines:

A. Where a student who has passed BBA I in the annual pattern (Introduced in 2014) has been absorbed under the absorption scheme hereunder, the marks of the BBA I of such student being out of 700 shall be converted to out of 800 so as to bring uniformity in the mark sheets of the regular students under this Direction and the students absorbed under the absorption scheme.

B. Similarly where a student has passed BBA I and II in annual pattern (Introduced in 2014) and has been absorbed under the scheme under this direction (Semester Pattern), the total marks obtained by such a student in BBA I and II examinations being out of 700 shall be converted to out of 800 each for the BBA I and II examinations each.

4. The equivalence & exemption of subjects for the students absorbed in the new course shall be as follows:

BBA New Course Examination (Semester Pattern)	Name of Subject in New Course Examination (Semester Pattern)	BBA Old Course Examination (2014)	Equivalent Subject in Old Course	Status of Exemption
Semester I	English	BBA Part I	English & Business Communication	Yes
	Fundamentals of Business Management	BBA Part I	Principles of Management	Yes
	Computer Applications for Business	BBA Part I	Computer Applications for Business	Yes

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	Cost Accounting	BBA Part I	Financial & Cost Accounting	Yes
Semester II	Principles of Marketing Management	BBA Part II	Principles of Marketing Management	Yes
	Financial & Management Accounting	BBA Part I	Financial & Cost Accounting	Yes
	Micro-Economic Fundamentals	BBA Part I	Business Economics	Yes
	English	BBA Part I	English & Business Communication	Yes
Semester III	Principles of Financial Management	BBA Part II	Management Accounting & Financial Management	Yes
	Basic Statistical Techniques	BBA Part II	Statistical Methods for Business	Yes
	Evolution of Business & Commercial Geography		**----**	**No***
	Environment Management	BBA Part II	Environment Management	Yes
Semester IV	Principles of Human Resource Management	BBA Part II	Human Resource Management	Yes
	Money, Banking & Finance	BBA Part I	Business Economics	Yes
	Introduction to Sociology & Psychology		**----**	**No***
	Business Legislations	BBA Part II	Business & Industrial Laws	Yes
Semester V	Entrepreneurship Development	BBA Part III	Entrepreneurship Development	Yes
	Principles of Operations Management	BBA Part III	Production & Operations Management	Yes
	International Business Environment		**---**	**No***
	Research Methodology	BBA Part II	Research Methodology	Yes
Semester VI	Financial Management – Paper 1	BBA Part III	Financial Management – Paper 1	Yes
	Financial Management – Paper 2	BBA Part III	Financial Management – Paper 2	Yes
	Human Resource Management – Paper 1	BBA Part III	Human Resource Management – Paper 1	Yes
	Human Resource Management – Paper 2	BBA Part III	Human Resource Management – Paper 2	Yes
	Marketing Management - Paper 1	BBA Part III	Marketing Management -Paper 1	Yes
	Marketing Management - Paper 2	BBA Part III	Marketing Management -Paper 2	Yes

(*) All these subjects have no equivalent subjects in the BBA Old Course Examination (introduced in 2014). Hence, students desiring for absorption in New Course under this Direction are mandatorily required to appear for these subjects in respective semesters.

5. If a student who had opted for final year 'Service Sector Management' specialization papers of old syllabus (2014) & could not pass it in three attempts, he shall appear for a new specialization subject as per semester pattern scheme.

6. The above absorption scheme of B.B.A. shall be effective till the introduction of new Syllabus.

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27. Guidelines for Project Work :

Objective

Every student will be assigned a project in 6th Semester of BBA and it will be pursued by him/her under the supervision of an internal supervisor. The objective of the Project Work is to help the student develop his/her ability to apply multi-disciplinary concepts, tools and techniques to solve organizational problems and/or to evolve new/innovative theoretical frame work.

Type of Project

The Project may take any one of the following forms:

i) Comprehensive case study (covering single organization/multifunctional area problem, formulation, analysis and recommendations)

ii) Inter-organizational study aimed at inter-organizational comparison/ validation of theory/survey of management services.

iii) Evolution of any new conceptual / theoretical framework.

iv) Field study (Empirical study).

v) Software analysis, Design and solutions for organizational achievement (Applicable to IT)

Selection of Project Topic:

- Project topic has to be selected with respect to the programme of study and area elected by the student.
- Title of the project should clearly specify the objective and scope of the study. It should be specific and neither too vague nor centralistic. The topics should be designed meticulously. It can be designed like "Employee Welfare Measures" – A case study of XYZ Ltd.
- Project selection has to be made in consultation with the supervisor who will act as a Project guide for the student.

Scope of Work

The student is expected to carry out following activities in the project:

1. Prepare a synopsis and get it approved by the supervisor as assigned by the respective Institutes.
2. Undertake a detailed literature survey on the subject matter.
3. Make relevant data collection/observation.
4. Consult experts of the field.
5. Visit related organizations/institutions/industries.
6. Compile data in proper format.
7. Make proper conclusion/recommendations.
8. Prepare a Project Report.
9. The volume of the project-report should be ranging from 60-80 pages.
10. Obtain approval of Project Report by project supervisor.
11. Submit two hard bound copies of the Project Report at the Institute.
12. Submission of the Project Report shall be one month prior to the date of the commencement of the 6th Semester Examinations for BBA.

General Format of the Report

The project report should preferably be written in the following format:

a) Executive Summary

b) Introduction to topic

c) Research Methodology

d) Analysis and Findings of the study

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e) Conclusions and Recommendations of the study
f) Bibliography
g) Appendices – to include questionnaire, if any

Examination and Evaluation

The Project is to be treated as a paper of study of the BBA-6th Semester comprising of 200 marks. The external assessment shall be done on the basis of the project report and Viva Voce. The Project shall be evaluated by an External faculty for 150 marks and of which 100 marks will be allocated to the Written Report Content and Presentation and 50 marks for Viva Voce. The Project work shall be evaluated by internal and external examiners for 100 marks (as mentioned above) at the respective institute / college as per the scheduled fixed by the university. One such External Examiner shall not examine more than 20 students in one academic year.

28. This direction shall come into force phase wise from the academic session 2016-17.

Sd/-
Dr. S. P. Kane
Vice-Chancellor

Nagpur
Date : 29.08.2017

Appendix A

Subject/Paper Summary for BBA Program

Semester	Subject Code	Name of Subject
I	1T1	English
	1T2	Fundamentals of Business Management
	1T3	Computer Applications for Business
	1T4	Cost Accounting
II	2T1	Principles of Marketing Management
	2T2	Financial & Management Accounting
	2T3	Micro-Economic Fundamentals
	2T4	English
III	3T1	Principles of Financial Management
	3T2	Basic Statistical Techniques
	3T3	Evolution of Business & Commercial Geography
	3T4	Environment Management
IV	4T1	Principles of Human Resource Management
	4T2	Money, Banking & Finance
	4T3	Introduction to Sociology & Psychology
	4T4	Business Legislations
V	5T1	Entrepreneurship Development
	5T2	Principles of Operations Management
	5T3	International Business Environment
	5T4	Research Methodology
VI	6T1	Elective – Paper 1
	6T2	Elective – Paper 2
	6P1	Project Work

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Appendix B

List of Elective Subjects

Group Area	Paper	Name of Subject
Financial Management	1	Fundamentals of Business Finance
	2	Advanced Financial Management
Human Resource Management	1	Fundamentals of Human Resource Management
	2	Advanced Human Resource Management
Marketing Management	1	Fundamentals of Marketing Management
	2	Advanced Marketing Management

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Appendix C

Detailed Syllabus

Bachelor of Business Administration (BBA) Examination

Semester – I

1T1– English

Unit I: Basic Grammar – Tense, Forms of the Verb, Preposition, Articles, Punctuation, Single Word for a Group of Words, Sentence Construction, Comprehension.

Unit II: Business Letter Writing- Enquiries and replies, Placing and fulfilling orders , Complaints and follow-up letters , Sales letters, Circular letters, Application for employment and Resume.

Unit III: Business Manners- Body Language, Gestures, Telephone etiquette, E-mail etiquette.
Textbook:
1) The Bet – Anton Chekov
2) Socrates and the Schoolmaster – F. L. Brayne

Unit IV: Textbook:
1) An Astrologer's Day – R. K. Narayan
2) The Gift of the Magi – O' Henry
3) With the Photographer – Stephen Leacock

Reference Books:

1. Textbook entitled 'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Longman
2. Orient Longman, Raj N Bakshi 2003-2007.
3. The grammar Tree, MridulaKaul, BeenaSugathan, ArchanaGilani- Oxford university press 2011
4. Grammar for All, N Ramlingam, Himalaya Publishing House, 2nd Edition 2014.
5. John Eastwood, Oxford Practice Grammar with answers
6. High School English Grammar & Composition, Wren & Martin Revised by NDV Prasad Rao, S Chand Publication
7. Business Correspondence & Report Writing, R C Sharma &Krisha Mohan, 3rd Edition, Tata Mcgrall Hill
8. Communication, C S Rayudu, Himalaya Publication July 2008
9. Business Communication, UrmilaRai, S M Rai, Himalaya Publication 9th Edition.

1T1- ENGLISH

QUESTION PAPER PATTERN

[Maximum Marks – 80

1. (A) Comprehension of Unseen Passage (**UNIT-I**)
   (Four Very Short Answer Questions based on the given Passage)
   4 X 2 Marks= 8 Marks

(B) Four items out of Six based on any one of the Grammar/Vocabulary items prescribed in **UNIT-I**

4 X 1 Mark = 4 Marks

(C) Four items out of Six based on any one of the Grammar/Vocabulary items prescribed in **UNIT-I**

4 X 1 Mark = 4 Marks

2. (A) ONE out of TWO Questions from **UNIT-II** (Business Letter Writing)

1 X 8 Marks = 8 Marks

(B)ONE out of TWO Questions from **UNIT-II** (Business Letter Writing)

1 X 8 Marks = 8 Marks

3. (A) ONE out of TWO Questions from **UNIT–III** (Business Manners)
1 X 8 Marks = 8 Marks
(B) ONE out of TWO Long Answer Questions (to be answered in about 150 words) based on the prescribed Lessons in **UNIT-III** from the textbook ***Prism***
1 X 8 Marks = 8 Marks
4. (A) TWO Short Answer Questions (to be answered in about 75 words) out of THREE based on the Lessons Prescribed in **UNIT-III**

2 X 4 Marks = 8 Marks

(B) ONE out of TWO Long Answer Questions (to be answered in about 150 words) based on the prescribed Lessons in **UNIT-IV** from the textbook ***Prism***

1 X 8 Marks = 8 Marks

5. (A) TWO Short Answer Questions (to be answered in about 75 words) out of THREE based on the prescribed Lessons in **UNIT-IV** from the textbook ***Prism***

2 X 4 Marks = 8 Marks

(B) FOUR **Very Short Answer Questions** out of SIX to be answered in one or two sentences each from the prescribed Lessons (from ***Prism***) in **UNIT-III&UNIT-IV**

4 X 2 Marks = 8 Marks

1T2 – Fundamentals of Business Management

Unit I: Introduction -Nature, function, definition and importance of management, Definition, nature, purpose and scope of management, Functions of a manager, is management a science or art? Development of Management Thought -Scientific management; Contribution of Taylor, Fayol, Mary Follet, Elton Mayo; Hawthorne experiments, Contingency approach.

Unit II: Management and Administration-Management and administration, Management as a profession, Professionalism of management in India, Management ethics and management culture, Skills required of manager, Classification of skills, Methods of skills development.

Unit III: Management Planning-Concept of planning, objectives, Nature, Types of plan, Stages involved in planning, Characteristics of a good plan, Importance, Limitations of planning, Making planning effective, Strategic planning in Indian Industry.

Unit VI: Decision Making-Concept, characteristics of decisions, Types of decisions, Steps Involved in decision making, Importance of decision making, Methods of decision making, Committee Decision Making. Organisation -Concepts, Principle of organization, Importance, Features of good organization structure, Types of Organisation structure.

Reference Books:

1. Essential of Business Administration - K.Aswathapa Himalaya Publishing House
2. Management: Concept and Strategies By J. S. Chandan, Vikas Publishing
3. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
4. Principles of Management By Ramasamy T, Himalaya Publishing House
5. Principles of Management, Dr.NeeruVashisht&Dr.Namita Rajput, Taxmann

1T3 – Computer Applications for Business

Unit I: Introduction to Computers - Generation of Computers, Block Diagram, Working of Computer, Hardware and Software, Programming and Flow Charts concepts, Operating systems (MSDOS, Windows, UNIX, Linux), Networking concepts.

Unit II: Working with Computers - Introduction to Word, Excel, PowerPoint, Internet,. Lab Activity would be based on the following topics: a. MS Word b. MS Excel c. MS PowerPoint

Unit III: Introduction to e-Commerce, e-Learning and e-Business, M-Commerce. Introduction to Basic Web Page designing Language (HTML), using Tags: - Structural, Formatting, List tags and Table.

Unit IV: IT Consulting – Basic concepts of business, strategy and operation; Business / Strategic Consulting: Reengineering, BPR; Operations Consulting: domain knowledge concept, domain-consulting. IT Enabled Services (ITES) – Processes, Outsourcing Function, Call Centres; BPO's: Captive BPO's (GE and Dell) and Third Party BPO's (Infosys BPO, Wipro BOP, Mphasis, Daksh and EXL etc).

Reference Books:

1. E-Commerce- ParagDewan (Excel Books),
2. P.K.Sinha –Computer Fundamentals.
3. World Wide Web –design with HTML –C Xavier ,
4. Computer Application in Management –NirupmaPathak ,
5. BPO- SarikaKulkarni,
6. BPO' Processes & Challenges By Harsh Bharghav& Deepak Kumar,
7. IT Enabled Retailing by k. Suresh,
8. IT Strategies for Business- FarhaKulkarni
9. Computer Applications in Management- UshaDahiya&SapnaNagpala, Taxmann

1T4 – Cost Accounting

Unit –I: Introduction -Meaning of Cost, Costing and Cost Accounting, Features, Scope and Functions of Cost Accounting, Advantages and Limitations of Cost Accounting; Concept of Cost; Analysis and Classification of Costs; Elements of Cost; Preparation of Cost Sheet (Statement of Cost); Quotations and tender. Introduction and need for reconciliation between financial accounts and cost account, reasons for disagreement in Profit; Preparation of Reconciliation Statement.

Unit –II: Process Costing: Meaning, features and applicability, difference between process and job costing, wastage and by-products, normal and abnormal loss. Preparation of process accounts

Unit III: Operating Costing: Classification of costs, Features of operating costing: Transport costing (Standard charge, running and operating cost, maintenance charges and log sheet)

Unit IV Marginal Costing: Introduction, Application of Marginal costing in terms of cost control, level of activity planning- Break-even-analysis: Application of BEP for various business problems.

Simple Numerical will be based on Unit II, III and IV

Reference Books:

1) Management Accounting, Bhagwati&Pillai, Second Edition, S. Chand &. Company ltd.
2) Cost & Management Accounting, Ravi M Kishore, Taxmann Publications Pvt. Ltd.
3) Cost and Management Accounting V. K. Saxena& C. D. Vashist, Sultan Chand & Sons Publication.
4) Cost Accounting, Text and Problems, MC Shuka, TS Grewal and MP Gupta, S Chand Publications

Question Paper Pattern for BB4 – Cost Accounting

Question No.	Unit	Nature	Max. Marks
1	I	a. Theory Question b. Theory Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
2	II	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
3	III	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
4	IV	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
5	I II III IV	Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question	4 Marks each
TOTAL MARKS			80

Bachelor of Business Administration (BBA) Examination

Semester – II

2T1– Principles of Marketing Management

Unit I Marketing : Definition, nature, scope & importance, MarketingManagement, Core concepts of marketing, selling concept,production concept, modern marketing concept.

Unit II Segmentation: Concept, basis of segmentation, Importance inmarketing; Targeting : Concept Types, Importance; Positioning: Concept, Importance, Brand positioning, Repositioning.

Unit III Marketing Mix: Product : Product Mix, New Product development, levels ofproduct, types of product, Product life cycle, Branding andpackaging, different types of distribution channels.

Unit IV Price: Meaning, objective, factors influencing pricing, methods of pricing.Promotion : Promotional mix, tools, objectives, media selection & management. Process & Scope Marketing **Information Systems :** Meaning Importance and Scope Consumer Behaviour : Concept, Importance and Factors influencing consumer behaviour.

Reference Books:

1. Marketing Mgt. by Philip Kotler (PHI)
2. Marketing Management by RajanSaxena
3. Marketing Management by Namaswamy&Ramakumari.

2T2 – Financial & Management Accounting

Unit –I: Introduction - Meaning, Scope and importance of Financial Accounting. Financial Accounting - concepts and conventions, classification of accounts, Rules and principles governing Double Entry Book-keeping system (Preparation of Journal), Nature and function of financial Reporting, GAAP.

Unit –II: Final Accounts of Companies - Final Accounts of Joint Stock Companies – contents and preparation of Trading and Profit and Loss Account, Profit and Loss Appropriation Account and Balance sheet with adjustment, Closing Entries (Simple entries)

Unit III: Management Accounting - Meaning, Scope, Importance, and Limitations of Management Accounting, Difference between Financial Accounting and Management Accounting, Break even analysis, Analysis of Financial Statements (using ratio analysis-simple ratios)

Unit IV: Budgetary Control - Business budgets and budgetary control – Types of budget and its utility, preparation of cash & flexible budgets.

Note: Simple Numericals will be based on all Units.

Reference Books:

1. S. N Maheshwari : Financial Accounting Theory and problems – S.Chand (G/L) & Company Ltd,
2. Pillai R. S. N. – Management Accounting – S. Chand & Co. Pvt. Ltd.
3. Shukla and Grewal : Advanced Accounts (S. Chand & Ltd. New Delhi)
4. Management Accounting & Financial Management :-Arora M N (Himalaya Publishing
5. House Pvt. Ltd.)
6. Accounting for Management- Dr. Ashok Sehgal& Dr. Deepak Sehgal, Taxmann

Illustrative Question Paper Pattern for BB6 – Financial & Management Accounting

Question No.	Unit	Nature	Max. Marks
1	I	a. Theory Question b. Theory Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
2	II	a. Numerical Question b. Numerical Question	8 Marks 8 Marks

		OR c. Numerical Question	 16 Marks
3	III	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
4	IV	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
5	I II III IV	Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question	4 Marks each
TOTAL MARKS			80

2T3– Micro-Economic Fundamentals

Unit I: Introduction to Micro Economics- Meaning, Definition, Importance of Micro Economics, Factors affecting Micro Economics. Difference between Micro-Economics & Macro Economics.

Unit-II Demand and Supply Analysis - Concept of Demand, Law of Demand-Meaning, Definition, Assumptions & Exceptions. Elasticity of Demand- Meaning, Types and Factors affecting Elasticity of Demand; The Indifference Curve Theory; Supply- Concept of Supply, Elasticity of Supply, Types and Factors affecting Elasticity of Supply.

Unit III: Production & Cost Analysis - Production & Production Function: Concept, Forms of Production function, Law of Variable Proportions, Returns to scale. Cost Concepts, Short term and Long term cost output relationship, The Isocost and Isoquant Approach, Economic Region and Economies & Diseconomies of scale.

Unit IV: Market Structures- Characteristics and price determination in various market structures - Perfect Competition, Monopoly, Monopolistic Competition, Oligopoly. Pricing: Meaning, Types of Pricing.

Reference Books:

1. AgarwalaS.K.,Microeconomic Theory, Excel Books, New Delhi
2. Appannaiah, Reddy &Shanthi, BBM Semester Economics, 2006, Himalaya Publishing House, Mumbai.
3. Dholkia R H &Oza A.N., 1996, Oxford University Press, New Delhi
4. Dominick Salvatore, Managerial economics in a Global economy, 2006, Thomson learning Press
5. Jhingan, 2004, M.L.,Microeconomic Theory, Veranda Publishers, New Delhi.
6. Ravindra R Dholakia, Ajay N Oza, Micro –Economics for Management Studies, Oxford University Press, Delhi
7. Robert S.Pindyck, Daniel L Rubinfeld, PremL.Mehta, Microeconomics, 2006, Pearson, New Delhi.
8. Suma Damodran, Managerial Economics, 2006, Oxford University Press, New Delhi
9. Sundharam K P. M, microeconomics, Sultan Chand & Sons.

2T4 - ENGLISH

(To be implemented from the Session 2016-2017 onwards)

1	Unit I	Basic Grammar& Vocabulary : • Subject-Verb-Agreement / Concord of Nouns, Pronouns and Possessive Adjectives • Spotting errors and rewriting sentences correctly. • Phrasal Verbs, Collocations and Idioms (based on the exercises at the end of the prescribed lessons from *Golden Harvest* • Words Often Confused	Reference Books: 1. Macmillan Foundation English by R. K. Dwivedi and A. Kumar (Macmillan/Trinity) 2. Learners' English Grammar and Composition by N. D. V. Prasad Rao (S.Chand Publication) 3. Developing Communication Skills by Krishna Mohan and MeeraBanerji (Trinity)
2	UNIT II	Business Communication • Memorandum Writing • Notice, Agenda and Minutes	1. Developing Communication Skills by Krishna Mohan and MeeraBanerji (Trinity)
		• Writing Advertisements for: Rent, Sale, Situations Vacant	2. Write Right by SaritaManuja (Macmillan/ Trinity)
3	UNIT III	Prose Items: • A Real Good Smile: Bill Naughton • What India Inc Wants: a. Our Muddled Generation: Dinesh Kumar b. Employers Look for Potential Employees, not Exam Results: Manish Sabharwal • The Thief: Ruskin Bond	Prescribed text : *Golden Harvest* by Orient BlackSwan

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4	UNIT IV	Prose Items: • A Simple Philosophy: Seathl • Go, Kiss the World: SubrotoBagchi • My Struggle for an Education: Booker T. Washington	Prescribed text : *Golden Harvest* by Orient BlackSwan

2T4 - ENGLISH

(QUESTION PAPER PATTERN)

[Maximum Marks – 80]

1. (A) FIVE items out of SEVEN based on Subject-Verb- Agreement/Concord (fill in the blanks)- **UNIT-I** 5 x 1 Mark = 5 Marks

(B) FIVE items out of SEVEN based on Spotting Errors and Rewriting Sentences correctly. – **UNIT-I** 5 x 1 Mark = 5 Marks

(C) FIVE items out of SEVEN based on Phrasal Verbs/ Collocations/Idioms - **UNIT-I** 5 x 1 Mark = 5 Marks

(D) FIVE items out of SEVEN based on Words Often Confused (fill in the blanks) – **UNIT- I** 5 x 1 Mark = 5 Marks

2. (A) ONE out of TWO items on Memorandum Writing - **UNIT-II** 1 X 5 Marks = 5 Marks

(B) ONE out of TWO questions based on Notice, Agenda and Minutes - **UNIT-II** 1 X 10 Marks = 10 Marks

(C) ONE out of TWO questions based on Writing Advertisements- **UNIT-II** 1 X 5 Marks = 5 Marks

3. (A) ONE out of TWO Long Answer Questions to be answered in about 150 words - **UNIT–III** (Prescribed Text) 1 X 10Marks = 10 Marks

(B) TWO out of THREE Short Answer Questions to be answered in about 75 words - **UNIT-III** (Prescribed Text) 2 X 5 Marks = 10 Marks

4. (A) ONE out of TWO Long Answer Questions to be answered in about 150 words - **UNIT–IV** (Prescribed Text) 1 X 10 Marks = 10 Marks

(B) TWO out of THREE Short Answer Questions to be answered in about 75 words - **UNIT-IV** (Prescribed Text) 2 X 5 Marks = 10 Marks

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Bachelor of Business Administration (BBA) Examination

Semester – III

3T1 – Principles of Financial Management

Unit –I: Introduction of Business Finance - Meaning, Scope and importance of Business Finance. Finance Functions. Goals & objectives of financial management

Unit –II: Sources of Financing - LONG TERM: Equity shares, Preference Shares, debentures,/ Bonds (Types, features & utility), term loans, lease & hire purchase, retained earnings,; SHORT TERM: trade credit, bank finance, commercial paper, factoring & bills discounting.

Unit III: Cost of Capital - Cost of capital, Cost of different sources of finance, weighted average cost of capital, Concept of Leverage, Concepts of Capital Structure.

Unit IV: Working Capital Management - Meaning, Scope, Importance, and Limitations of Working Capital, Factors affecting Working Capital needs, Various Approaches for financing Working Capital. Concept of Operating Cycle, Estimation of Working Capital Requirement

Note: Simple Numerical will be based on Unit III and IV only.

Reference Books:

1) Financial Management by Ravi Kishore, Taxmann Publications Pvt Ltd
2) Financial Management – I M Pandey – S. Chand & Co. Pvt. Ltd. (Old editions in Vikas Publications)
3) Financial Management , Theory, Concepts and Problems by Dr. R. P. Rustagi, Taxmann Publications Pvt Ltd
4) Financial Management, Text, Problems and Cases, by M Y Khan and P K Jain, McGraw-Hill Publications

BBA Sem III
3T2 – Basic Statistical Techniques

Unit I – Definition, functions, scope and role of statistics in business and importance of statistics. Classification of data, tabulation, frequency distribution, diagrams & graphs.

Unit **II** – Importance and requisites of a good statistical average, types of averages – arithmetic mean, median, mode, geometric mean, harmonic mean, weighted average, relationship amongst different averages.

Unit III – Meaning and significance of dispersion, methods of measuring dispersion – range, quartile deviation, mean deviation, standard deviation and coefficient of skewness.

Unit IV – Definition of correlation, significance of correlation, types of correlation, merits and limitations of coefficient, Calculation of coefficient of correlation and probable error for simple series, calculation of coefficient of correlation and probable error for continuous series.

Numerical shall be based on Unit II, Unit III, and Unit IV

Reference Books:

1. Fundamentals of statistics : D. V. Elhance&VeenaElhance
2. Statistices : V. K. Kapoor – S. Chand & Sons
3. Statistics : B. New Gupta – SahityaBhavan Agra
4. Statistics Methods : S.P. Gupta – S. Chand & Sons
5. Fundamental of Statistics : S. C. Gupta – Himalaya Publishing House
6. Business Mathematics & Statistics : NEWK Nag & S.C. Chanda – Kalyani Publishers

Illustrative Question Paper Pattern for BB10 – Basic Statistical Techniques

Question No.	Unit	Nature	Max. Marks
1	I	a. Theory Question b. Theory Question OR c. Theory Question d. Theory Question	8 Marks each
2	II	a. Theory Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
3	III	a. Theory Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
4	IV	a. Numerical Question b. Numerical Question OR c. Numerical Question	8 Marks 8 Marks 16 Marks
5	I II III IV	Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question Short Answer Theory Question	4 Marks each
TOTAL MARKS			80

3T3 – Evolution of Business & Commercial Geography

Unit I–Evolution of Business & Economy: Industrial revolution (1820-1850); Rise of European business (1850-1900); Impact of First World War on International Business; The Great Depression and its effect on International Business; Impact of Second World War on International Business.

Unit II – Evolution of Business in post WWII Scenario: Cold War and its impact on International Business; OPEC Crises and its impact on International Business; Gulf War and its impact on International Business; Dawn of IT era and its impact on business & economy.

Unit III – Commercial Geography: Geography - meaning & its relation with Commerce & Commercial Geography - Nature and scope. Approaches of commercial Geography. 2. Geographical Environment & Commerce - Relationship between geographical environment and Commerce, Economic activities, Determinism and possibilism, Physical environment - Location, size and shape of the country relief, climate, water bodies, soils, vegetation, animals, minerals, Cultural environment, settlements, transport, communication and technology.

Unit IV -Industries : Role of industries in Economic development; Factors of industrial location - Raw material, power, market, transport and communication, land capital, technology; Webers theory of industrial location, Iron & steel industry - India & USA, Cotton textile industry - India & USA. Engineering industry in India - Major industrial regions of the world and India.

Reference Books:

1. Global Governmentality – Edited by Wendy Larner& William Walters, Routledge Resource
2. The Origins of Globalisation – Karl Moore & David Charles Louis, Routledge Resource
3. British Business History (1720-1994) – John F Wilson, Manchester University Press
4. The History of Family Business (1850-2000) – Andrea Colli, Cambridge University Press
5. Exporting the American Model: The Post war transformation of European Business – Marie-Laure Djelic, Oxford University Press
6. Order and Disorder after the Cold War – Brad Roberts, MIT Press
7. Commercial Geography - Sir Dudley Stamp.
8. Fundamentals of Economic Geography - Van Royen&Bengston.
9. Economic Geography - J. Alexander
10. Economic Geography - Jones &Darkenwald.

3T4 – Environment Management

Unit I: Introduction to Environment Management: Definition, Scope importance, Need for public awareness, sustainable development, Natural Resources- renewable and non- renewable resources, role of individual in conservation of natural resources(Forest, water, land, energy, mineral)

Unit II: Environment Pollution: Types of pollution- air, water, soil, noise, thermal and Nuclear, causes effectsna control measures, Global warming, green house effect, Ozone layer depletion, Acid rains

Unit III: Human Population: Global population growth, variations among nations, Population explosion-causes and impact, Family welfare Programs-methods of sterilization; Infectious diseases, water related diseases, risk due to chemicals in food, Cancer and environment

Unit IV: Social Issues in Environment: Construction of dams: problems and concerns of resettlement, rehabilitation of affected people; Environmental ethics– issues and possible solutions, resource consumption patterns and need for equitable utilization; Equity disparity in western and eastern countries; Urban and rural equity issues; Need for gender equity.

Reference Books:

1. A text book of environmental by K M Agrawal, P K Sikdar, S C Deb", published by Macmillan
2. Environment management by N K Uberoi", published by Excel Books
3. Environment management by Dr. Swapan Deb", published by Jaico Publishing House.
4. Environmental Management by S K Agrawal", published by A.P.H. publishing Corporation.

Bachelor of Business Administration (BBA) Examination

Semester – IV

4T1 – Principles of Human Resource Management

Unit 1 : Introduction to Human Resource Management: Definition, concept and Scope of H. R. M., Difference between Personnel Management and H.R.M., Importance and Functions of H.R.M. Role of H.R Department.

Unit 2 : Job Analysis, Job Design: Meaning of Job Analysis, Uses, Process and methods of collecting data for job analysis, Job Description, Job Specifications. Meaning of Job Design, Techniques of Job Design

Unit 3 : Human Resource Planning - Recruitment – Selection: Definition and objectives of Human Resource planning, process of Human Resource planning factors influencing estimation of Human Resources, Concept of Recruitment & Selection, sources of recruitment, Selection Procedure

Unit 4 : Induction & Training : Concept of Induction, Training- Need for training, benefits of training, identification of training needs and methods/ types of training. Evaluation of effectiveness of training programs.Placement, Transfer, Promotion, Demotion.

Reference Books:

- Dr. S S Khanka : Human Resource Management,
- Aswathappa, K.; Human Resource and Personnel Management (Text and Cases), Tata McGraw Hill Publishing Company
- Dessler,Gary; Human Resource Management;Prentice Hall
- SubbaRao, Personnel and Human Resources management, HPH.
- Human Resource Management- Text and Cases-- VSP Rao

4T2 – Money, Banking and Finance

Unit I: Money - Concept and functions of Money, Origin and development of Money, Limitations of Barter System, Classification of Money, Importance of Money, Qualities of Good Money, Defects of money.

Unit-II – Banking and Finance - Commercial Banking- Role and functions of Commercial Banks, Credit creation and its limitations Central Banking-Functions of Central Bank. Reserve Bank of India –Role in Indian Economy, Monetary & Non-Monetary functions of RBI.

Unit III: National Income Determination- Meaning, Method & Difficulties of Measuring National Income; Concept of GDP, GNP, NNP, PI, DPI. Inflation and Deflation- Types, Causes and Measures to Control.

Unit IV: Monetary and Fiscal Policy- Concept, Objectives, Instruments, Limitations of Monetary and Fiscal policy, Public Finance- Meaning, Scope and Importance of Public Finance, Public Finance Vs Private Finance.

Reference Books:

1. Appannaiah, Reddy &Shanthi, BBM Semester Economics, 2006, Himalaya Publishing House, Mumbai.
2. Chaturvedi D., Macro Economics, 2005, Galgotia Publishing Company, New Delhi.
3. Dominick Salvatore, Managerial economics in a Global economy, 2006, Thomson learning Press
4. Datt, Ruddar and K P M Sundharam, 2005, Indian Economy, S.Chand and Co. Pvt. Ltd. New Delhi
5. Jhingan, 2004, M.L., Money Banking International Trade and Public Finance, Ed. 8, Veranda Publishers, New Delhi.

6. Mithani D. M., Money, Banking, International trade and Public Finance,2006, Himalaya Publishing House, Mumbai
7. Samuelson, Paul Anthony and William D. Nordhaus, 1998, Economics, Ed. 6 New Delhi: Tata McGraw Hill Publishing Company Ltd, New Delhi.
8. Somashekhar N T., Money, Banking, International trade and Public Finance,2006,Himalaya Publishing House, Mumbai
9. Suma Damodran, Managerial Economics, 2006, Oxford University Press, New Delhi.

4T3 – Introduction to Sociology & Psychology

Unit I:Sociology as the Science of Society: (a) Sociology – Meaning and Definitions, (b) Characteristics of Sociology as a science (empirical, theoretical, cumulative and nonethical), (c) Development of Modern Industrial Society – Characteristics, industrialism, capitalism, urbanism, liberal democracy, (d) Postmodern Society – Nature and Characteristics, (e) Culture – Meaning and elements, (cognitive elements, beliefs, values and norms and signs), Meaning, stages and agencies of socialisation.

Unit II:Social Structure and Social Change: (a) Structural aspects of social system – Institutions, groups, subgroups, roles, norms and values, (b) Social change – Its sources – Internal and External, (c) Types of Social Change – Changes in social values with reference to pattern variab les, changes in occupational structure and demographic changes

Unit III:Introduction to Psychology:(a) Definition, Nature, Scope and Applications of Psychology. (b)Methods: Introspection, Observation, Experimental, Interview, Questionnaire and Case Study. (c)Contemporary Perspectives: Biological, Cognitive, Psychoanalytical, Humanistic, Evolutionary and Cross-cultural. (d)Biological Bases of Behaviour: Evolution, Genes and Behaviour. The Response Mechanism: Receptors, Effectors and Adjustors. (e)The Nervous System: The Basic Structure, Functions and Divisions of the Peripheral and Central Nervous System.

Unit IV:Social Psychology:(a)Introduction: Nature and Scope; Methods of Studying Social Behaviour: Observation, Experimental, Field Study, Survey, Sociometry and Cross-cultural. (b)Socialization: Agents and Mechanisms, Socialization and Deviation. (c)Perceiving Others: Forming Impressions; Role of Non-verbal Cues, Group stereotypes, Central Traits; Primary and Recency Effects; Models of Information Integration; Attribution of Causality: Biases and Theories (Jones and Davis, Kelley).

Reference Books:

1. Inkeles, Alex, "What is Sociology?", Prentice Hall of India, New Delhi, 1987
2. Jayaram N., "Introduction to Sociology", Macmillan India, Madras, 1988
3. Ghode R.N. and BhauDaydar, "Sociology: Basic Concepts", Spectrum Publications, Nagpur
4. Atkinson and Hilgard (2002). Introduction to Psychology. New York: Thomson Wadsworth
5. Feldman, R. S. (2006). Understanding Psychology. India: Tata McGraw Hill.
6. Feldman, R. S. (1985). Social Psychology: Theories, Research and Application.New York: McGraw Hill.
7. Myers, David, G (1994). Exploring Social Psychology. New York: McGraw Hill.

4T4 – Business Legislations

Unit I: Administration of law & legal system in India - Introduction to legal aspects of Business in general; Freedom of Trade, Profession and Occupation (Constitutional Provisions).

Unit II: Indian Contract Act (1872) - a) Definition (Sec.2) b) Essential elements of a valid contract c) Competency to enter in contracts (Sec. 11 & 12).d) Consent – Free consent, Coercion, undue influence, fraud, misrepresentation, mistake (sec 13-23).Void Agreement (sec 24-30) f) Consequences of breach of contract (sec73-75).

Unit III: The Companies Act (1956) - Definition & characteristics of a company, Company distinguished from partnership, Kinds of Companies, Provisions relating to incorporation, lifting the Corporate Veil. Memorandum of Association, Doctrine of ultra-vires, Articles of Association, Doctrine of indoor management & constructive notice, Concept of Prospectus.**Company Management And Board Meeting :** Administrative Hierarchy, Board of Director – Director- Legal Position, Appointment, Qualification, Disqualification, Removals Power, duties, Liabilities etc. Managing Director – Meaning, Appointment, and Disqualification.Manager-Meaning, Disqualification.Company Meetings Meaning of meeting-General Body meeting – statutory Meeting, Annual General meeting, Extra ordinary meeting Board Meeting.

Unit IV: The Consumer Protection Act,1986 Salient features of Act. Definitions- Consumer, Complaint, Services, Defect and Deficiency, Complainant. Rights and Reliefs available to consumer.Procedure to file complaint.Consumer Disputes Redressal Agencies.(Composition, Jurisdiction, Powers and Functions.) Procedure followed by Redressal Agencies. Introduction to GST

Reference Books:

1) Business and Commercial Laws-Sen and Mitra.
2) An Introduction to Mercantile Laws-N. D. Kapoor
3) Business Laws-N. M. Wechlekar
4) Company Law-Avatar Singh
5) Law of Contract-Avtar Singh
6) Consumer Protection Act in India .Niraj Kumar
7) Consumer protection in India. V.K.Agrawal
8) Consumer Grievance Redressal under CPA. Deepa Sharma.

Bachelor of Business Administration (BBA) Examination

Semester – V

5T1 – Entrepreneurship Development

Unit I:Entrepreneur & Entrepreneurship: Evolution of the concept of Entrepreneurs, Characteristics of an Entrepreneur, Distinction between an entrepreneur and a manager; functions of an entrepreneur, types of entrepreneurs, concept of intrapreneurs; growth of entrepreneurship in India, role of entrepreneurship in economic development,.

Unit II:Entrepreneurial growth: Factors - Economic factors, non-economic factors, Government actions; Entrepreneurial competencies – meaning, major competencies, developing competencies; Entrepreneurship Development Programs (EDPs) - Need, objectives, course content of EDPs, phases of EDPs, evaluating EDPs.

Unit III:Small Enterprises: An introductory framework: Definition, characteristics, relationship between small and large units, rationale, objectives, scope, opportunities for entrepreneurial career, problems of SSIs; Project Identification and Selection (PIS) - Meaning of project, project identification, project selection, contents of project reports, formulation of project reports; Project Appraisal - Concept, methods, economic analysis, financial analysis, market analysis, technical feasibility, managerial competence.

Unit IV:Institutional& financial support to Entrepreneurs: Need for institutional support, various institutions supporting entrepreneurship in India – MIDC, MSME, MCED, DIC, SSIB, MSSIDC, BIFR; Financial support to entrepreneurs: Commercial banks, other financial institutions – IDBI, IFCI, SFCs, SIDBI, venture capital.

Reference Books:

1. Entrepreneurship 6 th edition. Robert D Hisrich , Tata McGraw-Hill.
2. Kuratko- Entrepreneurship – A Contemporary Approach, (Thomson Learning Books)
3. Small-Scale Industries and Entrepreneurship. Desai, Vasant (2003). Himalaya Publishing House, Delhi.
4. S.S. Khanka – Entrepreneurial Development (S. Chand & Co.)
5. Exploring Entrepreneurship, Blundel& Lockett, Oxford University Press
6. Entrepreneurship, Roy, Oxford University Press

5T2 – Principles of Operations Management

Unit I: Introduction to Operations Management: Introduction to Operations Management, its Nature, Scope, Importance and Functions. Difference between production, manufacturing and service. Concept and types of production, mass, job-based, batch and assembly line production system. Types of services.

Unit II: **Facilities and Production Planning** : Factors affecting plant location, types of plant layouts – product layout, process layout, fixed position layout, cellular layout, types of service layouts. Concept of production planning, definitions of capacities, master production schedule, material planning. Introduction to maintenance.

Unit III: **Material Management:** Scope of materials management, Purchase and Stores Functions, Introduction to warehouse management, Concept of Lead time, re-order level, minimum and maximum stock, Basic concepts of Inventory management, inventory costs, ordering and carrying cost.

Unit IV: Quality Management and Productivity: Introduction to quality, dimensions of quality, concept of product, process and service quality. Introduction to Quality Management System, concept of TQM, ISO, Kaizen, Quality circles, Six-sigma.Concepts of productivity, machine, labour and cost productivity.

Reference Books:

1. Operations Management by Shridhar, Himalaya Publishing House
2. Operations Management Nair: TMH
3. Production and Operations Management, Adam & Ebert, Prentice Hall India
4. Operations Management by Chary ,Mcgraw Publications, 4th edition.
5. Production and Operations Management, K.Aswathappa&K.ShridharaBhat, Himalaya Publication
6. Production and Operations Management, R.Panneerselvam, 3rd Edition, Eastern Economy Edition.

5T3 – International Business Environment

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Unit I: Introduction to International Business: Importance, nature and scope of International business; Modes of entry into International Business; Internationalization process and managerial implications; Issues in foreign investments, technology transfer, pricing and regulations; International collaborative arrangements and strategic alliances; Concept and significance of balance of payments account

Unit II: International Business Environment: Economic, Political, Cultural and Legal environments in International Business. Framework for analyzing international business environment.

Unit III: Global Trading and Investment Environment: World trade in goods and services – Major trends and developments; World trade and protectionism – Tariff and non-tariff barriers; Foreign investments-Pattern, Structure and effects; Movements in foreign exchange and interest rates and their impact on trade and investment flows.

Unit IV: International Economic Institutions and Agreements: WTO, WTO and Developing Countries, IMF, World Bank, UNCTAD, International commodity trading and agreements. Structure and functioning of EC and NAFTA, Regional Economic Groupings in Practice: Levels of Regional Economic Integration; Regionalism vs. Multilateralism; Important Regional Economic Groupings in the World.

Reference Books:

1. Bennet, Roger, International Business, Financial Times, Pitman Publishing, London.
2. Bhattacharya, B., Going International: Response Strategies of the Indian Sector, Wheeler Publishing, New Delhi.
3. Czinkota, Michael R., et. al., International Business, the Dryden Press, Fortworth.
4. Danoes, John D. and Radebaugh, Lee H., International Business: Environment and Operations, Addison Wesley, Readings.
5. Hill, Charles W. L., International Business, McGraw Hill, New York.

5T4 – Research Methodology

Unit I: Introduction - Meaning, Objectives and Types of research, Research Approach, Research Process, Relevance & scope of research in management. **Research Design -** Features of good Design, Types of Research Design,

Unit II: Sampling Design - Steps in sample Design, Characteristics of a good sample Design, Probability & Non Probability sampling. Hypothesis – Meaning, Types, Process, Formation of Hypothesis, Testing of Hypothesis

Unit III: Measurement & scaling techniques - Errors in measurement. Test of sound measurement, Scaling and scale construction technique. Attitude Measurement and Scales: Introduction to attitude - Various Methods to measure attitude.

Unit IV: Methods of data collection - Primary data – questionnaire and interviews; Collection of secondary data. **Interpretation of data -** Techniques of Interpretation, Report writing, Layout of a project report, preparing research reports.

Reference Books:

1. Research Methodology – C.R. Kothari
2. Business Research Methods – Naval Bajpai
3. Business Research Methodology – J K. Sachdev

Bachelor of Business Administration (BBA) Examination

Semester – VI

Elective A - Financial Management

Paper 1

6T1– Fundamentals of Business Finance

Unit –I: Mathematics of Finance – Concept of Time Value of Money, Compounding and Discounting of single cash flow, series of cash flow and annuity. Simple problems based on Time Value of Money

Unit –II: Capital Budgeting - Premises of Capital Budgeting Decisions, Tools in Capital Budgeting, Pay Back Period, Average Rate of Return on Investments, Net Present Value, IRR.

Unit –III: Dividend decision and Management of Earnings - Relevance approach of dividend valuation models, Irrelevance approach of dividend valuation models, Stability of dividend, Factors determining dividend decisions.

Unit IV: Corporate Restructuring - Reasons & drivers of corporate restructuring, Methods of restructuring- mergers (types of merger), takeovers, acquisitions (Types of Takeover/ acquisition), divesting/ demerger, spin-off, split ups

Simple Numerical will be based on Unit I, II and III only.

Reference Books:

1) Financial Management by Ravi Kishore, Taxmann Publications Pvt Ltd
2) Financial Management – I M Pandey – S. Chand & Co. Pvt. Ltd. (Old editions in Vikas Publications)
3) Financial Management , Theory, Concepts and Problems by Dr. R. P. Rustagi, Taxmann Publications Pvt Ltd
4) Financial Management, Text, Problems and Cases, by M Y Khan and P K Jain, McGraw-Hill Publications

Paper 2
6T2 – Advanced Financial Management

Unit –I: Banking Services and Operations -Definition of banks, Functions of Commercial Banks, Banking Structure in India, Role of RBI vis-a-vis other commercial banks, Introduction to Bank Deposits, Types of Deposit Accounts, KYC

Unit –II: Insurance Services - Concept of insurance, principles of insurance, Traditional and Unit linked policies, individual and group policies, Different type of insurance products – whole life products, term assurance annuities, and endowment, Medi-Claim and health insurance products.

Unit –III: Mutual Funds – Organization Structure, Classification of Funds –Types of Funds – Equity Funds, Debt Funds, Liquid Funds, Balanced Funds, Monthly Income Plans, ETFs, Commodity Funds, Fund of Funds, Sectoral Funds, ELSS; Calculation of NAV; Systematic Investment Plans; Concept of Cost Averaging and Value Averaging.

Unit IV: Capital Market - Introduction to Capital Markets, Structure of Capital Market, Primary and Secondary Market, Stock Exchanges in India- BSE, NSE, OTCEI, ICSEI, Functions of Stock Exchange, SEBI and Role of SEBI in Capital Market

Reference Books:

1) Indian Financial System by Bharti V Pathak Pearson Publications
2) Indian Financial System by M Y Khan McGraw-Hill Publications
3) Financial Markets and Services , Gordon and Natrajan, Himalaya Publications
4) Financial Services, SandeepGoel, PHI Publications
5) Know Your Bank (volume I to VI) published by IIBF
6) Life and Health Insurance, 13th Edition by Kenneth Black Jr., Harold D. Skipper Jr., PHI Publications

Elective B–Human Resource Management

Paper 1

6T1– Fundamentals of Human Resource Management

Unit 1 : Introduction: Concept, HRM ; Evolution of HRM; Challenges of HRM; Role of Human Resource Management in strategic management, Characteristics of Workforce today

Unit 2 : Performance Appraisal : Concept and Introduction, Importance, process – methods of performance appraisal – Traditional & Modern Methods.

Unit 3 : Job Evaluation & Compensation management: Concept, objectives and methods of Job Evaluation, Wages & Salary, components of employee remuneration – – base and supplementary. Wages & Salary Administration

Unit 4 : Legal Aspects : Introduction to Provident Fund Act, Employee State Insurance Corporation Act, Minimum Wages Act, Industrial Relations Act, Industrial Dispute Act.

ReferenceBooks :

- Dr. S S Khanka : Human Resource Management,
- Aswathappa, K.; Human Resource and Personnel Management (Text and Cases), Tata
- Rao,V S P,Human Resource Management,Text and Cases
- Dessler,Gary; Human Resource Management;Prentice Hall
- SubbaRao, Personnel and Human Resources management, HPH.
- SeemaSanghi , Human Resource Management

Paper 2
6T2– Advanced Human Resource Management

Unit 1 : Job Analysis, Job Design & Job Evaluation: Job Analysis & Design - Job Analysis – Meaning, Uses, Competency approach to job analysis, Job Description, Job Specifications & Role Analysis, Factors affecting Job Design, Techniques of Job Design, Cases and Exercises in understanding Job Analysis. Job Evaluation –Concept, objective & methods.

Unit 2:Performance Appraisal: Nature, Objectives of Performance Appraisal, Performance Planning and Potential Appraisal, Pitfalls of Appraisal, Praise and Recognition; Rewards and Incentives; Promotions. HR Records, MIS HR Reports, HR Formats – Personnel Files, Attendance, Leave, Medical Records.

Unit 3 : Industrial Relations : Nature, Concept, scope, objectives & significance of Industrial Relations, Trade unions, Functions of Trade Unions - Forms of collective bargaining - Workers' participation in management, Nature & causes of Industrial Dispute and Settlement of Industrial Disputes.

Unit 4 : Ancillary Topics: Goal Setting, Promotions and Transfers; Separations- Retirement, VRS, Deputation, Death, Retrenchment, Pink Slips, Competency Mapping, Employee Manual / PPP Handbook. Concept of Retention and Attrition. Online recruitment; Employee referrals; Recruitment process outsourcing Head hunting; Downsizing; Voluntary retirement schemes (VRS) HR outsourcing, Job Rotation & Transfer

Reference Books :

- Dr. S S Khanka : Human Resource Management,
- Aswathappa, K.; Human Resource and Personnel Management (Text and Cases), Tata
- Rao,V S P,Human Resource Management,Text and Cases
- Dessler,Gary; Human Resource Management;Prentice Hall
- SubbaRao, Personnel and Human Resources management, HPH.
- SeemaSanghi , Human Resource Management

Elective C–Marketing Management

Paper 1

6T1– Fundamentals of Marketing Management

Unit – I: Integrated Communication Mix (IMC) -meaning, importance; Communication meaning, importance, process, communication mix-components, role in marketing,

Unit – II: Branding - meaning, brand recall, brand positioning. Importance of branding and advertising. Digital Marketing – Scope and Importance, Search Engine Optimisation (SEO), Out of home (OOH).

Unit – III: Sales Organisation and Relationship : Purpose of sales organization, Types of sales organization structures, Sales department external relations, Distributive network relations.

Unit – IV: Concept of services - Nature & characteristics of services, Marketing Mix and strategies in Service Marketing, Product decisions, pricing strategies, Promotion of services, Placing or Distribution methods of services, Service vision & Strategies: Includes Advertisements, Branding, Packaging of Services.

Reference Books:

1. Marketing Mgt. by Philip Kotler (PHI)
2. Marketing Management by RajanSaxena, Tata McGraw Hill, Education
3. Service Sector Management by S M Jha
4. Sales Management - Cundiff, Still, Govoni

Paper 2
6T2– Advanced Marketing Management

Unit – I : Sales Management : - Evolution of sales function, Objectives of sales management positions, Functions of Sales executives, Relation with other executives, Salesmanship : Theories of personal selling, Types of Sales executives, Qualities of sales executives, Prospecting, pre-approach and post-approach, Organising display, showroom & exhibition

Unit – II:Distribution network Management: Product Distribution Channel & Types of Marketing Channels, Factors affecting the choice of channel, Types of middleman and their characteristics, Wholesale and Retail, Supply Chain Management (SCM) and introduction to Supply Chain Management, Various types of Warehousing and transportation facilities.

Unit – III: Service Quality - Impact of service Quality, Approaches to service Quality, Ten original dimensions of Service Quality, How to improve service Quality, Service quality information systems, Benchmarking and certification. Marketing challenges in services business; Classification of services; End user, Profit orientation, Services tangibility, People based services, Expertise. Role of IT in service industry.

Unit – IV: Customer Retention & Relationship Marketing: CB-Services, Facts & Importance of CB in services, Evolution of Relationship Marketing, Enhancement of Internal & External relationships, Customer Retention (Operations, Delivery System). Various types of services offered to customers – hotel, hospital, transport, insurance, banking and education.

Reference Books:

1. Marketing Mgt. by Philip Kotler (PHI)
2. Marketing Management by RajanSaxena, Tata McGraw Hill Education
3. Service Sector Management by S M Jha
4. Sales Management - Cundiff, Still, Govoni

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

DIRECTION NO. 24 OF 2017

DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF BACHELOR OF COMMERCE (COMPUTER APPLICATION) (BCCA) (CREDIT BASE SEMESTER PATTERN) FACULTY OF COMMERCE

(Issued by the Vice-Chancellor under section 12(8) of the Maharashtra Public Universities. Act, 2016) (Mah. Act No. VI of 2017)

WHEREAS, the Maharashtra Public Universities Act, 2016 (No. VI of 2017) (hereinafter Act) has come into force with effect from 1st March, 2017;

AND

WHEREAS, the amendment to the said Act came to be effected from 2016-2017.

AND

WHEREAS, the Faculty of Commerce at its meeting held on 14.3.2016 have decided to update and upgrade the existing syllabus for the award of the degree of Bachelor of Commerce (B.Com. (Computer Application)) (BCCA) commensurate with the curricula existing in the various Universities in India and with a view to include the latest trends in the commerce stream as well as to design it to suit to the needs of the industries and corporate houses as provided under Section 38(a) of the Act.

AND

WHEREAS, the Coordinator of the Faculty of Commerce concurred with the recommendations of the Special Task Committee in Computer Application in the Faculty of Commerce on 5.4.2016.

AND

WHEREAS, the Special Task Committee in Computer Application in its meetings held on 5.4.2016 updated the existing syllabi and recommended some modifications in the scheme of examination for under graduate courses.

AND

WHEREAS, the Coordinator, Faculty of Commerce has consented to the changes in the syllabus and the scheme of examination for the award of Bachelor of Commerce (B.Com. (Computer Application)) (BCCA)Degree.

AND

WHEREAS, the Vice-Chancellor, Nagpur University, Nagpur approved the recommendations so made by the Special Task Committee in the Faculty of Commerce duly concurred by the Coordinator, Faculty of Commerce as required under Section 38 (a) of the Act .

AND

WHEREAS, as per the Advice of the Vice Chancellor, Coordinator, Faculty of Commerce & Coordinator, Special Task Committee (Computer Application) in the meeting held on 24.2.2016 constituted sub-committee for syllabus restructuring of BCCA with Semester pattern.

AND

Whereas, the Sub-committee submitted the Semester Draft Syllabus of BCCA in meeting held on 5.4.2016.

AND

Whereas, the University has issued Direction to 15 of 2017 dealing with the composition of the four faculties created by the Act, where under the existing different faculties of the University have been merged into the four new faculties created by the Act, by which the erstwhile independent faculty of “Law” has been merged in the new faculty of “Humanities” under the Act;

AND

Whereas, the University has issued Direction No. 13 of 2017 prescribing “conditions for conduct of undergraduate and post graduate examinations based on credit based/choice based credit system, in all faculties, Direction, 2017” on 06/06/2017, prescribing certain conditions relating to maximum and minimum passing marks in the theory /practical subjects prescribed in the semester of a course, the maximum theory and practical subjects in a semester, rules

exemption and ATKT, and also the coding pattern for the subjects in each semester of the course, necessitating appropriate changes in the existing Directions governing the undergraduate and post graduation courses in all the faculties of the University;

AND

WHEREAS it is expedient to provide an Ordinance for the purpose of prescribing examinations leading to the degree of Bachelor of Commerce (B.Com. (Computer Application))(BCCA) in the Faculty of Commerce and phasic repeal of Ordinance No. 21 of 1994 governing the existing course of Bachelor of Commerce (B.Com. (Computer Application))(BCCA) but the Ordinance making is a consuming process and there is an exigency necessitating exercise of powers by the Vice-Chancellor under section 12(8) of the Act;

Now, therefore, I, Dr. S. P. Kane, Vice-Chancellor, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of the powers vested in me under Section 14(8) of the Maharashtra University Act of 1994 do hereby issue the following direction:

THIS DIRECTION SHALL BE CALLED "**DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OFBACHELOR OF COMMERCE (COMPUTER APPLICATION) (BCCA)(CREDIT BASE SEMISTER PATTERN) FACULTY OF COMMERCE**".

1. There shall be SIX examinations leading to the degree of B.Com. (Computer Application) (BCCA) namely:

   Part-I

   (1) The B.Com. (Computer Application) (BCCA) Semester-I Examination,

   (2) The B.Com. (Computer Application) (BCCA) Semester-II Examination,

   Part-II

   (3) The B.Com. (Computer Application) (BCCA) Semester-III Examination,

   (4) The B.Com. (Computer Application) (BCCA) Semester-IV Examination,

   Part-III

   (5) The B.Com. (Computer Application) (BCCA) Semester-V Examination,

   (6) The B.Com. (Computer Application) (BCCA) Semester-VI Examination,

2. The duration of the Degree Course under this shall be of three academic years. The BCCA Semester - I Examination at the end of the first Semester and BCCA Semester - II Examination at the end of the Second Semester in First Year and the BCCA Semester - III Examination at the end of the Semester - III and B

Semester - IV Examination at the end of Semester - IV in Second Year and the BCCA Semester - V Examination at the end of the Semester - V and BCCA Semester - VI Examination at the end of Semester - VI in Third Year.

3. The Examinations Specified in above paragraph (i.e., Paragraph – 2) above shall be held twice a year (Winter + Summer) at such places and on such dates as may be fixed by the University.
4. The details of the procedure for admission as well as eligibility for examination of:

(A) An applicant of the **BCCA Semester – I** Examination shall have :

Passed the 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education, with English at Higher or Lower level and any Modern Indian Language at higher or lower level with any combination of optional subjects.

OR

12th Standard Examination of Maharashtra State Board of Secondary and Higher Secondary Education in Vocational Stream with one language only; OR any other examination recognized as equivalent there to; in such subjects and with such standards of attainments as may be prescribed Minimum Competition vocational course (MCVC).

OR

Any other Equivalent Examination of any State in (10+2) pattern with any combination of subjects.

(B) An applicant of the **BCCA Semester - II** Examination shall have :
Appeared BCCA Semester – I Examination of this University.

(C) An Applicant of the **BCCA Semester-III** Examination shall have :
Appeared BCCA Semester – I & Semester – II Examination of this University.

(D) An Applicant of the **BCCA Semester-IV** Examination shall have :
Appeared BCCA Semester – I, Semester – II & Semester – III Examination of this University.

(E) An Applicant of the **BCCA Semester- V** Examination shall have :
Passed BCCA Part – I (Semester – I & Semester - II), BCCA Part – II (Semester – III) and appeared BCCA Part – II Semester – IV Examination of this University.

(F) An Applicant of the **BCCA Semester- VI** Examination shall have :
appeared BCCA Part – III Semester – V Examination of this University.

Name of Examination	Candidate should have Passed in following Examinations	Candidate should have Completed the term and filled Examination Form
BCCA Part - I Semester - I	The Qualifying Examination mentioned in Paragraph – 4 (A)	-----
BCCA Part - I Semester - II	---	BCCA Part - I (Semester – I)
BCCA Part - II Semester - III	---	BCCA Part - I (Semester – II)
BCCA Part - II Semester - IV	---	BCCA Part - II (Semester – III)
BCCA Part - III Semester - V	Passed BCCA Part – I (Sem. – I & Sem. – II) Passed BCCA Part – II (Sem. - III)	BCCA Part - II (Semester – IV)
BCCA Part - III Semester - VI	---	BCCA Part - III (Semester – V)

5. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to every collegiate candidate.

6. The fees for the examination shall be as prescribed by the Management Council from time to time and whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information of the examinees concerned.

With the issuance of this Direction, The Direction No 12 of 2014, Direction No. 48 of 2016 and Direction No. 64 of 2016 shall stand repealed.

Sd/-

Nagpur
Date : 29/08/2017

Dr. S. P. Kane
Vice-Chancellor

7. **Teaching and Examination Scheme**

B.Com. (Computer Application) (BCCA)

(A) BCCA Part – I

Semester – I

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
1T1	English and Business Communication - I	I	5	-	5	80	20	100	40	-	-	100	4
1T2	Financial Accounting	II	5	-	5	80	20	100	40	-	-	100	4
1T3	Fundamentals of Computer	III	5	-	5	80	20	100	40	-	-	100	4
1T4	Programming in 'C'	IV	5	-	5	80	20	100	40	-	-	100	4
Practical													
1P1	**Component - I:** Fundamentals of Computer **Component - II:** Programming in 'C'	P- I	-	10	10	-	-	-	-	100	40	100	4
	Total		**20**	**10**	**30**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
4. The practical shall be treated as a separate passing head.
5. Record should be prepared for Practical. Both Components should be included in Practical Record.
6. The candidate has to pass theory papers and Practical Paper separately.
7. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.
   Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits

Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

8. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
9. The odd semester may be scheduled from July to December and even semester from January to June.

(B) BCCA Part – I

Semester – II

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
2T1	English and Business Communication - II	I	5	-	5	80	20	100	40	-	-	100	4
2T2	Principles of Business Management	II	5	-	5	80	20	100	40	-	-	100	4
2T3	Programming in C++'	III	5	-	5	80	20	100	40	-	-	100	4
2T4	E-Commerce and Web Designing	IV	5	-	5	80	20	100	40	-	-	100	4
Practical													
2P1	**Component - I :** Programming in 'C++' **Component - II :** E-Commerce and Web Designing	P- I	-	10	10	-	-	-	-	100	40	100	4
	Total		**20**	**10**	**30**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
4. The practical shall be treated as a separate passing head.
5. Record should be prepared for Practical. Both Components should be included in Practical Record.
6. The candidate has to pass theory papers and Practical Paper separately.
7. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.

   Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

8. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
9. The odd semester may be scheduled from July to December and even semester from January to June.

(C) BCCA Part - II

Semester – III

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
3T1	Environmental Studies	I	5	-	5	80	20	100	40	-	-	100	4
3T2	Business Economics	II	5	-	5	80	20	100	40	-	-	100	4
3T3	Visual Basic Programming	III	5	-	5	80	20	100	40	-	-	100	4
3T4	Database Management System	IV	5	-	5	80	20	100	40	-	-	100	4
Practical													
3P1	**Component - I :** Visual Basic Programming **Component – II:** Database Management System	P- I	-	10	10	-	-	-	-	100	40	100	4
	Total		**20**	**10**	**30**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
4. The practical shall be treated as a separate passing head.
5. Record should be prepared for Practical. Both Components should be included in Practical Record.
6. The candidate has to pass theory papers and Practical Paper separately.
7. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.

Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits

Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

8. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
9. The odd semester may be scheduled from July to December and even semester from January to June.

(D) BCCA Part - II

Semester – IV

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
4T1	Mathematics	I	5	-	5	80	20	100	40	-	-	100	4
4T2	Business Law	II	5	-	5	80	20	100	40	-	-	100	4
4T3	Core Java	III	5	-	5	80	20	100	40	-	-	100	4
4T4	PHP & MySQL	IV	5	-	5	80	20	100	40	-	-	100	4
Practical													
4P1	**Component – I :**Core Java **Component – II :** PHP & MySQL	P- I	-	10	10	-	-	-	-	100	40	100	4
	Total		**20**	**10**	**30**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
4. The practical shall be treated as a separate passing head.
5. Record should be prepared for Practical. Both Components should be included in Practical Record.
6. The candidate has to pass theory papers and Practical Paper separately.
7. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.

   Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

   Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

8. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
9. The odd semester may be scheduled from July to December and even semester from January to June.

(E) BCCA Part - III

Semester – V

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
5T1	Computerized Accounting using Tally	I	5	-	5	80	20	100	40	-	-	100	4
5T2	VB.Net	II	5	-	5	80	20	100	40	-	-	100	4
5T3	**SEC – I :** (i) Management Information Systems (ii) System analysis & Design	III	5	-	5	80	20	100	40	-	-	100	4
5T4	**DSE– I :** (i) Cost & Management Accounting (ii) Corporate Accounting	IV	5	-	5	80	20	100	40	-	-	100	4
Practical													
5P1	**Component -I :** Tally **Component – II** VB.Net	P- I	-	10	10	-	-	-	-	100	40	100	4
	Total		**20**	**10**	**30**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. SEC = Skill Enhancement Course, DSE = Discipline Specific Elective (DSE) Course.
4. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
5. The practical shall be treated as a separate passing head.
6. Record should be prepared for Practical. Both Components should be included in Practical Record.
7. The candidate has to pass theory papers and Practical Paper separately.
8. One credit is equivalent to one hour of Teaching or two hours of Practical Work

week.

Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

9. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
10. The odd semester may be scheduled from July to December and even semester from January to June.

(F) BCCA Part - III

Semester – VI

Course Code	Subjects	Paper	Teaching Scheme per weeks			Examination Scheme						Total Marks	Credits
						Theory				Practical			
			Theory (Periods)	Practical (Periods)	Total (Periods)	Max Marks - Theory Paper (TH)	Max Marks - Internal Assessment	Total	Min Passing Marks	Max Marks - Practical (PR)	Min Passing Marks		
Theory													
6T1	C#.Net	I	4	-	4	80	20	100	40	-	-	100	4
6T2	**SEC– II :** (i) Python (ii) Ruby on Rail	II	4	-	4	80	20	100	40	-	-	100	4
6T3	**DSE– II :** (i) Entrepreneurship Development (ii) Company Law and Secretarial Practice	III	4	-	4	80	20	100	40	-	-	100	4
Practical													
6P1	**Component - I :** C#.Net **Component - II :** SEC - II	P- I	-	6	6	-	-	-	-	100	40	100	4
6P2	**Project**	Proj	-	6	6	-	-	-	-	100	40	100	4
	Total		**12**	**12**	**24**							**500**	**20**

Notes:

1. Duration of one Theory period is 48 minutes and Practical period is 48 x 2 = 96 minutes.
2. TH = Theory, PR = Practical, IA = Internal Assessment.
3. SEC = Skill Enhancement Course, DSE = Discipline Specific Elective (DSE) Course.
4. Minimum passing marks shall be 40 including internal assessment & University theory papers put together.
5. The practical shall be treated as a separate passing head.
6. Record should be prepared for Practical. Both Components should be included in Practical Record.
7. The candidate has to pass theory papers, Practical Paper and Project separately.
8. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.

Viz. Theory - 48 Minutes * 5 = 240 Minutes = 4 Hours i.e. 4 Credits.

Practical - 48 Minutes * 10 = 480 Minutes = 8 Hours i.e. 4 Credits.

9. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
10. The odd semester may be scheduled from July to December and even semester from January to June.

8. In order to pass the examination, an examinee shall obtain not less than 40% marks in each of the theory papers and each of the practical and the project.

   (A) An examinee who is unsuccessful in the examination shall be eligible for admission to the subsequent examinations on payment of a fresh fee prescribed for the examination together with the conditions of the ordinance in force from time to time.

9. (A) The scope of the subjects and pattern of examination shall be as indicated in syllabi.

   (B) The Medium of instructions and examinations shall be in ENGLISH only.

   (C) The Maximum/minimum marks which each subject carries & workload in **BCCA** Part–I (Semester – I & II), Part – II (Semester – III & IV) and Part – III (Semester – V & VI) shall be as indicated in Examination & Teaching Scheme in Paragraph No -7.

10. Applicant for B.Com. (Computer Application) (BCCA) Examination prosecuting regular course of study shall not be permitted to join any other course in this or any other University.

11. The percentage of passing marks in Theory & Practical shall be as indicated in Examination Scheme mentioned in Paragraph 7.

    In order to pass at the B.Com. (Computer Application) (BCCA) Semester - I, Semester - II, Semester - III, Semester - IV, Semester - V and Semester - VI Examinations an examinee shall obtain not less than 40% marks in each subject (Theory / Practical), that is to say jointly in the written subject theory Examination and in internal assessment / Sessional wherever applicable.

12. **ASSESSMENT**

- The final total assessment of the candidates is made in terms of an internal assessment (Sessional) and an external assessment for each course.
- For each paper, 20 marks will be based on internal assessment and 80 marks for semester end examination (external assessment), unless otherwise stated.
- The division of the 20 marks allotted to internal assessment of theory papers should based on class test, attendance, project assignme

seminar, power point presentation, fieldwork, group discussions or any other innovative practice / activity as determined by the teacher in respective subject and moderated by Head of the Institute/Principal.

Sr. No	Parameters	Max. Marks
1	Internal Marks on the basis of Class Attendance	05
2	Internal Marks on the basis of Class Assignment / Test	05
3	Internal Marks on the basis of Students Seminar / Students Lecture Forum	05
4	Internal Marks on Students Overall Performance	05
Total Internal Assessment Marks		**20**

- There shall be no separate / extra allotment of workload to the concerned teacher. He / She shall conduct the internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
- At the beginning of each semester, every teacher shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment with the prior permission of HOD / principal.
- An unsuccessful examinee at any internal shall be eligible for reexamination on payment of fresh examination fee prescribed by the University as per the respective directions.
- The internal marks will be communicated to the University at the end of each semester, but before the semester end examinations. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & result should be maintained for a period of one year by respective institute/college for verification by competent authority.
- The maximum and minimum marks which each subject carries in BCCA Semester - I, Semester - II, Semester – III, Semester – IV, Semester - V & Semester - VI Examination are as indicated in Paragraph 7. A, B, C, D, E & F respectively.
- A copy of Project work shall be submitted to college prior to commencement of Semester - VI Examination for Evaluation by Internal and External Examiner appointed as per University rules.
- Candidate shall submit his / her declaration that the Project is a result of his / her own work and the same has not been previously submitted to any examination of this University or any other University.
- The Practical Examination of each Semester will be conducted by Internal and External Examiner appointed as per University rules.

- The old course students shall be absorbed as per the absorption scheme mentioned in Appendix D.

STANDARD OF PASSING

- Every candidate must secure 40% marks in each paper (Theory / Practical).
- There shall be no internal marks in Practical and Project Examination.

13. (A) There shall be no classification of examinees successful at the B.Com. (Computer Application) (BCCA) Semester - I, Semester - II, Semester - III, Semester - IV, Semester - V and Semester - VI Examination whereas SGPA will be notified.

*** Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average):** In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows:-

Abbreviations and Formulae Used

G: Grade

GP: Grade Points

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of credits & Grades)

SGPA = ΣCG: Sum of Product of Credits & Grades points / ΣC: Sum of Credits points

SGPA: Semester Grade Point Average shall be calculated for individual semesters. (It is also designated as GPA)

CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

After calculating the SGPA for an individual semester and the CGPA for entire programme, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A+, A, B+, B, etc.

Marks	Grade	Grade Points
85 and above	O (Outstanding)	10
75 - 84	A+ (Distinction)	9
71 - 74	A (Very Good)	8
61 - 70	B+ (Good)	7
55 - 60	B(Above Average)	6

50 - 54	C (Average)	5
40 - 49	P (Pass)	4
00 - 39	F (Fail)	0
	AB (Absent)	0

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

(B) Division at the B.Com. (Computer Application) (BCCA) Semester - VI Examination shall be declared on the basis of the aggregate marks at the BCCA Semester - I, Semester - II, Semester-III, Semester- IV, Semester- V and Semester- VI Examination taken together and the CGPA will be calculated and notified.

(C) Successful examinees at the B.Com. (Computer Application) (BCCA) Semester - VI Examination shall be awarded division based on CGPA as follows:

CGPA Range	**Final Grade**	**Equivalent Class/ Division**
9.01 to 10.00	O	First Division (Outstanding)
8.01 to 9.00	A+ (Distinction)	First Division(Distinction)
7.01 to 8.00	A(Very Good)	First Division (Very Good)
6.01 to 7.00	B+(Good)	First Division (Good)
5.55 to 6.00	B(Above Average)	Second Division (Above Average)
5.00 to 5.54	C(Average)	Second Division (Average)
4.00 to 4.99	P (Pass)	Pass
0	F (Fail)	Fail
0	AB(Absent)	Absent

14. Successful examinees in the B.Com. (Computer Application) (BCCA) Semester Examination shall be awarded Distinction in each subject in which examinees obtain 75% or more marks in that subject at the respective Examination.
15. Unsuccessful examinees at the above examinations can be readmitted to the same examination on payment of a fresh fee and such other fees as may be prescribed.
16. Provisions of Ordinance No. 3 of 2007 relating to the award of Grace Marks for passing an examination, securing higher division / class and for securing distinction in subject(s) shall be applicable.
17. Notwithstanding anything to the contrary in this Direction, no person shall be admitted to an examination under this Ordinance, if he / she has already

passed the same examination or an equivalent examination of any other University.

18. Examinees successful at B.Com. (Computer Application) (BCCA) Semester - I, Semester - II, Semester - III, Semester - IV, Semester - V and Semester - VI Examination shall on payment of the prescribed fees receive a Degree in the prescribed form signed by the Vice-Chancellor.

19. This Scheme shall come into force from the academic session 2016-17.

20. The Provisions of Ordinance No. 21 of 1994 governing the existing course for B.Com. (Computer Application) (BCCA) stands repealed physically on implementation of this Direction.

APPENDIX – A

QUESTION PAPER PATTERN

First / Second / Third / Fourth / Fifth / Sixth Semester B.Com. (Computer Application) (BCCA) Examination
Choice Based Credit System (CBS)

Subject Name
Paper - I

Time: 3 Hours **Total Marks: 80**

N. B. - a) Draw well labeled diagram wherever necessary.
b) All questions are compulsory.

Part - A

N. B. – 1. Each question carries two marks.
2. Answers should not more than five lines.

Q1. **8 x 2 = 16**

A. } Unit - I
B. }

C. } Unit - II
D. }

E. } Unit - III
F. }

G. } Unit - IV
H. }

Part - B

N. B. – 1. Each question carries three marks.

2. Answers should not more than ten lines.

Q2. **8 x 3 = 24**

A. } Unit - I
B. }

C. } Unit - II
D. }

E. } Unit - III
F. }

G. } Unit - IV
H. }

Part - C

N. B. – 1. Each question carries five marks.

2. Answers should not more than 400 words for 5 marks questions and 600 words for 10 Marks questions respectively.

Q3. **Either**

(A) 5
(B) 5

Unit - I **OR**

(C) 10

Q4. **Either**

(A) 5
(B) 5

Unit - II **OR**

(C) 10

Q5. **Either**

(A) 5
(B) 5

Unit - III **OR**

(C) 10

Q6. **Either**

(A) 5
(B) 5

Unit - IV

OR

(C) 10

QUESTION PAPER PATTERN OF ENGLISH AND BUSINESS COMMUNICATION

Subject: English and Business Communication - I

SEMESTER – I

Time: 3 Hours] **[Total Marks: 80**

Q 1. A. Comprehension of Unseen Passage from Unit I 10 Marks

(Five VSAQs of 2 Marks each based on the Unseen Passage)

B. Questions on ANY TWO components of Enriching Vocabulary from Unit I (**Five items to be solved out of Eight (5 x 1 Mark) X 2**) 10 Marks

(Synonyms / Antonyms to be given in 'match the following' format – 5 words against 8 options)

Q 2. A. ONE out of TWO Letters (Application for Employment/Job Offer Letters) from Unit II 10 Marks

B. ONE out of TWO Letters (Sales letters / Claim and Adjustment Letters) from Unit II 10 Marks

Q 3. A. ONE LAQ out of TWO from Unit III (10 × 1) = 10 Marks

B. TWO SAQs out of THREE from Unit III (5 x 2) = 10 Marks

Q 4. A. THREE SAQs with internal choice from Prose Section of Unit IV

(3 x 5 Marks)=15 Marks

B. ONE SAQ with internal choice from Poetry Section of Unit IV 05 Marks

Total = 80 Marks

N.B. **LAQ** - Long Answer Questions to be answered in about 150 words
SAQ - Short Answer Questions to be answered in about 75 words approximately.

INTERNAL ASSESSMENTOF ENGLISH AND BUSINESS COMMUNICATION: 20 MARKS

The Internal Assessment would be done on the basis of the assignments submitted by the student and his/her performance, attendance and conduct during the Semester. The concerned teacher shall provide, in advance, a list of topics/assessment items/Question Bank (to the students) based on the Units prescribed for the Theory Examination. Students shall finalize 2 topics/items from 2 different units with the approval of the concerned teacher and submit the same within the prescribed deadline.

Students may be given freedom to submit a creative writing assignment on human values/world peace/environmental issues inspired by or related to the lessons/poems prescribed in the syllabus.

2 Assignments	**–**	**6+6 = 12 Marks**
Performance & Conduct	**–**	**4 Marks**
Attendance	**-**	**4 Marks**
TOTAL	**–**	**20 MARKS**

QUESTION PAPER PATTERN OF ENGLISH AND BUSINESS COMMUNICATION

Subject: English and Business Communication - II

SEMESTER – II

Time: 3 Hours] **[Total Marks: 80**

Q 1. A. Comprehension of Unseen Passage from Unit I 10 Marks

(Five VSAQs of 2 Marks each based on the Unseen Passage)

B. Questions from Section B of Unit – I 10 Marks

- **(Five items out of Eight on meanings of the Words often Confused - (1 x 5 Marks))**
- **(Five items out of Eight on Punctuation –(1 x 5 Marks))**

Q 2. A. ONE out of TWO Letters (Inviting Quotations/Placing Orders) from Unit II 10 Marks

B. ONE out of TWO Letters (Credit Letters - Granting/Refusing Credit, Letter to Bank for overdraft facility) from Unit II 10 Marks

Q 3. A. ONE LAQ out of TWO from Unit III (10 × 1) = 10 Marks

B. TWO SAQs out of THREE from Unit III (5 x 2) = 10 Marks

Q 4. A. THREE SAQs with internal choice from Prose Section of Unit IV (3 x 5 Marks) =15 Marks

B. ONE SAQ with internal choice from Poetry Section of Unit IV 05 Marks

Total = 80 Marks

N.B. **LAQ** - Long Answer Questions to be answered in about 150 words
SAQ - Short Answer Questions to be answered in about 75 words approximately.

INTERNAL ASSESSMENTOF ENGLISH AND BUSINESS COMMUNICATION: 20 MARKS

The Internal Assessment would be done on the basis of the assignments submitted by the student and his/her performance, attendance and conduct during the Semester. The concerned teacher shall provide, in advance, a list of topics/assessment items/Question Bank (to the students) based on the Units prescribed for the Theory Examination. Students shall finalize 2 topics/items from 2 different units with the approval of the concerned teacher and submit the same within the prescribed deadline.

Students may be given freedom to submit a creative writing assignment on human values/world peace/environmental issues inspired by or related to the lessons/poems prescribed in the syllabus.

2 Assignments	**–**	**6+6 = 12 Marks**
Performance & Conduct	**–**	**4 Marks**
Attendance	**-**	**4 Marks**
TOTAL	**–**	**20 MARKS**

APPENDIX – B

(A) Project and Classification of Marks on Project

Towards the end of the second year of study, a student will be examined in the course "Project Work".

a. Project Work may be done individually or in groups (Maximum 3 students) in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to monitor the progress of individual student.
b. The Project Work should be done using the tools covered in B.Com. (Computer Application) (BCCA).
c. The Project Work should be of such a nature that it could prove useful or be relevant from the commercial / management angle.
d. The project work will carry 100 marks.
e. Project Work can be carried out in the Institute or outside with prior permission of the Institute.
f. The external viva-voice examination for Project Work would be held as per the Examination Time Table of the Third year of study, by a panel of one external and one Internal Examiner.

Types of Project

As majority of the students are expected to work out a project in some industry / research and development laboratories / educational institutions / software export companies, it is suggested that the project is to be chosen which should have some direct relevance in day-today activities of the candidates in his/her institution. The Applications Areas of project – Financial / Marketing / Database Management System / Relational Database Management System / E-Commerce / Internet / Manufacturing / web Designing / Scientific / ERP etc.

Project Proposal (Synopsis)

The project proposal should be prepared in consultation with the guide. The project guide must be a person having minimum Qualification MCM / M.Sc. (Computer Science + Information Technology) / M.Sc. (Mathematics / Electronics / Statistics / Physics + Post B.Sc. Diploma in Computer Science & Application) / MCA. The project proposal should clearly state the objectives and environment of the proposed project to be undertaken. It should have full details in the following form:

Format of Synopsis for Desktop Application

1. Title of the Project.
2. Objectives of the Project.
3. Project Category (DBMS / RDBMS / OOPS etc.).
4. Tools / Platform and Languages to be used.

5. Complete Structure of the System:
    i. Numbers of Modules and its Description.
    ii. Modular Chart / System Chart.
    iii. Data Structures or Tables.
    iv. Process Logic of each Module.
    v. Types of Report Generation.
6. References.

Note: Synopsis should not be more than 3-4 pages.

Format of Synopsis for Web Application

1. Title of the Project.
2. Objectives of the Project.
3. Project Category (DBMS / RDBMS / OOPS etc.).
4. Tools / Platform and Languages to be used.
5. Complete Structure of the System:
    i. Number of pages and links their short description.
    ii. Use / Information of Pages.
    iii. Feedback Form (if any).
6. References.

Note: Synopsis should not be more than 3-4 pages.

Project Report Formulation

Front Page.

College Certificate Page.

Declaration Page.

Acknowledgment Page.

Project Profile.

Index or Content Page.

i. *Contents ——————————.

Appendices

i. List Figures, Tables& Charts.
ii. Approved copy of Synopsis.

Glossary

*** Contents.**

i. Introduction.
ii. Objectives.
iii. Preliminary System Analysis.
    - Preliminary Investigation.

- Present System in Use.
- Flaws in Present System.
- Need of New System.
- Feasibility Study.
- Project Category.

iv. Software Engineering Paradigm Applied
- Modules
- System / Modular Chart.

v. Software & Hardware Requirement Specification.

vi. Detailed System Analysis.
- Data Flow Diagram.
- Numbers of Modules and Process Logic.
- Data Structures and Tables.
- Entity-Relationship Diagram.

vii. System Design.
- Form Design.
- Source Code.
- Input screen & Output Screen.

viii. Testing &Validation Checks.

ix. System Security Measures.

x. Implementation, Evaluation and Maintenance.

xi. Future Scope of the project.

xii. Suggestion & Conclusion

xiii. Bibliography& References.

Note :-

i. A Student is expected to complete the Assignments based on Syllabus of Practical subjects and submit the same in the form of a files (assignment Record) at the end of Academic Session for the evaluation purpose.

ii. A student should submit internal assessment of each theory paper prescribed by the subject teacher.

iii. A Student is expected to deliver a seminar on any course curricular subject / latest trends in IT relevant subject per semester for internal assessment.

Classification Of Marks on Project :-

Report & Documentation	40
Viva voice (External)	40
Viva voice (Internal)	20
Total Marks	**100**

The marks of Project shall be notified as a whole out of 100 in Foil/C-Foil.

(B)Practical and Classification of Marks on Practical

1. Practical exam shall be of 4 hours duration.
2. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department.
3. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.
4. After Viva-Voice and evaluation of practical records of a student by the Internal & External Examiner, both examiners should sign on the certificate of practical records.
5. The certificate template shall be as follows:

Name of the college / Institution
Name of the Department:

CERTIFICATE

This is to certify that Mr./Mrs./Ms. _____ of class BCCA Part _____ Semester _____ has satisfactorily completed the practical experiments prescribed by Rastrashant Tukdoji Maharaj Nagpur University for the subject _____ during the academic year _____.

Signature
Practical In-charge

Signature
Head of the Department

Signature
Internal Examiner

Signature
External Examiner

Date: _____

Classification of Practical Marks :-

	Practical – I	Marks (Component – I)	Marks (Component – II)
1.	Writing a Program or Problem	20	20

	(Algorithm & Flowchart)					
2.	Execute on a computer					
3.	Taking Hard Copy					
	Practical – II					
1.	Writing a Program or Problem (Algorithm & Program)	10		10		
	External Viva Voce					
		10		10		
	Practical Record	10		10		
	Total Marks	**50**	**+**	**50**	**=**	**100**

Note:

- Since the practical contains two components (i.e. two subjects), so each components has to be evaluated as above.

- Whereas, the marks of Practical shall be notified as a whole out of 100 in Foil / C-Foil.

APPENDIX – C

ABSORPTION SCHEME

B.COM.(COMPUTER APPLICATION) (BCCA)

(From Annual Pattern Introduced in 2014 to CBS Pattern from Session 2016-17)

It is notified for general information of all concerned that the failure students of ***B.Com. (Computer Application) (BCCA) Annual pattern Old Course (introduced in 2014) shall be absorbed in the new course CBS Pattern introduced from the session 2016-2017 examination with the following scheme.***

1. Those who have completed & passed **B.Com. (Computer Application) (BCCA) Part-I as per Old course *(Annual pattern)*** are eligible for admission in the **B.Com. (Computer Application)(BCCA) SEM - III *CBS Pattern introduced from the session 2016-2017* (New course).**

2. Failure students of **B.Com. (Computer Application) (BCCA) Part - I old course** and having ATKT as per rules mention in direction No. _____ of _____are eligible to take admission in **B.Com. (Computer Application)(BCCA) SEM - III *CBS Pattern introduced from the session 2016-2017* (New course).**

   They should clear their **B.Com. (Computer Application) (BCCA) Part - I old Course backlog** papers in next **three attempts (Last Chance Winter 2017).** If they fail to pass in **Winter-2017** attempt they will have to appear in parallel papers of **new course CBS scheme** as per absorption scheme indicated in **Appendix- D.**

   Note:

   i. The students, who will appear in parallel papers of **new course CBS scheme** paper with maximum theory marks 80, will get proportional internal marks out of 20 updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part - I.**

3. Those who have completed & passed **B.Com. (Computer Application)(BCCA) Part-I & B.Com. (Computer Application) (BCCA) Part - II as per Old course** are eligible for admission in the **B.Com. (Computer Application) (BCCA) CBS scheme (Part – III) Sem - V (New course).**

4. Failure students of **B.Com. (Computer Application) (BCCA) Part - II old course** and having ATKT as per rules are eligible to take admission in **B.Com. (Computer Application) (BCCA) Part-III Sem – V CBS scheme New course.** They should clear their **B.Com. (Computer Application) (BCCA) Part - II old course backlog** papers in next **three attempts (Last Chance Winter 2018).** If they fail to pass in **Winter-2018** attempt they will have to appear in parallel papers of **new course CBS scheme** as per absorption scheme indicated in **Appendix- D**.

   Note:

   i. The students who will appear in parallel papers of **new course CBS scheme** paper with maximum theory marks 80, will get proportional internal marks out of 20, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part–II.**

5. Failure students of **B.Com. (Computer Application) (BCCA) Part-III old course** are having chances upto **winter 2019** examination **(Last Chance)**. So they should appear **B.Com. (Computer Application) (BCCA) Part-III old course examination & is required to clear their backlog**. After that those who will have backlog in the **B.Com. (Computer Application) (BCCA) Part-III old course** will have to appear in parallel papers of **new course CBS scheme** as per the absorption scheme indicated in **Appendix- D**.

   Note:

   i. The students who will appear in parallel papers of **new course CBS scheme** paper with maximum theory marks 80, will get proportional internal marks out of 20, updated in **old course** mark sheet of **B.Com. (Computer Application) (BCCA) Part-III**.

APPENDIX – D

(A) BCCA Part – I

Old Course (Annual Pattern)➔New Course CBS Pattern (Choice Based System)

Sr. No	Old Course (Annual Pattern)	Max Marks	Sr. No	New Course CBS Pattern (Choice Based System)	Max Marks
Theory			**Theory**		
1	English & Business Communication	80	T1	English and Business Communication - II	80
2	Principles of Business Management	80	2T2	Principles of Business Management	80
3	Financial Accounting	80	1T2	Financial Accounting	80
4	Information Systems	80	1T3	Fundamentals of Computer	80
5	Information Technology	80	2T4	E-Commerce and Web Designing	80
6	Introduction to Operating Systems	80	1T4	Programming in 'C'	80
Practical			**Practical**		
7	**Practical-I :** Microsoft Office	100	1P1	**Practical - I :**Fundamentals of Computer & Programming in 'C'	100
8	**Practical-II :** Operating System	100	2P1	**Practical - I :** E-Commerce and Web Designing	100

(B) BCCA Part – II

Old Course (Annual Pattern)➔New Course Pattern (Choice Based System)

Sr. No	Old Course (Annual Pattern)	M. Marks	Sr. No	New Course CBS Pattern (Choice Based System)	Max Marks
Theory			**Theory**		
1	Statistics & Quantitative Techniques	80	4T1	Mathematics	80
2	Business Economics	80	3T2	Business Economics	80
3	Cost & Management Accounting	80	4T2	Business Law	80
4	Programming Skills (C Prog.)	80	3T3	Visual Basic Programming	80
5	E-Commerce & Web Designing	80	4T4	PHP & MySQL	80
6	MIS & System Analysis	80	3T4	Database Management System	80
Practical			**Practical**		
7	**Practical-I :** Programming Skills	100	3P1	**Practical - I :**Visual Basic Programming & Database Management System	100
8	**Practical-II :** HTML	100	4P1	**Practical - I :** PHP & MySQL	100

(C) BCCA Part – III

Old Course (Annual Pattern)➔New Course Pattern (Choice Based System)

Sr. No	Old Course (Annual Pattern)	M. Marks	Sr. No	New Course CBS Pattern (Choice Based System)	Max Marks
Theory			**Theory**		
1	Business Law	80	5T4	**DSE – I :** (i) Cost & Management Accounting (ii) Corporate Accounting	80
2	Computerized Accounting (TALLY)	80	5T1	Computerized Accounting using Tally	80
3	Software Product and Project Management	80	5T3	**SEC – I :** (i) Management Information Systems (ii) System analysis & Design	80
4	Front End Development	80	6T1	C#.Net	80
5	DBMS and Oracle	80	5T2	VB.Net	80
Practical			**Practical**		
6	Practical-I : Tally	100	5P1	**Practical - I :**Computerized Accounting using Tally	100
7	Practical-II : VB & Oracle	100	5P1	**Practical - I :** VB.Net	100
Project			**Project**		
8	PROJECT	100	6P2	**Project**	100

ABSORPTION SCHEME
B.COM.(COMPUTER APPLICATION) (BCCA)

(From Annual Pattern very old (before 2014) to Annual Pattern introduced from 2014-15)

It is notified for general information of all concerned that the failure students of ***B.Com. (Computer Application) (BCCA) Old Course shall be absorbed in the new course introduced from the session 2014-2015 examination with the following scheme.***

1. Those who have completed & passed **B.Com. (Computer Application) (BCCA) Part-I as per Old course** are eligible for admission in the **B.Com. (Computer Application)(BCCA) Part - II New course.**

2. Failure students of **B.Com. (Computer Application) (BCCA) Part - I old course** and having ATKT as per rules are eligible to take admission in **B.Com. (Computer Application) (BCCA) Part-II New course.** They should clear their **B.Com. (Computer Application) (BCCA) Part - I old Course backlog** papers in next **three attempts (Last Chance Winter 2016).** If they fail to pass in **Winter-2016** attempt they will have to appear in parallel papers of **new course scheme** as per absorption scheme indicated in **Appendix- E.**

   Note:

   i. The students, who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 100, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part - I.**

   ii. The students, who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 70, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part - I.**

3. Those who have completed & passed **B.Com. (Computer Application)(BCCA) Part - I & B.Com. (Computer Application) (BCCA) Part - II as per Old course** are eligible for admission in the **B.Com. (Computer Application) (BCCA) Part - III New course.**

4. Failure students of **B.Com. (Computer Application) (BCCA) Part - II old course** and having ATKT as per rules are eligible to take admission in **B.Com. (Computer Application) (BCCA) Part-III New course.** They should clear their **B.Com. (Computer Application) (BCCA) Part - II old course backlog** papers in next **three attempts (Last Chance Winter 2017).** If they fail to pass in **Winter-2017** attempt they will have to appear in parallel papers of **new course scheme** as per absorption scheme indicated in **Appendix- E**.

Note:

i. The students who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 100, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part–II.**

ii. The students, who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 70, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part - II.**

5. Failure students of **B.Com. (Computer Application) (BCCA) Part-III old course** are having chances upto **winter 2018** examination **(Last Chance)**. So they should appear **B.Com. (Computer Application) (BCCA) Part-III old course examination & is required to clear their backlog**. After that those who will have backlog in the **B.Com. (Computer Application) (BCCA) Part-III old course** will have to appear in parallel papers of **new course scheme** as per the absorption scheme indicated in **Appendix- E**.

Note:

i. The students who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 100, updated in old course mark sheet of **B.Com. (Computer Application) (BCCA) Part-III**.

ii. The students, who will appear in parallel papers of **new course scheme** paper with maximum theory marks 80, will get proportional marks out of 70, updated in **old course mark sheet** of **B.Com. (Computer Application) (BCCA) Part - III.**

APPENDIX – E

(i) B.Com. (Computer Application) (BCCA) Part-I

Sr. No.	Old course Theory	Max. Marks	Sr. No.	New Course Theory	Max. Marks
1	English & Business Communication.	100	1	English & Business Communication	80
2	Principles of Business Management.	100	2	Principles of Business Management	80
3	Basic Economics & Business Environment.	100	3	Introduction to Operating Systems	80
4	Financial Accounting.	100	4	Financial Accounting	80
5	Information Systems.	70	5	Information Systems	80
6	Information Technology	70	6	Information Technology	80
7	**Practical I** : IS	30	7	**Practical-I :** Microsoft Office	100
8	**Practical II** : IT	30	8	**Practical-II :** Operating System	100

Note:

i. Students who appear in practical of New Course Scheme, then he/she must **have to be appeared with maximum practical marks out of 100** as per the new course scheme, which shall be converted in proportion to 30 marks and updated in old course marksheet.

(ii) B.Com. (Computer Application) (BCCA) Part-II

Sr. No.	Old course Theory	Max. Marks	Sr. No.	New Course Theory	Max. Marks
1	Cost & Management Accounting	100	1	Cost & Management Accounting	80
2	Statistics & Quantitative Techniques.	100	2	Statistics & Quantitative Techniques.	80
3	MIS & System Analysis	100	3	MIS & System Analysis	80
4	E-Commerce & Web Designing	70	4	E-Commerce & Web Designing	80
5	Programming Skills (C Prog.)	70	5	Programming Skills (C Prog.)	80
6	Computerized Accounting (TALLY)	70	6	Basic Economics & Business Environment.	80
7	**Practical- I** : PS (C Prog.)	30	7	**Practical-I :** Programming Skills	100
8	**Practical-II** : E-Comm& WD	30	8	**Practical-II :** HTML	100
9.	**Practical-III :** Comp.A/c(Tally)	30			

Note:

i. The Students who already appeared and passed in Practical of **old course B.Com. (Computer Application) (BCCA) Part – II with maximum Practical marks out of 30**, should be convert into its proportional Practical marks out of 100 and should update in old course mark sheet of B.Com. (Computer Application) (BCCA) Part - II.

ii. And if students who appear in practical of New Course Scheme, then he/she must **have to be appeared with maximum practical marks out of 100** as per the new course scheme.

(iii) B.Com. (Computer Application) (BCCA) Part-III

Sr. No.	Old course Theory	Max. Marks	Sr.No.	New Course Theory	Max. Marks
1	Business Laws.	100	1	Business Law	80
2	Auditing and Income Tax	100	2	Computerized Accounting (TALLY)	80
3	Software Product and Project Management.	100	3	Software Product and Project Management.	80
4	Front End Development	70	4	Front End Development	80
5	DBMS and Oracle	70	5	DBMS and Oracle	80
6	**Practical- I** : FED	30	6	**Practical-I :** Tally	100
7	**Practical -II** : DBMS & Oracle	30	7	**Practical-II :** VB & Oracle	100
8	**Project**	100	8	**Project**	100

Note:

i. The Students who already appeared and passed in Practical of **old course B.Com. (Computer Application) (BCCA) Part – III with maximum Practical marks out of 30**, should be convert into its proportional Practical marks out of 100 and should update in old course mark sheet of B.Com. (Computer Application) (BCCA) Part - III.

ii. And if students who appear in practical of New Course Scheme, then he/she must **have to be appeared with maximum practical marks out of 100** as per the new course scheme.

APPENDIX –E

BCCA Part – I

Semester – I

Paper - I: English and Business Communication – I (1T1)

UNIT I

A. Comprehension of an Unseen Passage
B. Enriching Vocabulary: Synonyms and Antonyms, Single Word for a Group of Words, Change of Word from Noun to Adjective & vice-versa.

UNIT II

Business Correspondence: Application for Employment, Job Offer Letters, Sales letters, Claim and Adjustment Letters

UNIT III

Communication Process: Sender, Channel, Message, Receiver and Response

Types of Communication:

a.	According to mode:	a. Oral	b.	Written
b.	According to Medium:	a. Electronic	b.	Print
c.	According to number of participants :	a. Dyadic	b.	Group
d.	According to Direction:	a. One-way	b.	Two-way
e.	According to Purpose:	a. General	b.	Business (Specific)

UNIT IV

Textbook entitled 'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Black Swan

Prose

i) With the Photographer – Stephen Leacock
ii) Socrates and the Schoolmaster – F. L. Brayne
iii) Speech on Indian Independence – Jawaharlal Nehru

Poetry

i) On Television - Roald Dahl
ii) The Felling of the Banayan Tree - DilipChitre
iii) Stay Calm - Grenville Kleiser

Reference Books:

(For UNIT I)

i) English Grammar – N.D.V. Prasada Rao (S.Chand)
ii) Developing Communication Skills – Krishna Mohan &MeeraBanerji (Macmillan

(For UNIT II)

i) Business Communication: Urmila Rai, S.M. Rai- (Himalaya Publishing House)
ii) Business Correspondence and Report Writing – R. C. Sharma& Krishna Mohan (Tata McGraw-Hill)
iii) Developing Communication Skills – Krishna Mohan & Meera Banerji (Macmillan)

(For UNIT III)

i) Business Communication and Management- Dr. K.R.Dixit (Vishwa Publishers, Nagpur)

(For UNIT IV)

Prescribed Text Book :

i) *Prism: Spoken and Written Communication, Prose & Poetry* published by Orient BlackSwan

Paper - II: Financial Accounting (1T2)

UNIT – I

Introduction to Financial Accounting: Accounting as an information system, Financial, cost and management accounting and their interrelationships, Finance Function and Accounting, Accounting as an academic Discipline, Accounting as an Career and Profession, Place of Accounting Officers in the Organization, Auditing and Internal Control, Ethical Issues in Accounting, Forms of Organizations and Their Effect on Accounting, Accounting and Corporate Governance. **Accounting Concepts, Standards and IFRS:** Introduction ,Accounting Concepts and Convention, Accounting Policies, Generally Accepted Accounting Principles(GAAP),International Financial Reporting Standards(IFRS),Indian Accounting Standards(Ind AS),India's Road map to Convergence with IFRS, Indian Government Accounting Standards(IGAS). **Presentation of Financial Statements: Balance Sheet:** Conceptual Basis of a Balance Sheet, Capital and Revenue Expenditure and receipts, Classification of Item on a Balance sheet, Format of Balance Sheet, Balance Sheet Equation, Preparing Balance Sheet.

UNIT – II

Preparation of final Accounts: The Income Statements: Introduction, Format of Profit and Loss Account, Profit and Loss account of a Manufacturing Concern, Appropriation of Profit, Advantages of Profit and Loss Account. **Mechanics of Accounting:** Introduction, Classification of Accounts, Double Entry System, Overview of Accounting cycle, preparing journals, Subsidiary Books, Ledger, Preparation of Trial Balance, Accounting Errors and Their Rectification, Bank Reconciliation statement (BRS), Computerized Accounting. **Fixed Assets and Depreciation Accounting:** Introduction, Cost of Fixed Assets, Depreciation, Method of computing depreciation, Accounting Treatments for transactions, Impairment of Assets.

UNIT – III

Inventory Valuation: Introduction, Record Keeping for Inventory, Perpetual inventory System, Inventory Valuation/Measurement, Methods of Valuation of Inventories, Analysis of Inventories. **Corporate Accounts:** Introduction to Companies, Types of Companies, Shares and Share Capital, Issue of Shares. **Share Issue:** Payments in Installment, Buyback of Shares, Debentures and Bonds, Income Statement/Profit and Loss Account, Balance Sheet, Company Annual Report. **Cash Flow Statement:** Introduction to Cash Flow Statement, Cash and Cash Equivalents, Cash Flow Activities, Operating Activities, Some Special Items, Free cash Flow, Fund Flow Statement, Analysis of cash Flow Statement, Preparation of cash Flow Statement.

UNIT – IV

Financial Statement Analysis: Introduction Techniques for financial Statement Analysis Horizontal Analysis: Comparative and Trend Statements, Vertical Analysis: Common Size, Liquidity Ratios: Current and Quick Ratio, Solvency Ratios: D/E, Interest Coverage, Profitability ratios:(GP,NP,EBIT,EBDITA,EPS), Return Ratios: ROI,ROE, Turnover Ratios, Analysis of Stock and Debtors, Working Capital Management, Stock Prices and Financial Data :P/E. **Investments:** Introduction, Financial Instruments, Assets and Liabilities, Joint Ventures, Subsidiaries and Associates, Consolidated Financial Statement, Business Combinations, Accounting for Investments,
Contemporary Issues in Accounting : Introduction ,Foreign Currency Accounting , Creative Accounting, Forensic Accounting , Environmental Accounting, Lean Accounting ,Human Resource Accounting, Objectives of Human resource Accounting, HRA in India, Inflation Accounting, Responsibility Accounting, Transfer Pricing, Segment reporting. Extensible business Reporting Language(XBRL).

Text Book:

1. VaradrajBapat, Mehul Raithatha, Financial Accounting, McGraw-Hill.

Reference Books:

1. M. N. Arora, K. V. Achalapati, S. Brinda, Financial Accounting, Taxmann
2. M. Hanif, A. Mukherjee, Financial Accounting, McGraw-Hill.
3. N. Ramachandran, Ram Kumar Kakani, Financial Accounting for management, McGraw-Hill.
4. Dhanesh K Khatri, Accounting for Management, McGraw-Hill.

Paper - III: Fundamentals of Computer (1T3)

UNIT – I

Understanding the Computer: Introduction, Evolution of computers, Generation of computers, Classification of computers, Computing concepts, The computer system, Application of computers. **Computer Organization and Architecture:** Introduction, Central processing unit, Internal communications, Machine cycle, The bus, Instruction set. **Memory and Storage Systems:** Introduction, Memory representation, Random Access Memory, Read Only Memory, Storage systems, Magnetic storage systems, Optical storage systems, Magneto optical system, Solid-state storage devices, storage evaluation criteria.

UNIT – II

Input Devices: Introduction, Keyboard, Pointing devices, Scanning devices, Optical recognition devices, Digital camera, Voice recognition system, Data acquisition sensors, Media input devices. **Output Devices:** Introduction, Display monitors, Printers, Impact printers, Non-impact printers, Plotters, Voice output systems, Projectors, Terminals. **Computer Codes:** Introduction, Decimal system, Binary system, Hexadecimal system, Octal system, 4-bit Binary Coded Decimal(BCD) Systems, 8-bit BCD Systems, 16-bit Unicode, Conversion of numbers

UNIT – III

Computer Software: Introduction, Types of computer software, System management programs, System development programs, standard application programs, Unique application programs, Problem solving, Structuring the logic, Using the computer. **Programming Languages:** Introduction, History of programming languages, Generations of programming languages, Characteristics of good programming languages, Categorization of High-level languages, Popular High-level languages, Factors affecting the choice of languages, Developing a program, Running a program. **Data Communication and Networks:** Introduction, Data communication using modem, Computer network, Network topologies, Network protocol and software, Application of network.

UNIT – IV

Operating Systems: Introduction, History of operating systems, Functions of operating systems, Process management, Memory management, File management, De[illegible] management, Security management, Types of operating systems, Providing

interface, Popular operating systems. **Microsoft Software:** Introduction, MS-DOS, MS Word systems, MS Excel systems ,MS PowerPoint systems, MS Access systems, MS Publisher,

Text Book:

1. E Balagurusamy, Fundamentals of Computers, Mc Graw Hill Education.

Reference Books:

1. Dr. Rajiv Midha, S. Brinda, Fundamental of Information Technology, Taxmann.
2. Madhulika Jain, Shashank Jain, Satish Jain, Information Technology Concepts, BPB Publication.
3. Dr. Rajiv Midha, Information Technology, Taxmann
4. B.Ram, Computer Fundamentals (Architecture & organization), New Age International Publisher.
5. Turban, Rainer, Potter, Introduction to Information Technology, Wiley India Edition.
6. Sanjay Saxsena, Introduction to Information Technology, Vikash Publishing House Pvt. Ltd.
7. Dr. Sushila Madan, Information Technology, Taxmann.

Practical List of Fundamentals of Computer

1. Insert a line chart with the following data. Specify Chart title as “Yearly Income (In Lakhs)”.

COUNTRIES	GOLD	DIAMOND	IRON ORE
INDIA	50	35	60
USA	40	40	35
CHINA	45	55	60
JAPAN	60	65	70

2. Create a Table of Contents for Generations of Computers.
3. Create the following result card in Ms-Word

Mount Carmel School
Sector 46, Chandigarh.

Class 9th — Roll No. 123
Student Name — Maninder Raj
Father’s Name — Sh.S.S. Chauhan

Result Card
Term-II Examination

Subject	Max. Marks	Marks Obtained
English	100	92
Maths	100	93
Science	100	98
Social Studies	100	88
Hindi	100	78
Computer Science	100	90
Total	600	539

Position in the Class: IInd
Remarks: Good
Parents Signature — Principal Signature

4. Write all the options of standard and formatting toolbar. Use different types of bullets and numbering. Divide the page in two columns.

5. Using Mail merge, write a letter to all the selected candidate for their final interview on 20th Sep 2008 at Dotcom Services Ltd, Nawab Layout, Nagpur 10 at 11:00 am along with necessary documents, resume and 2 Passport size photographs.

6. Create the following table by Insert Table option of MS Word

Country	***Population Chart***	
	Year	**Population (In Lakhs)**
INDIA	1998	80
	1999	90
	2000	100
USA	1998	60
	1999	70
	2000	80
UK	1998	70
	1999	75
	2000	80
Total		

Apply Auto format (Table web2) to the above table.
Calculate Total Population by using formula “SUM”.

7. Create your resume using Resume Wizard.(Using Templates).

8. Write a Cotemporary letter regarding launch of new product in a company. (Using Templates).

9. Make a list of the following functions with example and syntax.
   i. Sum
   ii. Average
   iii. Max
   iv. Min
   v. Count
   vi. Round
   vii. Sqrt
   viii. ABS
   ix. Upper
   x. Lower
   xi. Today
   xii. Now
   xiii. Roman
   xiv. Mean
   xv. Median
   xvi. Mode

10. Calculate Profit and prepare a Column chart in MS Excel using the data.

Month	Net Sales (Rs. Lakhs)	Total Cost (Rs. Lakhs)	Profit (Rs. Lakhs)
Jan-02	22	18	
Feb-02	24	9	
Mar-02	32	24	
Apr-02	26	23	
May-02	30	24	
Jun-02	34	25	
Jul-02	35	30	

a) Give chart Title - Profit Report
b) X axis Title - Months
c) Y axis Title - Amt(in Lakhs)

11. Prepare billing report for M/s. Total Synergy Consultancy Private Limited (TSCPL) in MS Excel.

				Figures in '000	
Consultant	**Qtr 1**	**Qtr 2**	**Qtr3**	**Qtr 4**	**Yearly Total**
R.Bhatnagar	Rs9,752.00	Rs10,129.00	Rs8,212.00	Rs7,032.00	
M.Lath	Rs5,755.00	Rs6,477.00	Rs5,447.00	Rs4,584.00	
P.Sharma	Rs6,769.00	Rs6,758.00	Rs6,378.00	Rs1,644.00	
K.Pandey	Rs3,708.00	Rs5,795.00	Rs6,188.00	Rs1,636.00	
M.Swamy	Rs5,009.00	Rs2,009.00	Rs7,643.00	Rs7,323.00	
Total➔					

Prepare Pie Chart showing consultant's contribution to Total yearly Billing from the above example.

12. Prepare a statement of Marks (Calculate the Total Marks, Average and Grade using functions Sum, Average and IF).

Criteria for Grade: Average >=75 ----Distinction
Average >=60 ----First
Average >=50 ----Second
Average >=45 ----Third

13. Prepare the following table in a worksheet using Ms-Excel

Name	Basic	DA	HRA	Gross Pay	PF	Net Pay
Rojer	10000	2000	2780			
Mack	20000	1050	1500			
Simon	35000	2100	1900			
Fredric	25000	2500	2100			
Harry	20000	1000	1500			

Perform the following calculations:
a) Gross Pay=Basic Pay +DA+HRA
b) PF=12% of DA
c) Net Pay=Gross Pay- PF

Perform the following formatting:
a) Set column width=10
b) Set row height=15
c) Text Alignment:
i. Horizontal : Center
ii. Vertical : Centre

14. Prepare following table for “DOTCOM SOLUTIONS LIMITED”

DOTCOM SOLUTIONS LIMITED				
INVENTORY DATABASE				
INV.CODE	**DESC**	**QTY**	**RATE**	**PRICE**
P1002	TV-COLOUR 21"	35	11000	
P1001	TV-COLOUR 29"	15	28000	
P1003	DVD	20	12000	
P1007	STERIO	53	6000	
P1008	WASHING MACHINE	21	18000	
P1005	REFRIGERATOR	40	8000	
P0004	DISH WASHER	5	20000	
P1009	MIXER	35	3000	
P1010	GRINDER	20	5000	

i) Calculate price and apply Auto format to the above table.
ii) Sort the records in the table in ascending order of INV.CODE.

15. Using conditional formatting on the above table perform the following :
    a) Highlight those INV.CODE values where INV.CODE is greater than P1005.
    b) Highlight those quantity values where Qty is between 30 and 50.
    c) Highlight (Single Underline) the rate values where rate is less than 10000 and (Bold) greater than or equal to 20000.
    d) Highlight (Strikethrough) the price value where price is equal to 3, 20,000 and (Bold-Italic) not equal to 1, 00,000.

16. Following data of DOTCOM SOLUTIONS LTD. is given

Sales	Rs.40, 00,000
Variable costs	Rs.30, 00,000
Fixed expenses	Rs.70, 000

Calculate:

I. Contribution
II. Profit Volume Ratio
III. Break Even Point
IV. Margin of Safety

NOTE: Contribution=sales – variable cost
PVR= (contribution /sales) *100
BEP = (fixed cost / PVR)*100
MOS=Profit / PVR*100
Profit=contribution-fixed expense

17. Use IF Function
    i. From the data given below check whether the expenses are over budget or within budget using function IF.

Actual Expenses	Predicted Expenses	Over/Within Budget
1500	900	
500	900	
500	925	
2000	1500	

ii. Design a mark sheet and enter record of any 5 students for three subject and check whether their result is PASS or FAIL using (IF-AND).
Table structure should be as given:

Sr. No	Student Name	Marks			Result(PASS/FAIL)
		Subject 1	Subject2	Subject3	

Condition: result will be “PASS” if marks of each subject are greater than 45.

18. Enter the following data in MS-Excel

Property Value	**Commission**
100,000	7,000
200,000	14,000
300,000	21,000
400,000	28,000

From the above data calculate the following using function SUMIF

- Sum of the commissions for property values over 160,000
- Sum of the commissions for property values below 300,000.
- Sum of the commissions for property values over 100,000

19. Create Timetable by inserting table in Power Point.

20. Using the following data create a chart in power Point.

	Sub 1	**Sub 2**	**Sub 3**	**Sub 4**
John	56	56	60	67
Rita	45	67	80	45
Joseph	56	67	89	78

21. Create a Power Point presentation using Auto Content Wizard.

22. Create a PowerPoint presentation showing various features of MS Office. Demonstrate the use of master slide.

23. Create a Power Point presentation listing various design templates available.Use various types of bullets and numbering. Each slide should have Animation effect.

24. Create a Power Point Presentation for explaining various network topologies.

25. Create an advertisement in Power Point with maximum 6 slides. Each slide should have custom animation.

26. Create a table **EmpMaster** in MS-ACCESS with following details:

Field Name	**Data Type**	**Description**
Emp_Id	Text	Size=15, Input Mask: ###-##-###
Emp_Name	Text	Size=20, Format: > (Display in Uppercase)
Address	Text	Size=30
Joining_date	Date	Format=”Short date”, Validation rule = Employee joined between 01/01/07 and date()
Married	Yes/No	
No_of_Children	Number	Validation Rule : not more than 2 (<=2)

a) Set Emp_Id as Primary key. b) Insert information about 10 Employees.
c) Use column width as best fit.
d) Print the table design view and datasheet view.

27. Create a table **BookDetails** in MS-ACCESS with following details:

Field Name	Data Type	Description
Book_Id	Text	Size=3 , Like Eg: B101
Title	Text	Size=20, Format: < (Display in lowercase)
Author	Text	Size=20, Format: > (display in uppercase)
Publication	Text	Size=30
Edition_No	Number	Format=Byte
Price	Currency	Use Currency Symbol Rs.
Pages	Number	Format=Byte

a) Set Book_Id as Primary key. b) Insert information about 10 Books.
c) Use column width as best fit.
d) Print the table design view and datasheet view.

28. Consider the following table and perform the operation given below:

ProductDetails

Prod_Id	Prod_Name	Company_Name	Country
101	Chavanprash	Dabur Ltd	India
121	Chocolates	Amul Ltd	India
126	Face wash	Amway Ltd	USA
163	Soap	Hindustan Lever Ltd	India
132	Cold Cream	Nivea Ltd	Germany
135	Hair Gel	L'Oreal Pvt Ltd	Australia
111	Deodorant	Coty Incorporation	South Africa
106	Hair Shampoo	Amway Ltd	USA

a) Select only those records whose country = "India"
b) Select only those record whose company = "Amway Ltd"
c) Print the table datasheet view of both a) and b) after selection.

29. Consider the following table and perform the operation given below **Employee_Details.**

Emp_Id	Emp_Name	Desg	Dept_Name	Add	City	Sal
1	Rakesh	Programmer	CMP	Ramanagar	Nagpur	Rs. 10,000.00
2	Amit	Clerk	ACT	Khamla	Nagpur	Rs. 4,500.00
3	Anjali	Operator	REC	Sadar	Nagpur	Rs. 2,200.00
4	Sachin	Accountant	ACT	Tilaknagar	Nagpur	Rs. 11,500.00
5	Sagar	Sr. Accountant	ACT	Ravinagar	Nagpur	Rs. 12,500.00
6	Abhilash	Operator	STO	Dharampeth	Nagpur	Rs. 2,200.00

- Select Emp_Name, Desg and Sal from Employee_Details.
- Select All fields from Employee_Details where Dept_Name = "ACT" AND Sal > 4000.
- Print the Query design view, Datasheet view and SQL view of a) and b

30. Consider the following table and perform the operation given below.

Account

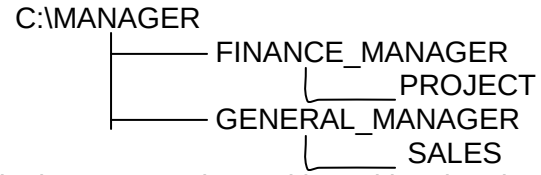
AcctId	AcctType	Amount
A1	Saving	Rs.50,000.00
A2	Saving	Rs.25,000.00
A3	Fixed	Rs.100,000.00
A4	Fixed	Rs.55,000.00
A5	Saving	Rs.25,000.00

a) DELETE FROM Account WHERE Amount <=25,000

b) Print the Query design view, Datasheet view and SQL view.

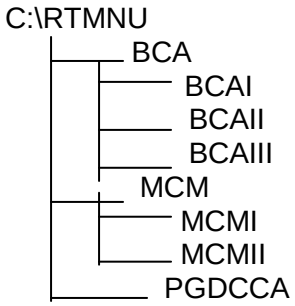
31. Make a directory naming CPC in DOS. Under that make three sub directories BCAI, BCA II, BCAIII. Also explain the commands used in making the directories and subdirectories in DOS.

32. Using Tree Command in DOS make the following tree diagram.



Also explain the commands used in making the above tree diagram.

33. Using tree command in DOS make the following tree diagram



Also explain the commands used in making the above tree diagram.

34. Make a file named "compute.txt" in DOS and write the definition and characteristics of computer in that file. Rename the file compute.txt to computer.txt.
Also explain the commands used in making the file and renaming file. Explain the difference between copy and ren Command.

35. Make a file named "compute.txt" in DOS and write the definition and characteristics of computer in that file. Copy the contents of file compute.txtto computer.txt.
Also explain the commands used in making the file and copying the contents of one file to another file.

36. Make a file named file1.txt in DOS and enter the following text in that file.

WWW can be defined as a set of standards for storing, retrieving, formatting and displaying information using client/server architecture, graphical user interfaces and a hypertext language that enables dynamic link to documents. World Wide Web is a repository of information spread all over the world and linked together.

Copy the contents of file1.txt to file2.txt also explain the difference between rename and copy command.

Paper - IV: Programming in 'C' (1T4)

UNIT – I

Data Types, Operators and some statements: Identifiers and keywords, Constants, C Operators, Type Conversion. **Writing a Program in C:** Variable declaration, Statements, Simple C Programs, Simple Input Statements, Simple Output Statements, and Features of stdio.h. **Control Statements:** Conditional Expressions, Loop Statements, Breaking control statements.

UNIT – II

Function and Program Structures: Introduction, Defining a Function, Return Statement, Types of Functions, Actual & Formal Arguments, Local & Global Variables, Multifunction Program, and The Scope of Variables, Recursive Function, and ANSI Function Slandered. **Arrays:** Array Notation, Array Declaration, Array Initialization, Processing with Arrays, Arrays and Functions, Multidimensional Array, Character Array.

UNIT – III

Pointers: Pointer Declaration, Pointer Arithmetic, Pointers and Functions, Pointers and Arrays, Pointer and Strings, Array of Pointers, Pointers to Pointers. **More on Functions:** Pre-processors, Macros, Header Files, standard Functions.

UNIT-IV

Structures, unions and Bit Fields: Declaration of Structure, Initializing a Structure, Functions and Structures, Array of Structure, Arrays within Structure, Structure within structure, Pointer and ?Structure, Union, Bit Fields, Typedef Enumerations. **Data File Operations:** Review of input/output Functions, Opening and Closing of files, Simple File Operation, Structures and File Operation, Block Read/Write, More on File operations, Low level File operations, Random Access File processing.

Text Book:

1. D. Ravichandran, Programming in C, New Age International Publishers.

Reference Books:

1. E. Balaguruswami, Programming in ANSI C,McGraw-Hill.
2. R Subburaj, Programming in C, Vikash Publishing House Pvt. Ltd.
3. S.K.Shrivastava & DipaliSrivastava, C in Depth, BPB Publication.
4. YashwantKanetkar, Let Us C, BPB Publication, 9th Edition.
5. Veugopal Prasad, Mastering C, McGraw-Hill.
6. Schildt, The Complete Reference C, McGraw-Hill.

Practical List of Programming in C (1P1)

A1. Draw a flowchart, write an algorithm and program in "C" to check whether the entered character is either alphabet, Digit or Special Character.

A2. Draw a flowchart, write an algorithm and program in "C" to check whether the entered character is in either Uppercase or Lowercase and also convert that character either in Uppercase or Lowercase by using toupper(), tolower(), getchar(), putchar( ), isupper( ) and islower( ) library functions.

A3. Draw a flowchart. write an algorithm and program in "C" to generate the mark sheet of student using following information.

a. Name of the student.
b. Roll Number
c. Course Name

d. Marks of 5 subjects, each subject carries 100 marks. Passing marks of each subject is 45.
e. Calculate Total Marks.
f. Calculate Percentage.
g. Display the Result, the conditions for result is –
   - Result = “Pass”, if the student get 50% aggregate and must not get less than 45 marks in each subject.
   - Else Result = “Fail”
h. Display the Grade, The grade will be –
   - Grade = “Distinction”, If Percentage>=75.
   - Grade = “First Class”, If 60 <= Percentage < 75.
   - Grade = “Second Class, If 50 <= Percentage <60.
   - Grade = “Fail”, If Percentage < 50.

A4. Draw a flowchart, write an algorithm and program in “C” to generate and print Fibonacci series and check whether each number is prime or unprimed.

A5. Draw a flowchart, write an algorithm and program in “C” to generate and print Fibonacci series and check whether each number is EVEN or ODD.

A6. Draw a flowchart; write an algorithm and program in “C” to convert the total number of days into number of years, months and remaining days. Consider 360 days in a year and 30 days in month.

A7. Draw a flowchart; write an algorithm and program in “C” to perform the following arithmetic operations using arithmetic operators in switch statement. The Arithmetic operations are addition (+), Subtraction (-), Multiplication (*), Integer Division (/) Real Division (/), modulo (%) and Raise to power (^).

A8. Draw a flowchart; write an algorithm and program in “C” to check the entered character is vowel or not using switch statement.

A9. Draw a flowchart; write an algorithm and program in “C” to convert Decimal Number to its equivalent Binary Number.

A10. Draw a flowchart; write an algorithm and program in “C” to convert Binary Number to its equivalent Decimal Number.

A11. Draw a flowchart; write an algorithm and program in “C” to find LCM and HCF of two numbers.

A12. Draw a flowchart, write an algorithm and program in “C” to Print and evaluate the following series. The series is -----

Sum = (x) + (x^2/2!))+(x^3/3!)) + (x^4/4!) +(x^5/5!))+……..

A13. Draw a flowchart, write an algorithm and program in “C” to Print and evaluate the following series. The series is -----

Sum = (x) + (x^3/3!))+(x^5/5!) + (x^7/7!) +(x^9/9!))+……..

A14. Draw a flowchart, write an algorithm and program in “C” to enter the Nine digit number, find and print even and odd numbers from that nine digit number also find the summation of all even number and odd numbers.

A15. Draw a flowchart, write an algorithm and program in “C” to check the entered number is Palindrome or not also print the reverse of the given number.

A16. Draw a flowchart, write an algorithm and program in “C” to swap the values of two variables with and without using third variable.

A17. Draw a flowchart, write an algorithm and program in “C” to generate and print the Prime Factors of a given number.

A18. Draw a Flowchart; Write an Algorithm and Program in “C” to Calculate the Mean and Variance of 10 Integer Numbers.

Where Mean = $\Sigma (X_i)/N$ and

Variance = $\Sigma (X_i - \ddot{X})^2/N$

A19. Draw a Flowchart; Write an Algorithm and Program in “C” to Find the Largest and smallest number form a single dimension array.

A20. Draw a Flowchart; Write an Algorithm and Program in “C” to Search an Element from a single dimension array with its position using Sequential search Technique. Print the message “Element found at position _____”, if the element present in an array and print message “Element Not Found”, If element is not present in an array.

A21. Draw a Flowchart; Write an Algorithm and Program in “C” to insert an element in a given position in an array.

A22. Draw a Flowchart; Write an Algorithm and Program in “C” to delete an element from a given position of an array.

A23. Draw a Flowchart; Write an Algorithm and Program in “C” to Sort elements of a given array using Bubble Sort in an ascending order.

A24. Draw a Flowchart; Write an Algorithm and Program in “C” to find the sum of Each Row and each column of a given Matrix and also find the sum of all elements.

A25. Draw a Flowchart; Write an Algorithm and Program in “C” to convert the matrix into Transpose of Matrix also print both the original and Transpose of Matrix.

A26. Draw a Flowchart; Write an Algorithm and Program in “C” to add two matrices of the given range and print all the three matrices.

A27. Draw a Flowchart; Write an Algorithm and Program in “C” to find the product of two matrices of the given range and print all the three matrices.

A28. Draw a Flowchart; Write an Algorithm and Program in “C” to check the entered String is Palindrome or not with and without using String Manipulation Functions.

A29. Draw a Flowchart; Write an Algorithm and Program in “C” to Find the given character and replace that character with new character of the original text also print the modified text.

A30. Draw a Flowchart; Write an Algorithm and Program in “C” to count the number of spaces, alphabets, digits, special symbols from a given text using String Manipulation Functions.

A31. Draw a Flowchart; Write an Algorithm and Program in “C” to count the number of spaces, alphabets, digits, special symbols from a given text using ASCII Characters.

A32. Draw a Flowchart; Write an Algorithm and Program in “C” to count the number of words and all characters excluding spaces from a given text without using string manipulation Functions.

A33. Draw a Flowchart; Write an Algorithm and Program in “C” to concatenate two strings into third string without using string manipulation Functions.

A34. Draw a flowchart, write an algorithm and program in “C” to Design and Print the following Output of any entered string, for example -

```
P
P   R
P   R   I
P   R   I   N
P   R   I   N   T
P   R   I   N
P   R   I
P   R
P
```

A35. Draw a Flowchart; Write an Algorithm and Program in “C” to Append to string arrays in third array.

A36. Draw a Flowchart; Write an Algorithm and Program in “C” to Sort a String array in either Ascending or Descending order.

A37. Draw a Flowchart; Write an Algorithm and Program in “C” to insert an element in an appropriate position in a sorted array. The array is sorted in an ascending order.

A38. Draw a flowchart, write an algorithm and program in “C” to Design and Print the following Output.

```
                1
            2   3   2
        3   4   5   4   3
    4   5   6   7   6   5   4
5   6   7   8   9   8   7   6   5
```

A39. Draw a flowchart, write an algorithm and program in “C” to Design and Print the following Output.

```
            *
        *   *   *
    *   *   *   *   *
*   *   *   *   *   *   *
    *   *   *   *   *
        *   *   *
            *
```

A40. Draw a flowchart, write an algorithm and program in “C” to Design and Print the following Output.

```
1
0   1
0   1   0
1   0   1   0
1   0   1   0   1
0   1   0   1   0   1
```

A41. Write an algorithm, draw a flowchart and develop 'C' program toCreate a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.

A42. Write an algorithm, draw a flowchart and develop 'C' program to create a file "abc.txt" and store the text. Copy the content from "abc.txt" to another file "xyz.txt" using putc() and getc() function. Also read the content of both files.

BCCA Part – I

Semester – II

Paper - I: English and Business Communication – II (2T1)

UNIT-I

(A) Comprehension of an Unseen Passage

(B) Punctuation, Words often confused

UNIT-II

Business Correspondence: Inviting Quotations, Placing Orders, Credit Letters - Granting/Refusing Credit, Letter to Bank for overdraft facility

UNIT-III

- Elements of communication
- Objectives of communication
- Essentials of effective communication
- Barriers to effective communication
- Suggestions to overcome the barriers

UNIT-IV

Textbook entitled 'Prism: Spoken and Written Communication, Prose & Poetry' published by Orient Black Swan

Prose

i) An Astrologer's Day – R. K. Narayan

ii) The Gift of the Magi – O. Henry

iii) The Bet – Anton Chekhov

Poetry

i) Say Not the Struggle Naught Availeth - Arthur Hugh Clough

ii) No Men are Foreign- James Kirkup

iii) Abou Ben Adhem - James Leigh Hunt

Reference Books:

(For UNIT I)

1. English Grammar – N. D. V. PrasadaRao (S.Chand)
2. Developing Communication Skills – Krishna Mohan &MeeraBanerji (Macmillan)

(For UNIT II)

3. Business Communication: Urmila Rai, S. M. Rai - (Himalaya Publishing House)
4. Business Correspondence and Report Writing – R. C. Sharma& Krishna Mohan (Tata McGraw-Hill)
5. Developing Communication Skills – Krishna Mohan & Meera Banerji (Macmillan)

(For UNIT III)

6. Business Communication and Management- Dr. K. R. Dixit (Vishwa Publishers, Nagpur)

(For UNIT IV)

Prescribed Text Book:

Prism: Spoken and Written Communication, Prose & Poetry published by Orient BlackSwan

Paper - II: Principles of Business Management (2T2)

UNIT- I

Nature And Functions Of Management – Importance Of Management, Definition Of Management, Management Function Or The Process Of Management, Levels Of Management, Organizational Or Business Functions, Role Of A Senior Management, Managerial Skills, Managerial Effectiveness, Management And Administration, Management- A Science Or An Art?, Management- A Profession?, Professional Management Vs Family Management, Management Of International Business. **Development Of Management Thought-** Early Classical Approaches, Neo-Classical Approaches, Modern Approaches. **Planning**- Nature Of Planning, Importance Of Planning, Types Of Plans, Steps In Planning, Strategic Planning Process, Limitation Of Planning, Making Planning Effective, Planning Skills, Strategic Planning In The Indian Industry. **Decision Making**- Meaning Of Decision, Types Of Decision, Steps In Relational Decision-Making, Rationality In Decision-Making, Environment Of Decision-Making, Common Difficulties In Decision-Making.

UNIT- II

Organization- What Is An Organization?, Process Of Organizing, Principles Of Organizing, Span Of Management, Departmentalization, Process Departmentalization, Purpose Departmentalization, Organization Structure, What Type Of Structure Is Best?, Emerging Organization Structures, Committees, Teams, International Organization Structures. **Coordination** – Distinction Between Coordination And Cooperation, Distinction Between Coordination And Control, Need For Coordination, Requisites For Excellent Coordination, Types Of Coordination, Techniques Of Coordination, Difficulties Of Coordination, Coordinating Global Operations. **Informal Organization** – Why Do Informal Group Forms?, Types Of Informal Groups, Stages Of Group Development, Distinction Between Formal And Informal Organization, Benefits Of Informal Organization To Its Members, Benefits Of Informal Organization To Its Management, Dysfunctional Effects Of Informal Organization, How To Minimize The Dysfunctional Effects Of Informal Organization?, Group Dynamics. **Staffing**- Importance And Need For Proper Staffing, Manpower Planning, Recruitment, Selection, Placement, Induction, Manpower Planning In India, Staffing From A Global Perspective.

UNIT- III

Training And Development- Difference Between Training, Education And Development, Advantages Of Training, Steps In Setting Up A Training And Development Programme, Design And Development Of The Training Programme, Evaluation Of Training And Development, Executive Training Practices In India, Mentoring, Learning Organization, Knowledge Management. **Performance Management**- Purpose Of Appraisal, Steps In Designing Performance Management System, Criteria And Standards Of Performance Appraisal, Frequency Of Appraisal, Performance Appraisal Methods, Limitations Of Traditional Appraisal Methods, Post-Appraisal Interview, Appraisal Of Management, Performance Management In Indian Industries, Expatriate Performance Appraisal, Career Planning And Development, Appraisal Of Organizational Development. **Compensation Plans**- Classification Of Compensation, Primary Compensation, Monetary Incentive, Non-Monetary Incentive, Recognition As A Reward, Benefits, Wage Packet Of Indian Worker, International Compensation. **Direction And Supervision-** Requirements Of Effective Direction, Giving Orders, Motivation, Job Satisfaction, Organizational Commitment, Morale, First-Level Or Front- Line Supervision.

UNIT- IV

Communication- Importance Of Communication, Purpose Of Communication, Formal Communication, Forms Of Communication, Informal Communication, The Communication Process, Barriers To Communication, Principles Of Effective

Communication, Communication Networks, Checks On In-Plant Communication, Communication In Indian Industries. **Leadership** – Difference Between A Leader And A Manager, Characteristics Of Leadership, Functions Of A Leader, Traditional Approaches To Leadership, Situational Factors Determining Choice Of Leadership Style, New Approaches To Leadership, Leadership Assessment, Leadership Style In Indian Organization, Worker Participation In Management In India. **Managerial Control-** Steps In A Control Process, Need For Control System, Benefits Of Control, Essentials Of Effective Control System, Problems Of The Control System, Control Techniques. **Organizational Change**- Need For Planned Change, Managing Organizational Change, Requisites For Successful Planned Chase, Recent Planned Changes In The Corporate Sector In India.

Text Book:

1. P. C. Tripathi, P. N. Reddy, Principles of Management, McGraw-Hill.

Reference Books:

1. Prof. Partho S. Sengupta, Principles and Practices of Management,Vikash Publishing House Pvt. Ltd.
2. NeeruVaisishth, VibhutiVasishth, Principles of Management Text & Cases, Taxmann
3. Harold Koontz, Heinz Weihrich, Essentials of management, McGraw-Hill.
4. NeeruVaisishth, Business Management, Taxmann.
5. R. S. N. Pillai, S. Kala, Principles and Practices of Management, S. Chand.
6. Chandra Bose, Principles of Management & Administration, PHI.

Paper - III: Programming in 'C++' (2T3)

UNIT – I

Introduction to Object Oriented Programming: Introduction, What is Object Oriented Programming(OOP)?, Structured Procedural programming(SPP), Object Oriented Programming OOP, Characteristics of OOPs, Advantages of OOPs, Disadvantages of OOPs, Comparison of SPP and OOP, Steps in Developing OOP Programs, Structure of Object Oriented Programs, Object Oriented Languages, Importance of C++. **Data Types, Operators and Expressions:** Identifiers & Keywords, Data Types, C++ Simple Data Types, Literals, Variables, the Const Data type, C++ Operators, Type Conversion. **Input and Output Streams:** Comments, Declaration of Variables, the Main () Function, Simple C++ Programs, Program Termination, Features of IOStream, Keyboard and Screen I/O, Manipulator Functions, Input and Output (I/O) Stream Flags. **Control Statements:** Conditional Expressions, Loop Statements, Nested Control Structures, Breaking Control Statements.

UNIT – II

Function and Program Structures: Introduction, Defining a Function, Return Statement, Types of Functions, Actual & Formal Arguments, Local & Global Variables, Default Arguments, Structure of C++ Program, Order of the Function Declaration, Manually invocated Functions, Nested Functions, Scope Rules, Side Effects, Storage Class Specifiers, Recursive Function, Pre-processors, Header Files, Standard Functions. **Arrays :**Introduction, Array Notation, Array Declaration, Array Initialization, Processing with Arrays, Arrays and Functions, Multidimensional Array, Character Array. **Pointers and Strings:** Introduction, Pointer Arithmetic, Pointers and Functions, Pointers to Functions, Pointers and Arrays, Array of Pointers, Pointers to Pointers, Pointer and Strings, Deciphering Complex Declarations. **Structures, Unions and Bit Fields:** Introduction, Declaration of Structure, Processing with Structures, Initialization of Structures, Functions and Structures, Array of Structure, Array within a Structure, Nested Structure, Pointer and Structure, Unions, Bit Fields, Typedef, Enumerations.

UNIT – III

Classes and Objects: Introduction, Structures and Classes, Declaration of Class, Member Functions, Defining the Object of a Class, Accessing a Member of Class, Array of Class Objects, Pointer and Classes, Union and Classes, Classes within classes(Nested Class). **Special Member Function:** Introduction, Constructors, Destructors, Inline Member Functions, Static Class Members, Friend Function, Dynamic Memory Allocations, This Pointer, Mutable. **Single and Multiple Inheritance:** Introduction, Single Inheritance, Types of Base Classes, Type of Derivation, Ambiguity in Single Inheritance, Array of Class Objects and Single Inheritance, Multiple Inheritance, Container Classes, Member Access Control.

UNIT-IV

Overloading Functions and Operators: Function Overloading, Operator Overloading, Overloading of Binary Operators, Overloading of Unary Operators. **Polymorphism and Virtual Functions:** Polymorphism, Early Binding, Polymorphism with Pointers, Virtual Functions, Late Binding, Pure Virtual Functions, Abstract Base Classes, Constructors under Inheritance, Destructors under Inheritance, Virtual Destructors, Virtual Base Classes. **Templates and Exception Handling:** Function Template, Class Template, Overloading of Function Template, Exception Handling. **Data File Operations:** Opening and Closing of Files, Stream State Member Functions, Reding/Writing a Character from a File, Binary File Operations, Classes and File Operations, Structure and File Operations, Array of Class Objects and File Operations, Nested Class and File Operations. Random Access File Processing.

Text Book:

1. D. Ravichandran, Programming with C++, McGraw-Hill.

Reference Books:

1. E. Balaguruswami, Object Oriented Programming with C++, McGraw-Hill.
2. Rohit Khurana, Object Oriented Programming with C++, Vikash Publishing House Pvt. Ltd.
3. Anirban Das, GoutamPanigrahi, Object Oriented Programming with C++, Vikash Publishing House Pvt. Ltd.
4. Herbert Schildt, The Complete Reference – C++, McGraw-Hill.

Practical List of Programming in 'C++'

1. Write an algorithm, draw a flowchart and develop a C++ program to print the sum and product of digits of an integer.

2. Write an algorithm, draw a flowchart and develop a C++ program to reverse of a number.

3. Write an algorithm, draw a flowchart and develop a C++ program to compute the sum of the first n terms of the following series - S = 1+1/2+1/3+1/4+……

4. Write an algorithm, draw a flowchart and develop a C++ program to compute the sum of the first n terms of the following series - S =1-2+3-4+5…….

5. Write an algorithm, draw a flowchart and develop a C++ function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.

6. Write an algorithm, draw a flowchart and develop a C++ program to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
*********
```

7. Write an algorithm, draw a flowchart and develop a C++ program to swaps two numbers using pointers.

8. Write an algorithm, draw a flowchart and develop a C++ function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.

9. Write an algorithm, draw a flowchart and develop a C++ program to compute the factors of a given number.
10. Write an algorithm, draw a flowchart and develop a C++ program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
11. Write an algorithm, draw a flowchart and develop a C++ program to demonstrate the use of single inheritance.

12. Write an algorithm, draw a flowchart and develop a C++ program to find largest among two value using friend function.

13. Write an algorithm, draw a flowchart and develop a C++ program in which a function is passed address of two variables and then alter its contents.

14. Write an algorithm, draw a flowchart and develop a C++ program to display Fibonacci series (i)using recursion, (ii) using iteration

15. Write an algorithm, draw a flowchart and develop a C++ program to calculate Factorial of a number (i)using recursion, (ii) using iteration

16. Write an algorithm, draw a flowchart and develop a C++ program to demonstrate the use of this pointer.

17. Write an algorithm, draw a flowchart and develop a C++ program to perform unary operator overloading.

18. Write an algorithm, draw a flowchart and develop a C++ program to Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator

19. Write an algorithm, draw a flowchart and develop a C++ program to find sum of n elements entered by the user. To write this program, allocate memory dynamically using malloc() / calloc() functions or new operator.

20. Write an algorithm, draw a flowchart and develop a C++ program to create a Marksheet using multilevel inheritance.

Paper - IV: E-Commerce and Web Designing (2T4)

UNIT – I

Introduction to Electronic Commerce

Electronic Commerce : The Scope of Electronic Commerce, Definition of Electronic Commerce, Electronic Commerce and the Trade Cycle, Electronic Markets, Electronic Data Interchange, Internet Commerce, e-Commerce in Perspective. **Business Strategy in an Electronic Age: The** Value Chain, Supply Chains, Porter's Value Chain Model, Inter Organizational Value Chains. **Competitive Advantage:** Competitive Strategy, Porter's Model, First Mover Advantage, Sustainable Competitive Advantage, Competitive advantage using e-Commerce. **Business Strategy:** Introduction to Business Strategy, Strategic Implication of IT, Technology, Business Environment, Business Capability, Existing Business Strategy, Strategy Formulation and Implementation Planning, e-Commerce Implementation, e-Commerce Evaluation. **Case Study: e-Commerce in Passenger Air Transport:** Choices, Airline Booking Systems, Competition and customer Loyalty, Web Booking Systems, Competitive Outcomes

UNIT – II

Business to Business Electronic Commerce

Inter Organizational Transactions: Inter Organizational Transactions, the Credit Transaction Trade Cycle, A Variety of Transaction, Pens and Things. **Electronic Markets: Markets**, Electronic Markets, Usage of Electronic Markets, Advantages and Disadvantages of Electronic Markets, Future of Electronic Markets. **Electronic Data Interchange (EDI):** Introduction to EDI, EDI definition, The Benefits of EDI, EDI Example. **EDI: the Nuts and Bolts :**, EDI technology, EDI Standards, EDI Communications, EDI Implementation, EDI Agreements, EDI Security, Nuts, Bolts and the Tool kit. **EDI and Business :**Organizations that use EDI, EDI Trading Patterns, EDI Transactions, EDI Adoption and EDI Maturity, IOS, EDI an Internet e-Commerce. **Inter Organizational e-Commerce: Inter** Organizational Transaction, Purchasing Online, After Sales Online, e-Commerce in Desk top Facilities Management, Pens and Things and the Web.

UNIT – III

Business to Consumer Electronic Commerce

Consumer Trade Transactions: What you want, when you want it, Internet e-Commerce, The e-Shop, Internet Shopping and the Trade Cycle, Other e-Commerce Technologies, Advantages and Disadvantages of Consumer e-Commerce, Consumer e-Commerce at Pens and Things. **The Elements of e-Commerce :** Elements, e-Visibility, The e-Shop, Online Payments, Delivering the Goods, After Sales Service, Internet e-Commerce Security, A Web Site Evaluation Model. **E-Business: Introduction**, Internet Bookshops, Grocery Supplies, Software Supplies and Support. Electronic Newspapers, Internet Banking, Virtual Auctions, Online Share Dealing, Gambling on the Net, e-Diversity **Introduction to the Internet:** Computer in Business, Networking, Internet, Electronic Mail(E-Mail), Resource Sharing, Gopher, World Wide Web, Usenet, Telnet, Bulletin Board Service, Wide Area Information Service. **Internet Technologies:** Modem, Internet Addressing, Physical Connections, Telephone Lines, Internet Browsers, Internet Explorer, Netscape Navigator. **Introduction to HTML:** Designing a Home Page, History of HTML, HTML Generations, HTML Documents, Anchor Tag, Hyper Links, Sample Html Documents. **Header and Body Sections: Header** Section, Title, Prologue, Links, Colorful Web Page, Comment Lines, Some Sample Html Documents. **Designing the body Section :** Heading Printing, Aligning the Headings, Horizontal Rule, Paragraph Tab Setting, Image and Pictures, Embedding PNG Format Images.

UNIT – IV

Ordered and Unordered Lists: Lists, Unordered Lists, Headings in a List, Ordered Lists, Nested List. **Table Handling: Table**, Table Creation in HTML, Width of the Table and Cells, Cells Spanning Multiple Rows/Columns, Coloring Cells, Columns Specification,

Some Sample Tables. **Dhtml and Style Sheets:** Defining Styles, Elements of Styles, Linking a Styles Sheet to an HTML Document, In-Line Styles, External Styles Sheets, Multiple Styles. **Frames:** Frameset Definition, Frame Definition, Nested Framesets. **A web Page Design Project:** Frameset Definition, Animals, Birds, Fish. **Forms: Action** Attribute, Method Attribute, Enctype Attribute, Drop Down List, Sample Forms

Text Books

1. David Whiteley, e-Commerce Strategy, Technologies and Applications, McGraw Hill Education
2. CXavier, World Wide Web design with HTML, McGraw Hill Education.

Reference Books:

1. Bajaj, Nag, E-Commerce, McGraw-Hill.
2. Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, AlessandroVernet, Professional Web 2.0 Programming, Wiely.
3. Michael P. Papazoglou, Pieter M.A. Ribbers, e-Business, Wiely.
4. Brian P. Hogan, HTML5 and CSS3, Shroff Publishers.
5. Sandeep panda, AngularJS – Novice to Ninja, Shroff Publishers.
6. Web Technologies – Black Book, Dreamtech Press.
7. Mike Mcgrath, Web Design in Easy Steps, McGraw-Hill.
8. Mike Mcgrath, JavaScript in Easy Steps, McGraw-Hill.
9. Mike Mcgrath, CSS3 in Easy Steps, McGraw-Hill.

Practical List of E-Commerce & Web Designing

1. Write a program in HTML to link two files. The name of the first file is LINK1.HTML and that of second file is LINK2.HTML. LINK2.HTML should contain a Back link also.

2. Write a program in HTML to design a table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY. Illustrate the usage of cell padding and cell spacing. Also align the Table to the CENTRE of the page.

3. Write a program in HTML to design a Table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY. The table should also contain the below given specifications.

a. Table should contain BORDER.
b. Background color of the Table should be GREEN.
c. Color of the Text should be BLUE.
d. Text should be centrally aligned in the cell.

4. Write a program in HTML to illustrate the usage of ROWSPAN in the below given format.

CITY	TOWN
NAGPUR	SHANKAR NAGAR
	DHARAMPETH
	RAMDASPETH
BOMBAY	DADAR
	V.T.
	THANE

5. Write a program in HTML to illustrate the usage of COLUMN SPAN (COLSPAN) in the below given format.

NAME	LIVING CITY	COMPANY CITY
SUJEET	CHHINDWARA	
TAPAN	NAGPUR	BOMBAY
RAM	BOMBAY	
MOHAN	BANGALORE	
KRISHNA	PUNE	
MANGESH	BOMBAY	NAGPUR
AVINASH	DELHI	

6. Write a program in HTML to divide the Screen into 4 sections.

7. Write a program in HTML to divide the screen horizontally into two sections.

8. Write a program in HTML to demonstrate the usage of Marquee text with the below given Specifications.
   a. Marquee text is INTERNATIONAL COLLEGE.
   b. Color of text is BLUE.
   c. Background color is YELLOW.
   d. Size of Text is 7.
   e. Direction is LEFT to RIGHT.

9. Write a program in HTML to demonstrate the usage of Image file with the below given specification.
   1. Background color of page is GREEN.
   2. The size of Image is 400 x 400 pixels.
   3. The Image should contain a border.
   4. Alternate text is “IMAGE NOT FOUND”.
   5. Image should appear on the centre of the page.

10. Write a program in HTML to demonstrate the usage of Image file with the below given specifications.
   1. Background color is RED.
   2. The size of Image is 300 x 300 pixels.
   3. The image should contain a BORDER.
   4. Alternate Text is “IMAGE is NOT FOUND”.
   5. Vertical space should be 100 pixels.
   6. Horizontal space should be 350 pixels.

11. Write a program in HTML to illustrate Ordered & Unordered Listing in the below given format.

1. NAGPUR
   - SHANKAR NAGAR
   - DHARAMPETH
   - SADAR
   - RAMDASPETH
2. BOMBAY
   - DADAR
   - V.T.
   - THANE
3. BANGALORE
   - ULSOOR
   - SHIVAJI NAGAR
   - MAJESTIC
   - HAL
   - NAL

1. Write HTML code to display the following :

Industry Segment	Share of Industry RND	
	1981	1988
Information	32%	42%
Drug	07	09
Combined	39	51

12. Write a program in HTML to illustrate the below given formats.
1. The page should contain a paragraph which is centrally aligned.
2. FIRST line of the paragraph should be BOLD and ITALIC.
3. STRIKEOUT the Second Line.
4. Underline and change the color to RED, of the third line.
5. Change the font size of the fourth Line to 5.
6. Change the color of the text to GREEN.
7. Two horizontal lines below the paragraph.

13. Write a program in HTML to design a table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY.

14. Write a program in HTML to design a Table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY. The table should also contain the below given specifications.
   a. Table should contain BORDER.
   b. Background color of the Table should be GREEN.
   c. Color of the Text should be BLUE.
   d. Text should be centrally aligned in the cell.

15. Write a program in HTML to divide the screen horizontally into two sections.

16. Write a program in HTML to demonstrate the use of the Marquee Text with the below given Specifications.
   a. Marquee Text is INTERNATIONAL COLLEGE.
   b. Text color is BLUE.
   c. Repeat the Marquee Text five Times.
   d. Make use of SCROLLAMOUNT.
   e. Make use of SCROLLDELAY.

17. a) Give the advantages of style sheets.
b) Design a web page to embed external style sheet in HTML document.

18. a) What are the different formats of video file? Explain the various methods to add video file in a web page.
b) Design a web page to show the use of audio file using different approaches and attributes of embed tag.

19. a. What is CSS? Explain different ways to associate CSS to HTML documents.
   a. Design a web page to embed style sheet in HTML document through <HEAD> tag.

BCCA Part – II
Semester – III

Paper - I: Environmental Studies (3T1)

UNIT - I

Multidisciplinary Nature of Environmental Studies- Environment, Environment Studies, Need for public Awareness, Environmental Degradation, Shelter Security, Economic Security, Social Security, Effects of Housing on Environment , Effects of Industry on Environment**. Natural Resources-** Introduction, Types of Natural Resource, Forest Resources, Water Resources, mineral Resources, Food Security Resources, Energy resources, Land Resources, Conservation of Natural Resources, Sustainable Lifestyles, Sustainable Water Management(SWM), Biogeochemical Cycle.

UNIT – II

Ecosystem- Introduction to Ecology and Ecological Succession, Ecosystem, Food Chain, Ecological Pyramids, Types of Ecosystems, Forest Ecosystems, Aquatic Ecosystems, Grassland Ecosystem, Desert Ecosystem. **Biodiversity and its Conservation-**Biodiversity, Values or Benefits of Biodiversity, Bio geographic Zones of India, Hot Spots of Biodiversity, Endangered and Endemic Species, Rare and Threatened Species, Threats to Biodiversity, Human –Wildlife Conflicts, Conservation of Biodiversity.

UNIT – III

Environmental Pollution and Its Effects- Introduction ,Requirements of a Non polluted Environment, Public Health Aspects, Air Pollution, Land Pollution, Land Pollution or Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution, Hazardous Wastes, Nuclear Hazards (Radiation Pollution),Solid Waste and Its Management, Role of Individuals in Pollution Prevention, Disaster Management.

UNIT – IV

Social Issues and the Environment- Introduction, Sustainable Development, Urbanization, Water Conservation, Resettlement and Rehabilitation of People ; Its Problems and Concerns, Social Issues and The Environment, Wasteland Reclamation, ACTs for Environmental Protection, Carbon Credits, Industrial Symbiosis, Initiatives and Roles of Nongovernmental Organization (NGOs) in Environmental Protection, Issues Involved in Enforcement of Environmental Legislation ,Animal Husbandry. **Human population and the Environment-** Population Growth, Family Welfare Programs, Environment and Human Health, Fundamental Rights, Human Rights, Value Education, HIV/AIDS, Environmental Education, Women's Education, Role of Information Technology in Environment and Human Health.

Text Book

1. Shashi Chawla , Environmental Studies, McGraw-Hill.

Reference Books

1. Dr. D. K. Asthana, Dr. MeeraAsthana, Environmental Studies, S. Chand.
2. Dr. K. Mukkanti, Environmental Studies, S. Chand.
3. Dr. D. D. Mishra,Fundamental Concepts in Environmental Studies, S.Chand.
4. Benny Joseph, Environmental Studies, McGraw Hill Education.

Paper - II: Business Economics (3T2)

UNIT – I

Introduction: Economics And Business Economics - Introduction, What Is Economics, Definitions, Nature And Scope Of Business Economics, Some Economics Concepts Applied In Business Analysis. **The Economy, Its Basic Problems And Price Mechanism :-** Introduction, What Is An Economy?, How A Free Enterprise Economy Works, Kinds Of Economic Systems, Production Possibilities Of An Economy, Basic Problems Of An Economy, How Market Mechanism Solves The Basic Problems, All Is Not Well With Free Enterprise Economies, Role Of The Government In The Economy. **Laws Of Demand And Supply And Market Equilibrium** :- Introduction, The Concept Of Market, Demand Side Of The Market, Supply Side Of Market, Market Equilibrium, Stability Of Market Equilibrium. **Theory of Consumer Demand: Analysis Of Individual Demand** - Introduction, Meaning Of Individual Demand, Utility- The Basis Of Consumer Demand, Cardinal Approach To Consumer Demand, Ordinal Utility Approach To Consumer Demand –The Indifference Curve Approach, Comparison Of Cardinal And Ordinal Utility Approaches, Revealed Preference Theory, Consumer Surplus. **Elasticity Of Demand** :- Introduction, Meaning Of Demand Elasticity, Price Elasticity Of Demand, Cross-Elasticity Of Demand, Income-Elasticity Of Demand, Advertisement Elasticity Of Demand, Price Expectation-Elasticity Of Demand, Some Estimates Of Demand Elasticity. **Demand Forecasting: -**Introduction, Meaning And Purpose Of Demand Forecasting, Prerequisites Of Good Demand Forecasting, Methods Of Forecasting Demand, Concluding Remarks, Some Case Studies Of Demand Forecasting.

UNIT – II

Production And Cost Analysis: Theory Of Production - Introduction, Some Basic Concepts, Production Function, Laws Of Production-Meaning And Kinds, Short-Run Laws Of Production, Long-Term Laws Of Production-I:Tools Of Analysis, Long-Term Laws Of Production-II: Laws Of Return To Scale, Laws Of Returns To Scale Through Production Function. **Theory of Cost** - Introduction, Cost Concepts, Cost Function, Short-Run Cost-Output Relations, Long-Run Cost Output Relations, Economics And Diseconomies Of Scale, Modern Theory Of Cost. **Market Structure And The Firm's Objectives -** Introduction, Market Structure And Degree Of Competition, Market Structure And Pricing Decisions, The Firm And The Industry, Profit: Meaning And Concepts, Objectives Of Business Firms, A Reasonable Profit Target: A Pragmatic Approach, Profit As Control Measure. **Price And Output Determination Under Perfect Competition -** Introduction, What Is Perfect Competition? Features Of Perfect Competition, Price Determination Under Perfect Competition, Equilibrium Of The Firm In Short-Run, Derivation Of Supply Curve, Equilibrium Of Industry And Firm In Short-Run, Equilibrium Of The Firm And Industry In Long-Run, Long-Run Supply Curve Of The Industry.

UNIT – III

Pricing Decisions Under Monopoly - Introduction, Definition And Features Of Monopoly, Sources And Kinds Of Monopolies, Revenue Curves Under Monopoly, Price And Output Determination In Short-Run, Two Common Misconceptions About Monopoly, There Is No Supply Curve In Short-Run, Monopoly Equilibrium In The Long-Run, Capacity Utilization Under Monopoly, Equilibrium Of Multiplant Monopoly, Price Discrimination Under Monopoly, Monopoly *Vs*. Perfect Competition, Application Of Monopoly Theory, Measures Of Monopoly Power, Government Regulation Of Monopoly Prices. **Pricing Decision Under Monopolistic Competition -** Introduction, Monopolistic Competition: Definition & Characteristics, Basic Elements Of Monopolistic Competition, Firms Equilibrium Under Monopolistic Competition, Excess Capacity Under Monopolistic Competition, Selling Cost And The Firm's Equilibrium: Non-Price Competition, Monopolistic Competition *Vs* Perfect Competition: A Comparison, Drawbacks Of Chamberlin's Theory Of Monopolistic Competition. **Pricing Decisions Under Oligopoly-** Introduction, Oligopoly: A Market Of Few Sellers, The Oligopoly Models: An

Overview, A Classical Model Of Duopoly: Cournet's Model, Chamberlin's Model Of Oligopoly : The Small Group Model, Sweezy's Kinked-Demand Curve Model, Price And Output Determination In Collusive Oligopoly, Baumol's Theory Of Sales Maximization, Oligopoly And The Game Theory.

UNIT – IV

Factor Market: Factor Demand And Supply -Introduction, Marginal Productivity Of Factor And Factor Demand, The Factor Supply: An Overview, Derivation Of Individual Labor Supply Curve, Derivation Of Market Labor Supply Curve. **Theory Of Wage Determination -** Introduction, Wage Determination Under Perfect Competition, Wage Differentials, Wage Determination Under Product Monopoly And Competitive Labor Market. **Theory Of Rent, Quasi-Rent And Economic Rent -**Introduction, Ricardian Theory Of Rent, Quasi-Rent: The Short-Term Rent On Fixed Factors, Factor Price, Transfer Earning And Economic Rent. **Theory Of Interest -**Introduction, Meaning Of Interest And Interest Rate, The Classical Theories Of Interest, The Loanable Fund Theory Of Interest, Keynesian Theory Of Interest. **Theory Of Profit -**Introduction, The Meaning Of Profit And Pure Profit, Accounting Profit *Vs* Economic Profit, Theories Of Profit, Does Profit Enter The Cost Of Production?.

Text Book

1. D. N. Dwivedi, Essentials of Business Economics, Vikas Publishing House Pvt. Ltd.

Reference Books

1. David P. Doane, Lori E. Seward, Applied Statistics in Business and Economics, McGraw-Hill.
2. Amit Kumar Upadhyay, Principles of Economics, Vikas Publishing House Pvt. Ltd.
3. P. K. Mehta, Business Economics, Taxmann.
4. Michael Mandel, Economics The basics, McGraw-Hill.
5. Sudip Chaudhuri, Anindya Sen, Economics, McGraw-Hill.
6. Geetika, PiyaliGhosh, Purba Roy Choudhury, Managerial Economics, McGraw-Hill.

Paper - III: Visual Basic Programming (3T3)

Unit – I

Introduction to Visual Basic– Advantages Of Visual Basic, Hardware Requirement, Software Requirement, Installing Visual Basic, Starting Visual Basic, Exiting From Visual Basic. **Working With Visual Basic Window Components**– Menu Bar, Standard Toolbar, Project Explorer Window, Form Layout Window, Properties Window, Toolbox, Code Editor Window, Object Browser, Customizing The Application Development Environment, Editor Tab, Editor Format Tab, General Tab, Docking Tab, Environment Tab, Advance Tab. **Working With Forms**– Extension & With Function Of The File, Properties, Events And Method Of The Form. **Using The Controls Of Visual Basic –** Using Label Control, Using Command button Control, Using Textbox Control, Using Option Button Control, Using Frame Control, Using Checkbox Control, Using Listbox Control, Using Combo box Control, Using Image Control, Using Scroll Control, Using Picture Control, Using Timer Control, Using Drivelistbox Control, Using Dirlistbox, Using File listbox Control, Using The Shape Control. **Basic Programming Fundamentals –** Scope of Variables, Arrays, Operators, Decision Structure, Loop Structure.

Unit – II

Working With Procedure, Functions and Modules – Procedure, Functions, Modules **Accessing Files –** Sequential Method, Random Method, Binary Method. **Menus –** Creating Menus, Creating Popup. **Working With Common Dialog Control –** Showopen, Showsave, Showprint, Showfont, Showcolor, Showhelp. **Control Arrays**– What Is Control Arrays?, Creating Control Arrays Using The First Method, Control

Arrays Using The Second Method, Control Arrays Using The Third Method, **Use Of Load And Unload Statement. Working With Custom Controls –** Imagelist Control, Image combo Control, Treeview Control, Listview Control, Sorting List items, Toolbar Control, Statusbar Control.

Unit – III

Creating Mdi Applications – Features Of Child Form, Arrange in Windows, Window List **Creating an Application** – Making An Exe File, Taking Printouts. **Database Handling** – Creating the Database, Accessing the Database By Using The Data Control, Using Ado Data Control. **Working With Advance Data Controls** – Datalist Control, Datacombo Control, Datagrid Controls, Setting the Properties of the Datagrid Control, Msflexgrid Control, Setting the Properties of Msflexgrid Control, Sorting A Column, Merging Cells, Description Of Merge Options, Using The Data Form Wizard, Working With Ms Chart Layout. **Working with SQL Statement** – Displaying All Fields, Displaying Selected Fields, Modifying the Data, Creating Search Program, Creating Numeric Search Programs, Creating Complex Search Program.

Unit – IV

Debugging Techniques – Syntax Errors, Logical Errors, Run-Time Error, Debug Toolbar, Assert Method, Debugging Mode, Step Into, Step Out, Run To Cursor, Set Next, Show Next, Locals Window, Immediate Window, Watch Window, Edit Watch, Deleting Watch Expression, Quick Watch, Call Stack. **Handling Errors**– How Run-Time Error Occurs?, Trapping Error, Handling Errors, Resuming Program Execution, Resume, Resume Next, Using Resume Next, Err Object, Properties, Methods. **Working With Data Environment and Data Report**– SQL Query Builder, Data Report, Use of Controls, Using the Function Control, Using the Page Footer. **Working With Com Components –** What Is COM?, Introduction, ActiveX Controls, Using The ActiveX Control, Creating The ActiveX Control, Using The ActiveX Control In The Standard EXE, ActiveX Documents, Benefits, Creating An ActiveX Documents, Lifetime Events Of An ActiveX Documents, Describing About Hyperlink Object, Property bag Object, Write Property, Read Property, Property Change Method, Inserting Menus, ActiveX Document Migration Wizard, ActiveX Code Components, Setting Project Properties.

Text Book

1. Soma Dasgupta, Visual Basic – to Advance, BPB Publications.

Reference Books

1. Mohammad Azam, Programming with Visual basic, Vikas Publishing House Pvt. Ltd.
2. Mike Mcgrath, Visual basics in Easy Steps, McGraw-Hill.
3. Michael Vine, Microsoft Visual Basic Programming, PHI.
4. Evangelos Petroutsos, Mastering Visual basic, Wiley India Pvt. Ltd.

Practical List of Visual Basic Programming

B1. Draw a Flowchart. Write an Algorithm and Program to calculate the bonus for the Employee using user defined data types. If grade is A then bonus will be 1000, if B bonus 7000, if C bonus 5000, otherwise no bonus will be given. If the users have to reuse the program then all the values should be cleared and the cursor should be set to the first control. (Note - Use option button & frames)

B2. Draw a Flowchart. Write an Algorithm and Program to give options of Font size, Font color and Font face in the check boxes. Convert the text in the text box by applying the selected fonts.

B3. Draw a Flowchart. Write an Algorithm and Program to increase & decrease the width of command button and to change the position of command button (top & left) on the form using scrollbar.

B4. Draw a Flowchart. Write an Algorithm and Program to generate a thermometer using vertical scrollbar.

B5. Draw a Flowchart. Write an Algorithm and Program to accept an employee_no, emp_name from the user. Display several cities in the list box in which your company have the branches. Allow the user to do the following.
a. User should add the city if new branch opens.
b. Display the selected city.
c. Remove the city if the branch closed.
d. Create another list box in which user can add the metropolitan cities.
Note: Multiple cities can be added from the available cities.

B6. Draw a Flowchart. Write an Algorithm and Program to find the reverse of a 4 digit number and print the sum of all the digits.

B7. Draw a Flowchart. Write an Algorithm and Program to enter a base number and an exponent number from the user. Calculate exponential value of an entered base number.
(For Example, if base = 2and the exponent = 5 then the value will be 32)

B8. Draw the Flowchart. Write an Algorithm and Program to ask a Password while opening a project. Validate the user's password for 3 times, else do not allow the user to open the project.

B9. Draw a Flowchart. Write an Algorithm and Program to generate a stopwatch of 10 minutes using timer control.

B10. Draw a Flowchart. Write an Algorithm and Program to calculate the age of the user in year, month and days as on the current date.

B11. Draw a Flowchart. Write an Algorithm and Program to match the given pairs.

1.	Sachin Tendulkar	a.	Boxing
2.	VishwanathAnand	b.	Tennis
3.	Leander Pace	c.	Chess
4.	MikeTyson	d.	Cricket

B12. Draw a Flowchart. Write an Algorithm and Program to conduct a competitive examination. The examination contains 5 questions and each question is having 4 option. Assign 10 marks for every appropriate answer & 0 for wrong. Display the total marks at the end.

B13. Draw a Flowchart. Write an Algorithm and Program to add and subtract two different matrices.

B14. Draw a Flowchart. Write an Algorithm and Program to prepare a calculator. The calculator includes following operations - addition, subtraction, multiplication, division.

B15. Draw a Flowchart. Write an Algorithm and Program to calculate the area of a triangle and the area of circle.

Area of Triangle = 1/2 x Base x Height
Area of Circle = Pi x Radius x Radius

B16. Draw a Flowchart. Write an Algorithm and Program to enter the temperature in degree & convert it into Fahrenheit and vice versa.

Celsius = (F - 32) x (5 / 9)
Fahrenheit = (C + 32) x (9 / 5)

B17. Draw a Flowchart. Write an Algorithm and Program to calculate the average of five numbers using focus event.

B18. Draw a Flowchart. Write an Algorithm and Program to input text from the user & change it to Upper case and Lower case using option buttons.

B19. Draw a Flowchart. Write an Algorithm and Program to generate an Electricity Bill. Input customer number, customer name, current reading, last reading and area from the user. Are should be any one from the following -

I. Household II. Industrial III. Non Household
IV. Urban V. Rural VI. Agriculture
VII. Poultry Farm

Rates for Household : 1 to 30 - Rs.1 31 to 100 - Rs. 2.55 101 to 300 - Rs.2.95 301 and above - Rs. 4.55	Rates for Industrial : 1 to 1000 - Rs.2.40 1001 to 15000 - Rs. 3 15001 and above - Rs. 3.40
Rates for Non Household : 1 to 100 - Rs.2.50 201 and above - Rs. 5	Rates for Urban : For all - Rs. 2.25
Rates for Rural : For all - Rs. 1.40	Rates for Agriculture : For all - Rs. 1.90

B20. Draw a Flowchart. Write an Algorithm and Program to input ASCII values from the user & classify them into Small letters, Capital letters, Numeric value & special characters.

B21. Draw a Flowchart; write an Algorithm and Program to generate a Telephone Bill. Input customer number, customer name, telephone number, current reading, last reading, the month of billing and area as Urban OR Rural from the user. Calculate the bill as follows -

Call rates for Urban area :-
Free Calls - 150
151 to 400 - 0.80 Rs.
401 to 1000 - Rs. 1
1001 and above - Rs. 1.20

Call rates for Rural area:-
Free Calls - 250
251 to 450 - 0.60 Rs.
451 to 500 - Rs. 0.80
501 to 1000 - Rs. 1
1001 and above - Rs. 1.20

B22. Draw a Flowchart. write an Algorithm and Program to sort a Numeric Array using Linear Sort method.

B23. Draw a Flowchart. Write an Algorithm and Program to sort a String Array using Bubble Sort.

Paper - IV: Database Management System (3T4)

UNIT – I

Introduction: Concept of the System, Types of Decisions, Information System, Classification of information System, Conventional File Processing System, Database System, Components of Database Management System, Economic Justification of Database Approach. **Database Concepts:** Introduction, Data, Information, Metadata, Terminologies of Files, Association between Fields, Association between Files (Record Types), File Organization. **Data Structure:** Introduction, Location Methods, Types of Pointer, Inter record Data Structure.

UNIT – II

Data Models: Introduction, Classification of Data Model, Entity Relationship Model. **Database Design:** Introduction, Steps of Database Design, Normalization, Case Problem, Data Volume and Usage Analysis, Integrated Case Study-Database Design for Academic institution. **Implementation Design:** Introduction, Implementation Design, Guidelines for mapping Conceptual data model into a desired logical Data Model, Problem Design Guidelines.

UNIT – III

Structured Query Language - I: Table fundamentals, viewing data in the tables, Eliminating duplicate rows when using a select statements, sorting data in a table, creating a table from a table, inserting data into a table from another table, delete operations, updating the contents of a table, modifying the structure of tables, renaming tables, truncating tables, destroying tables, creating synonyms.

UNIT-IV

Structured Query Language - II: Data Constraints, Types of data constraints, defining different constraints on a table, computations done on table data, ORACLE functions, Date conversion functions, Data functions, Miscellaneous functions, Grouping data from tables in SQL, Subqueries, Joins, concatenating data from table columns, using the UNIONS, INTERSECT and MINUS clause.

Text Books

1. R. Panneerselvan, Database Management Systems, PHI Publication.
2. Ivan Bayross, SQL, PL/SQL, BPB Publications.

Reference Books

1. Silberschatz, Korth, Sudarshan, Database System concepts, McGraw-Hill.
2. Gupta, Database Management Systems, McGraw-Hill.
3. Alexis Leon, Mathews Leon, Database Management System, Leaon Vikas.
4. Mike Mcgrath, SQL in Easy Steps, McGraw-Hill.
5. Dr. P. S. Deshpande, SQL & PL/SQL for Oracle 11g, Dreamtech Press.

Practical List of Database Management System

1. Write a SQL Query to create a table**"employee"**:

Field Name	Datatype	Size
Emp_no	varchar2	5
Emp_name	varchar2	25
Address	varchar2	50
Phone_number	number	10
Designation	varchar2	15
Salary	number	15

1. Display the structure of table.
2. Add qualification field at the end of employee table.
3. Modify the size of the name field 25 to 30.

4. Display the employee name whose salary is greater than 20,000.
5. Display the employee details whose name starts with “A”.

2. Write a SQL Query to create a table **“student”**:

Field Name	Datatype	Size	Constraint
Roll	number	5	
Name	varchar2	30	
Address	varchar2	30	
City	varchar2	30	
DOB	date		
Phone	number	11	
Class	varchar2	10	
Marks	number	(10, 2)	

1. Display the structure of database and insert 10 records.
2. Display student information for all student in city Pune and Nagpur.
3. Display student information where marks greater than 80 and less than 90.
4. Display student name where first two character of student name ‘An’.
5. Change student name to Ashish where student roll number A001.

3. Write a SQL Query to create a table **“sales_details”**:

Field Name	Datatype	Size
S_id	varchar2	8
P_id	varchar2	8
P_name	varchar2	15
Price	number	10
Qty	number	8

1. Drop foreign key constraint on column p_no in table sales_details.
2. Add foreign key constraint on column sale_no in table sales_details.
3. Modify the column qty to include not null constraint.
4. Insert 10 records in sale_details.
5. Display p_id and total of quantity qty for each product.
6. Display p_id and total of price for all the products.

4. Write a SQL Query to create a table **“customer”**:

FieldName	Datatype	Size
Cust_no	varchar2	10
Cust_name	usertype	
Address	varchar2	10
Salary	number	10

1. Modify address field with not null.
2. Add city field as it must keep city name Mumbai, Delhi and Kolkata.
3. Add salary field where salary greater than 20,000.
4. Display the structure of table customer.
5. Insert 10 records into the table customer.
6. Display all the customer details who lives in Mumbai and Kolkata.
7. Display all the customer records whose salary>20,000 and salary<30,000.
8. Modify the address field where customer number is ‘C001’.

5. Write a SQL query to create **c_master** with fieldsc_no, name, address, city, state and pin_code:

Field Name	Datatype	Size
C_no	varchar2	10
Name	varchar2	10
Address	varchar2	10
State	varchar2	20
City	varchar2	20
Pin_code	number	10

1. Create sequence which will generate number from 1..999 in ascending order, with an interval of 1 and in cyclic order.
2. Insert 10 records.
3. Create index on c_master which column name c_no and state.
4. Create view on c_master .
5. Select columns c_no, city which belongs to Nagpur and Mumbai.

6. Write a SQL query to create a syntax seq_order which generating numbers from 1…9999 in ascending will number with an interval of 1 in cyclic order.

Field Name	**Datatype**	**Size**
P_no	varchar2	10
P_name	varchar2	20
Qty	varchar2	10
P_rate	varchar2	10

1. Display next value of sequence seq_order.
2. Display current value of sequence seq_order.
3. Insert values in sal_order table must be generated using sal_order sequence.
4. Display all records of sal_order table.
5. Change a cache memory of 50 seq_order sequence having interval 2.
6. Drop sequence.

7. Write a SQL Query to-

1. Create an index employee_index depends on employee table using field name.
2. Create a view depends on employee table.
3. Display the records from the view where city as Delhi and Mumbai.
4. Update the view where employee id is ‘E006’.

8. Write a SQL query to illustrate numeric function.

1. Sqrt 2. Ceil 3. Power 4. Floor 5. Round
6. Mod 7. Abs 8.Exp 9.Greatest 10. Least

9. Write a SQL query to create table space data user or data where size of file 100MB extend it by 10MB reach upto 250MB in size. Create user data1 with default tablespace and temporary tablespace. Create role acc_create with create session, create user, alter user and assign role to user. Assign profile to user where user should fail after 5 attempt and valid for 3 days. Destroy user data1 and tablespace from system.

10. Write a SQL query for join, inner join, outer join, self join and Cartesian join.

BCCA Part – II

Semester – IV

Paper - I: Mathematics (4T1)

UNIT – I

Introduction Scope, Data Collection and Classification: Meaning of Statistics, Variable and Attribute, Primary Data and Secondary Data, Population (or Universe)and Sample, Complete Enumeration (or Census) and Sample Survey, Statistical Enquiry, Useful Terms Classification, Tabulation, Mechanical Tabulation. **Permutation:** Introduction, Fundamental Rules of Counting, Result on Permutation Examples. **Combination:** Introduction, Result of Combination. **Set Theory :**Method of Set Representation and Notation, Types of Sets, Venn Diagram, Set Operations, Union(Set Addition), Intersection (Set Multiplication), Complement, Difference, Examples on Set Operations, Laws of Algebra of Sets, Duality, Verification of Laws (Using Venn Diagram), Proof of the Laws of Set Algebra, Number of Elements in a set

UNIT – II

Logarithm: Introduction, Definition of Logarithm, Laws of Logarithm, Common Logarithm and Natural Logarithm, Antilogarithm. **Compound Interest:** Interest Compounded Continuously, Amount at the Changing rates of Interest, Nominal and Effective rate of Interest, Growth and Depreciation. **Other Useful Mathematics Devices: Rounding** of Numbers, Absolute, Relative and Percentage Errors, Significant Figures, Some Short Processes of Calculation, Roots and Reciprocals Expressed as Power, A.P. Series and G.P. Series, Sum and Sum of the Squares of Numbers, Inequalities, Concept of Function, Polynomial, Sigma (∑) Notation, Simple Interpolation

UNIT –III

Charts and Diagrams: Objects of Diagrammatic Representation, Types of Charts and Diagrams. **Frequency Distribution :**Observation, Frequency, Simple Series(or Ungrouped Data)and Frequency Distribution, Useful Terms Associated with Grouped Frequency Distributions, Construction of frequency Distribution, Cumulative Frequency Distribution, Relative Frequency Distribution, Diagrammatic Representation of Frequency Distributions, Frequency Curve. **Measures of Central Tendency :**Average or Measure of Central Tendency, Arithmetic Mean(A.M.), Important Properties of A.M., Simplified Calculation for A.M., Mean of Composite Group, Geometric Mean(G.M.), Properties of G.M., Harmonic Mean(H.M.), Advantages and Disadvantages of A.M.,G.M.,H.M., Relations between A.M.,G.M.,H.M., Median, Calculation of Median, Advantage and Disadvantage of Median, Mode, Calculation of Mode, Advantages and Disadvantages of Mode, Relation between Mean, Median, Mode, Partition Values - Quartiles, Deciles, Percentiles, Calculation of Partition Values. **Measures of Dispersion :**Meaning and Necessity of 'Measures of Dispersion, Range, Quartile Deviation (Or Semi – Interquartile Range), Mean Deviation (Or Mean Absolute Deviation), Standard Deviation(S.D.), Important Properties of S.D., Calculation of Standard Deviation (σ), S.D. of Composite Group, Relation between S.D. and Other Measures, Relative Measure of Dispersion.

UNIT- IV

Moments, Skewness and Kurtosis : Moments, Relation between central and Non-Central moments, Beta coefficients and Gamma-coefficients, Standardized Variable, Moments of Frequency Distributions, Skewness, Kurtosis. **Curve Fitting :**Curve Fitting, Straight Line and Parabola, Free- hand Method of Curve Fitting, Method of Least squares, Fitting Straight line, Simplified Calculations, Fitting Parabola, Fitting Exponential and Geometric Curves. **Correlation and Regression :**Concepts of 'correlation 'and 'Regression', Bivariate Data, Bivariate , Frequency Distribution, Scatter Diagram, Correlation, Covariance, Correlation Coefficient(r),Properties of Correlation coefficient,

Calculation of r, Interpretation and use of r, Variance of the Sum (Difference)of Two Series, Regression, Properties of Linear Regression, Explained Variation and Unexplained Variation, Regression Curve in Bivariate Frequency Distribution , Rank Correlation. **Time Series** : Meaning and Necessity of 'Time Series Analysis', Components of Time Series, Adjustments to Time Series Data, Secular Trend, Measurement of Trend, Monthly Trend from Annual Data, Seasonal Variation, Measurement of Seasonal Variation, Cyclical Fluctuation, Business Forecasting, Exponential Smoothing. **Probability Theory :**Introduction, Random Experiment, Outcome, Event, Important Terminology, Techniques of Counting, Classical (or 'a Priori')Definition of Probability, Theorems of Probability, Draw without Replacement, Repeated Trials-Drawing with Replacement, Bayes' Theorem Other Approaches to Probability Theory, Set and Probability, Finite Probability Space and Assignment of Probabilities, Finite Equiprobable Sample Space and Classical Definition, Conditional Probability, Independent Events.

Text Book

1. N G Das,J K Das,Business Management and Statistics,McGraw-Hill.

Reference Books

1. Mrintunjay Kumar, Business Mathematics, Vikas Publishing House Pvt. Ltd.
2. Ajay Goel, AlkaGoel, Mathematics & Statistics, Taxmann.
3. Walter Rudin, Principals of mathematical Analysis, McGraw-Hill.
4. Dr. S. R. Arora, Dr. Kavita Gupta, Business Mathematics and Statistics, Taxmann.

Paper - II: Business Law (4T2)

UNIT- I

THE INDIAN CONTRACT ACT, 1872

Meaning Of Essentials Of Contract, Offer And Acceptance, Capacity Of Parties, Considerations, Free Consent, Legality Of Object And Consideration, And Agreements Opposed To Public Policy, Void Agreement And Contingent Contracts, Performance Of A Contract, Discharge Of A Contract, Remedies For Breach Of Contract, Quasi-Contracts, Indemnity And Guarantee, Bailment And Pledge, Contract Of Agency.

UNIT- II

THE SALE OF GOODS ACT, 1930:- The Sale Of Goods Act,1930, Contract Of Sale, 'Sale' And 'Agreement To Sell' Distinguished, Meaning & Types Of Goods, Sale/Agreement To Sell, Price. **Condition And Warranties**-Meaning, Condition & Warranty Distinguished, Express And Implied Conditions And Warranties, Doctrine Of Caveat Emptor. **Transfer Of Property-** Meaning, Rules Regarding To The Transfer Of Property, Transfer Of Property In Specific Or Ascertained Goods, Transfer Of Property In Unascertained Goods And Future Goods, Rules Relating To Transfer Of Property Of Goods Sent 'On Approval' Or 'On Sale Or Return', Delivery. **Rights Of Unpaid Seller** - Meaning, Right Of Lien, Right Of Stoppage Of Goods In Transit, Lien And Stoppage In Transit Distinguished, , Effect Of Sub-Sale Or Pledge By Buyer Upon The "Two Rights Of The Unpaid Seller", Right Of Resale, Rights Of Seller And Buyers, Right Of Unpaid Sellers Against Buyer Personality, Auction Sale.

THE INFORMATION TECHNOLOGY ACT, 2000 :- Meaning, objectives, scheme, scope, provision relating to electronic signature, provision relating to electronic governance, acknowledgement and dispatch of electronic records, secure electronic records and secure electronic signature, regulation of certifying authorities, electronic signature certificates, duties of subscribers, penalties, compensation and adjudication,

the cyber appellate tribunal, offences, constitution of advisory committee, power of controller to make regulations.

UNIT- III

THE INDIAN PARTNERSHIP ACT, 1932: Meaning & Essentials Of Partnership, Co-Ownership, Partnership Deed, Registration Of Firm, Types Of Partnership On The Basis Of Duration, Types Of Partners, Position Of Minor As A Partner, Mutual Rights And Duties, Relation Of Partners With Third Parties, Implied Authority Of Partners, Reconstitution Of Firms, Dissolution Of Firm, Settlement Of Accounts, Public Notice.

THE LIMITED LIABILITY PARTNERSHIP ACT, 2008 (LLP):-Meaning & Features Of LLP, Comparison Between Existing Partnership & LLP, Comparison Between Company & LLP, Minimum No. Of Partners, Designated Partners, Incorporation Document, Incorporation By Registration, Effects Of Registration, Registered Office Of LLP & Change Therein, Name Of LLP and change therein, partners of LLP and change therein, cessation of partnership interest, partner as agent of LLP And Not Of Other Partners, Extent Of Liability Of LLP, Extent Of Liability Of Partner, Unlimited Liability In Case Of Fraud, Whistle Blowing, Contribution. **Account, Audit And Taxation** :- Maintenance Of Books Of Account, Other Records And Audit, Etc, Annual Return, Partners Transferable Interest, **Taxation of LLP**, Conversion From Firm Into LLP, Conversion From Private Co. Into LLP, Conversion From Unlisted Public Co. Into LLP , Winding Up Of LLP, compulsory winding up, commencement of winding up by tribunal, voluntary winding up of a LLP.

UNIT- IV

The Negotiable Instruments Act, 1881 (Part-I) :-Negotiable instrument, promissory note, bill of exchange, acceptance, distinction between bill of exchange & promissory note, cheque, distinction between a cheque and bill of exchange, crossing, bouncing or dishonor cheque, holder & holder in due course, distinction between holder & holder in due course, negotiation and assignment, distinction between negotiation and assignment, endorsement, material alteration.

The Negotiable Instruments Act, 1881 (Part-II):- liabilities of various parties, proportionate in case of partial failure of consideration, presentment for acceptance, presentment for payment, acceptance for honor, payment for honor, dishonor of bill, notice of dishonor, rights of holder in case of instrument acquired after dishonor or after maturity, noting and protesting, drawee in case of need, discharge of an instrument, discharge of a parity, distinction between discharge of an instrument & discharge of a parity, hundi, types of hundies.

Text Book

1. P C Tulsian, Bharat Tulsian, Business law, McGraw-Hill.

Reference Books

1. M. C. Kuchhal, VivekKuchhal, Business laws, Vikas Publishing House Pvt. Ltd.
2. SushmaArora, Business Laws, Taxmann.
3. AkhileshwarPathak, Legal Aspects of Business, McGraw-Hill.
4. C. L. Bansal, Business Laws, Taxmann.
5. Chandra Kumar Roy, Pravhat Kumar Roy, Business Laws, Vikas Publishing House Pvt. Ltd.
6. Satish B Mathur, Business Law, McGraw-Hill.
7. Dr. K. V. Achalapati, RamannaMurthi, Business Laws, Taxmann

Paper - III: Core Java (4T3)

UNIT- I

Getting Started - The HelloWeb Applet, What is Java?, Why Learn Java, Installing and Setting Up the Java SDK, Writing Your First Application, Learning Java Syntax Basics, Writing Your First Applet! **Variables, Data Types, and Simple I/O –** The Project: the Name Game Application, Variables and Data Types, Working with Numbers, Getting Simple User Input, Strings and String Operations, Getting Back to the Name Game. **The Fortune Teller:** Random Numbers, Conditionals, and Arrays – The Project: the Fortune Teller, Generating Random Numbers, Controlling the Random Numbers Range, The If Statement, The if-else Statement, Using the Switch Statement, Understanding the Arrays, Back to the Fortune Teller.

UNIT- II

Using Loops and Exception Handling – The Project: The Number Guesser, Counting Forward with Loops, Skipping Values, Counting Backwords, Nested For Loops, Looping on Arrays, Using the while loop, Exception Handling, Back to the Numbers Guesser Program. **Blackjack: Object-Oriented Programming** – The Project: The BlackJack Application, Understanding Object-Oriented Concept, Examining Member Variables, Defining and Using Methods, Understanding Access Modifiers, The Card and CardDeck Class, Extending a Class, Back to the BackJack Game. **Creating a GUI Using the Abstract Windowing Toolkit** – The Project: MadLib Program, The java.awt Package, Using Frames, Using Components, Back to the MadLib Game Application.

UNIT- III

Advance GUI: Layout Managers and Events Handling – The Project: the AdvancedMadLib Application, Using Layout Managers, Handling AWT Events, Getting Back to the AdvancedMadLib Application. **Writing Applets** – The Project: QuizShow Applet, Understanding Applets, Including an Applet in a Web Page, Learning Applet Methods: init(), start(), stop(), and destroy(), Printing Status Messages, Writing Java Programs that Can Run as Applets or Applications, Using Sounds and Images, Back to the QuizShowApplet Applet.

UNIT- IV

The Graphics Class: Drawing Shapes, Images, and Text – The Project: Memory Game, The Graphics Class, Fonts and FontMatrics, Drawing Images, Using the Color Class, Getting Back to the Memory Game. **Custom Events Handling and File I/O –** The Project: The Block Game, Building the Block Class, Creating the BlockGrid Class, Building the PlayArea Event Model, Creating the PlayArea Class, Creating the ScoreInfoPanel Class, Creating the Block Game Application. **Creating Your Own Components and Packages** – The Project: MinePatrol, Creating Lightweight Components, Preparing to create the jpr.lightweight Package, Building the MineCell Classes, Creating the Mine Field Classes, Creating the MinePatrol Application.

Text Book

1. Java Programming for the absolute beginner, PHI, Joseph P. Russel (Text book).

Reference Books

1. E. Balagurusamy, Programming with Java – A Premier, McGraw-Hill.
2. Mike Mcgrath, Java in Easy Steps, McGraw-Hill.
3. RashmiKanta Das, Core Java for Beginners, Vikas Publishing.
4. Schildt,The Complete Reference Java 2, McGraw-Hill.
5. Dr. R. NageswaraRao, Core Java – An Integrated Approach, Dreamtech Press.
6. Joel Murach, Murach's Java Programming, Shroff Pubishers.

Practical List of Core Java

A1. Write an algorithm, draw a flowchart and develop a Java program to accept a number from the user and print its factorial.

A2. Write an algorithm, draw a flowchart and develop a Java program to accept three numbers from the user and print the largest number.

A3. Write an algorithm, draw a flowchart and develop a Java program to print first 10 prime numbers.

A4. Write an algorithm, draw a flowchart and develop a Java program toto print the following designs

*	1	1	1
* *	1 2	2 2	2 2
* * *	1 2 3	3 3 3	3 3 3
* * * *	1 2 3 4	2 2	4 4 4 4

A5. Write an algorithm, draw a flowchart and develop a Java program to accept any 10 numbers from the user to store it in an Array and print the largest of all.

A6. Write an algorithm, draw a flowchart and develop a Java program to multiply two matrices by accepting matrix elements from the user.

A7. Write an algorithm, draw a flowchart and develop a Java program to accept 10 names from the user to store them in array of string and print them in Alphabetical order.

A8. Write an algorithm, draw a flowchart and develop a Java program to demonstrate multilevel inheritance.

A9. Write an algorithm, draw a flowchart and develop a Java program to demonstrate object references.

A10. Write an algorithm, draw a flowchart and develop a Java program to accept any digit number from the user and print its reverse.

A11. Write an algorithm, draw a flowchart and develop a Java program to find area of rectangle, square, cylinder using the concept of method overloading.

A12. Write an algorithm, draw a flowchart and develop a Java program to accept a number from the user and search that number in array of numbers.

A13. Write an algorithm, draw a flowchart and develop a Java program to demonstrate method overriding and method overloading.

A14. Write an algorithm, draw a flowchart and develop a Java program to define a package P1 with class A having method show1() and show2(). Write another class B in package P2 to access elements of class A in it.

A15. Write an algorithm, draw a flowchart and develop a Java program to declare abstract class student having methods getName(), showName() and define these methods in another class B and access them.

A16. Write an algorithm, draw a flowchart and develop a Java program to demonstrate

i. public variables and methods

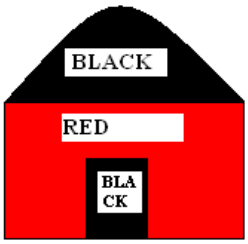
ii. private variables and methods
iii. Final class and Methods
iv. Default Variables
v. Protected Variables and Methods

A17. Write an algorithm, draw a flowchart and develop a Java program to display the following using Applet

A
A P
A P P
A P P L
A P P L E
A P P L E T

A18. Write an algorithm, draw a flowchart and develop a Java program to design user login screen using Applet and provide the facility of valid user login.

A19. Write an algorithm, draw a flowchart and develop a Java program to draw following using graphics class methods in a frame.



A20. Write an algorithm, draw a flowchart and develop a Java program to demonstrate multithreading using moving balls example in
a frame.

A21. Write an algorithm, draw a flowchart and develop a Java program to demonstrate multithreading using moving strings example in a frame.

A22. Write an algorithm, draw a flowchart and develop a Java program to change color of applet window with following condition

a. Green Color should be for exact 3 sec
b. Red color should be for exact 1 sec

A23. Write an algorithm, draw a flowchart and develop a Java program to accept two numbers from user and perform their division. Define an array with size 10, accept index number from the user and store the value at that index of the array. The exception if occurred for division should be handled in inner try block and exception for array storage should be handled at outer try block.

A24. Write an algorithm, draw a flowchart and develop a Java program to define an user defined exception sal_out_of_range and write a class named employee with fields id, name, sal, phno and accept details of user according to id and store in the variables, if sal exceeds 10000, sal_out_of_range should be thrown and handled properly.

A25. Write an algorithm, draw a flowchart and develop a Java program to design a registration form for new user creation. It should include fields such as First_Name, Last_Name, User_Name, Password, Confirm_Password and Email. After user enters complete data and clicks on Ok button, a dialog box should display message of successful user creation else user creation failed message should be displayed. A validation for password and confirm password should be performed in this practical.

A26. Write an algorithm, draw a flowchart and develop a Java program to handle all mouse events using an example of cursor movement on a frame.

A27. Write an algorithm, draw a flowchart and develop a Java program to demonstrate card layout manager.

A28. Write an algorithm, draw a flowchart and develop a Java program to add a text field, a choice control and a label on a frame. User should enter some text in the text field then after hitting the enter key, entered texts hould be added to choice control and label should display the number of items present in the choice control.

A29. Write an algorithm, draw a flowchart and develop a Java program to design a menu called Text with MenuItems like Set Fore Color, Set Back Color, Set Font to the text in the TextField on the Frame.

A30. Create a class named EmpAccDetails, add a method getEmpAccDetails to accept Account Details of Employee such as Income tax paid, grosssal, basic sal, HRA allowance. Add this class to a package EMP. Create another class called EmpDetails with method getEmpPerDetails, also access getEmpAccDetails in the same class by importing the EMP Package.

A31. Write an algorithm, draw a flowchart and develop a Java program to create three child Threads, all threads should print numbers from 1 to 10 but condition is that Thread 1 whenever starts printing the number should print all numbers completely without any break and then Thread 2 and 3 should print values as per the priority set by the system.

A32. Write an algorithm, draw a flowchart and develop a Java program to accept 10 numbers from the user, store it in an Array and print them in Ascending order, also print largest and smallest number of the array.

A33. Write an algorithm, draw a flowchart and develop a Java program to demonstrate Parameterized Applet by loading images to the Applet Window using specific name from the Parameter.

Paper - IV: PHP & MySQL (4T4)

UNIT- I

Getting Started With PHP- Basic HTML Syntax, Basic PHP Syntax, Using FTP, Testing Your Scripts, Sending Text To The Browser, Using The PHP Manual, Sending HTML To The Browser, Adding Comment To The Script, Basic Debugging Steps. **Variables-** What Are Variables?, Variable Syntax, Types Of Variables, Variable Values, Understanding Quotation Marks. **HTML Forms And PHP-** Creating A Simple Forms, Choosing A Form Data In PHP, Displaying Errors, Error Reporting, Manually Sending Data To A Page. **Using Numbers-** Creating The Forms, Performing Arithmetic, Formatting Numbers, Understanding Precedence, Incrementing And Decrementing A Number, Creating Random Numbers.

UNIT- II

Using Strings- Creating The HTML Forms, Concatenating Strings, Handling Newlines, HTML And PHP, Encoding And Decoding Strings, Finding Substrings, Replacing Parts Of A String. **Control Structures-** Creating The HTML Forms, The if Conditional, Validation Functions, Using Else, More Operators, Using elseif, The Switch Conditional, The For Loop. **Using Arrays-** What Is An Array, Creating An Array, Adding Items To An Array, Accessing An Array From A Form.

UNIT- III

Creating Web Applications- Creating Templates, Using External Files, Using Constants, Working With The Date And Time, Handling HTML Forms With PHP, Making Forms Sticky, Sending Email, Output Buffering, Manipulating HTTP Headers. **Cookies And Sessions-** What Are Cookies?, Creating Cookies, Reading From Cookies, Adding Parameters To Cookies, Deleting A Cookie, What Are Sessions?, Creating Session, Accessing Session Variables, Deleting Session. **Creating Functions-** Creating And Using Simple Functions, Creating And Calling Functions That Take Arguments, Setting Default Arguments Values, Creating And Using Functions That Return A Value, Understanding Variable Scope.

UNIT- IV

Files And Directories- File Permissions, Writing To Files, Locking To Files, Reading From Files, Handling File Uploads, Navigating Directories, Creating Directories, Reading Files Incrementally. **Intro To Database-** Introduction To SQL, Connecting To MYSQL, MYSQL Error Handling, Creating And Selecting A Database, Creating A Database, Inserting Data Into A Database, Securing Query Data, Retrieving Data From A Database, Deleting Data In A Database, Updating Data In A Database. **Putting It All Together-** Getting Started, Connecting To The Database, Writing The User-Defined Function, Creating The Template, Logging In, Logging Out, Adding Quotes, Listing Quotes, Editing Quotes, Deleting Quotes, Creating The Home Page.

Text Book

1. Larry Ullman, PHP for Web, Pearson.

Reference Books

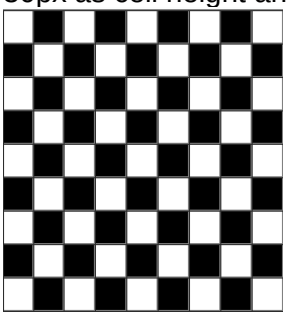
1. Holznr, The Complete Reference – PHP, McGraw-Hill.
2. Mike Mcgrath, PHP & MySQL in Easy Steps, McGraw-Hill.
3. Steve Suehring, Tim Converse & Joyce Park, PHP and MySQL, Wiely.
4. Joel Murach& Ray Harris, murach's PHP and MySQL, Shroff Publishers.
5. Jason Gilmore, Beginning PHP and MySQL.

Practical List of PHP & My-SQL

1. Write an algorithm, draw a flowchart and Write a PHP script to print the value of variable in PHP and use print function for printing.
2. Write an algorithm, draw a flowchart and Write a PHP script to print the values of variable using echo.
3. Write an algorithm, draw a flowchart and Write a PHP script to print the following pattern using nested loop.
   *
   * *
   * * *
   * * * *
   * * * * *
4. Write an algorithm, draw a flowchart and Write a PHP script to that creates the following table using for loops. Add cell padding="3px" and cell spacing="0px" to the table tag.

1 * 1 = 1	1 * 2 = 2	1 * 3 = 3	1 * 4 = 4	1 * 5 = 5
2 * 1 = 2	2 * 2 = 4	2 * 3 = 6	2 * 4 = 8	2 * 5 = 10
3 * 1 = 3	3 * 2 = 6	3 * 3 = 9	3 * 4 = 12	3 * 5 = 15
4 * 1 = 4	4 * 2 = 8	4 * 3 = 12	4 * 4 = 16	4 * 5 = 20
5 * 1 = 5	5 * 2 = 10	5 * 3 = 15	5 * 4 = 20	5 * 5 = 25
6 * 1 = 6	6 * 2 = 12	6 * 3 = 18	6 * 4 = 24	6 * 5 = 30

5. Write an algorithm, draw a flowchart and Write a PHP script using nested for loop that creates a chess board as shown below. Use table width="270px" and take 30px as cell height and width.



6. Write an algorithm, draw a flowchart and Write a PHP script toinsert a new item in an array on any position.
7. Write an algorithm, draw a flowchart and Write a PHP script tosort an array of positive integers using the Sort function asort() and ksort().
8. Write an algorithm, draw a flowchart and Write a PHP script tofor Creating, Retrieving and Deleting data from the cookie using POST Method.
9. Write an algorithm, draw a flowchart and Write a PHPscript to convert a date from yyyy-mm-dd to dd-mm-yyyy.
   Sample Date:2012-09-12
   Expected Result: 12-09-2012
10. Write an algorithm, draw a flowchart and Write a PHP script toremove the whitespaces from a string.
11. Write an algorithm, draw a flowchart and Write a PHP function that checks if a string is all lower case.

12. Write an algorithm, draw a flowchart and Write a PHP script tocheck whether a entered string is palindrome or not
13. Write an algorithm, draw a flowchart and Write a PHP script toprint Fibonacci series using recursion.
14. Write an algorithm, draw a flowchart and Write a PHP script using switch case and dropdown list display a - Hello|| message depending on the language selected in drop down list.
15. Write an algorithm, draw a flowchart and Write a PHP script toreplace the first 'the' of the following string with 'That' –
16. Sample: 'the quick brown fox jumps over the lazy dog.'
17. Expected Result: That quick brown fox jumps over the lazy dog.
18. Write an algorithm, draw a flowchart and Write a PHP script to check that emailid is valid or not.
19. Write an algorithm, draw a flowchart and Write a PHP script to create a simple 'birthday countdown' script, the script will count the number of days between current day and birth day.
20. Write a SQL statement to create simple table countries including columns country_id, country_name and region_id.
21. Write a SQL statement to create table countries including columns country_id, country_name and region_id and make sure that the column country_id will be unique and store an auto incremented value.
22. Write a SQL statement to create a table named countries including columns country_id, country_name and region_id and make sure that no countries except Italy, India and China will be entered in the table.
23. Write a SQL statement to insert a record with your own value into the table countries against each columns region_id.
24. Write a SQL statement to rename the table countries to country_new.

BCCA Part – III

Semester – V

Paper - I: Computerized Accounting using Tally (5T1)

UNIT-I

Introduction to Tally.ERP 9- Features of Tally, Enhancement in Tally.ERP 9, Installation Procedure of Tally.ERP 9, Opening Tally.ERP 9, Components of the Tally.ERP 9 Window, Creating a Company.**Stock and Godown in Tally-** Stock Groups, Stock Categories, Stock Items, Units of Measure, Godowns.

UNIT-II

Groups, Ledgers, Vouchers and Orders- Introducing Groups, Introducing Ledgers, Introducing Vouchers, Introducing Purchase Orders, Introducing a Sales Order, Introducing Invoices. **Reports in Tally.ERP 9-** Working with Balance Sheet, Working with Profit & Loss A/c Report, Working with Stock Summary Report, Understanding Ratio Analysis, Working with Trial Balance Report, Working with Day Book Report.

UNIT-III

Exploring Payroll in Tally.ERP 9- Working with Payroll Vouchers, Defining Payroll Reports, Working with Statements of Payroll Report, Describing Salary Disbursement.**Taxation-** Indian Tax Structure, Tax Deducted at Source in Tally.ERP 9, Create a Tax Ledger, TDS Vouchers, Printing a TDS Challan, Tax Collected at Source in Tally.ERP 9, TCS Reports in Tally.ERP 9, Calculating VAT in Tally.ERP 9, VAT Classification, VAT Vouchers, VAT Reports in Tally.ERP 9, Service Tax.

UNIT-IV

Important Features of Tally.ERP 9- Taking Backup in Tally.ERP 9, Restoring Data in Tally. ERP 9, Using E-mail in Tally.ERP 9, Migrating Data from Tally 7.2 to Tally.ERP 9, **Tally.NET in Tally.ERP 9-** Configuring the Tally.NET Feature, Assigning Security Levels, Creating Security Controls, Connecting a Company to the Tally.NET Server, Logging as a Remote User.

Text Book:

1. DT Editorial Services, Tally.ERP 9 in Simple Steps, Dreamtech Press.

Reference Books:

1. Computerized Accounting using Tally ERP 9, Sahaj Enterprise, Tally Education Private Ltd (TEPL).
2. Vikas Gupta, Business Accounting with MS Excel and Tally.ERP 9 Course Kit, Dreamtech Press.
3. Vishnu Priya Singh, Tally 9.
4. K. K. Nadhani, Accounting with Tally, BPB Publication.
5. K. K. Nadhani and A.K. Nadhani, Tally Tutorial, BPB Publication.

Practical List of Computerised Accounting using Tally

1. **Create a company in Tally.Erp 9 with the following details:**

Name of company	**Universal Company Ltd.**
Address	1804, world Tower, AB road, Baner, Pune _411080
Country	India
State	Maharashtra
Contact number	7894561230
Mobile number	7741258963
Email-Id	info@universalmfg.co.in
Books beginning from	01-04-2015
Financial year Beginning from	01-04-2015

2. **Create a company in Tally.Erp 9 with the following details:**

Name of company	**Sambhav trading Company**
Address	a/512, palm court, girgaam chaupaty, charni road, Mumbai-400007
Country	India
State	Maharashtra
Contact number	022-22886512
Mobile number	9898745555
Email-Id	enquiry@sambhav.com
Books beginning from	01-04-2014
Financial year Beginning from	01-04-2014

3. **Create the following ledgers in the books of universal company ltd.**

Name of ledger	**Under (group)**	**Bill wise details set to**	**Opening balance**
Share capital	Capital account	No	15,00,000
Purchase account	Purchase account	No	Nil
Sales accounts	Sales accounts	No	Nil
Ultra tech cement ltd	Sundry creditors	yes	270000
Building	Fixed assets	No	1200000
Computers	Fixed assets	No	50000
Office furniture	Fixed assets	No	175000
Cash in hand	Cash accounts	No	20000
Civic centre association	Sundry debtors	yes	290000
Bank of india	Bank accounts	No	80000
Petty cash	Cash in hand	No	50000

4. Create the following ledgers in the books of universal company ltd.

Name of ledger	Under (group)	Bill wise details set to	Opening balance
Proprietors capital	Capital account	No	10,00,000
Purchase account	Purchase account	No	Nil
Sales accounts	Sales accounts	No	Nil
Hindustan unilever ltd	Sundry creditors	yes	355000
Land and Building	Fixed assets	No	850000
Computers and peripheral	Fixed assets	No	30000
Office furniture	Fixed assets	No	75000
Cash in hand	Cash accounts	No	18000
Tahuraa Traders Pvt. ltd	Sundry debtors	yes	310000
Bank of Baroda	Bank accounts	No	102000

5. Record the following vouchers in the books of Universal company ltd.

a. 04-04-2014 withdrawn Rs. 20000 from bank of india and transferred to petty cash book.
b. 08-04-2014 paid 2000 from petty cash for buying stationery for office.
c. 15-04-2014 made purchase from ultra tech cement ltd. Worth Rs. 45000
d. 19-04-2014 issued cheque to ultra tech cement ltd for Rs. 45000
e. 21-04-2014 sold goods worth of Rs. 75000 to civic centre association
f. 25-04-2014 received a cheque from civic center association for Rs. 75000. The same was deposited in the bank on the same date.
g. 30-04-2014 paid staff salary of Rs. 9800 from petty cash

6. Record the following vouchers in the books of Sambhav Trading Co. Pvt. ltd.

a. 02-04-2014 withdrawn RS. 10000 From bank of broadband transferred to petty cash book.
b. 05-04-2014 paid 1000 from petty cash for office expenses.
c. 11-04-2014 made purchase from Hindustan unilever ltd. Worth Rs. 33000
d. 13-04-2014 Issued cheque to Hindustan Unilever Ltd. For Rs. 20000
e. 14-04-2014 Made purchase from Hindustan Unilever Ltd. Worth Rs. 26000
f. 18-04-2014 Issued cheque of Rs. 38000 to Hindustan Unilever Ltd.
g. 21-04-2014 sold goods worth of Rs. 90000 to Tahuraa Traders Pvt Ltd.
h. 22-04-2014 received a cheque from Tahuraa Traders Pvt Ltd. For Rs. 75000 . The same was deposited in the bank on the same date.
i. 23-04-2014 sold goods worth of rs. 85000 to Tahuraa Traders Pvt Ltd.
j. 25-04-2014 received cheque from Tahuraa Traders Pvt Ltd. From Rs.75000. The same was deposited in the bank on the same date.
k. 30-04-2014 Paid staff salary of Rs. 7200 from petty cash.

7. Journalize the following transaction in the books of Sanjay Poddar for the month of March 2012.

March 2012	Particular	Amt
1	Sanjay commenced business with cash	40000
2	Bought goods for cash	25000
5	Deposit in Bank	50000
7	Bought goods in credit from Anand	15000
10	Sold goods to Prakash	7000
12	Purchase Machinery Payment made by Cheque	10000

8. Journalize the following transaction in the books of Prashant for April 2011 prepare Balance sheet.

April 2011	Particular	Amt
1	Start business with capital borrowed from his friend Satish	1,10,000
3	Bought Machinery	40,000
5	Sold goods for cash to Satish	25000
7	Purchase goods from Somesh	30000
9	Bought goods for cash from Nitin	26000
11	Cash sales	10000
15	sold goods to Manish	8000

9. Journalize the following transaction in the books of Rahul Thakur for the month of March 2012 and prepare profit and loss account.

March 2012	Particulars	Amt
1	Start Business with Furniture	15000
	And machinery	40000
2	Borrowed from central Bank	45000
5	Bought goods	30000
8	Sold goods to Manoj on credit	12000
10	Paid Electricity Bill	1500
13	Bought Stationary from Vikas	8500

10. Journalize the following transaction in the books of Rupesh for the year ended March 2012 and prepare Profit and loss account.

March 2012	Particulars	Amt
1	Rupesh commenced business with cash	80000
2	Bought goods on credit from Ramesh	15000
6	Paid into Bank	8000
8	Bough from Sanket on credit	15000
10	Bought goods for cash	12000
12	Received goods from Sukesh	7500
15	Goods sold on credit to Chanda	9000

11. Create cost centers Project A and Project B under primary cost category and record the following transaction in the books of sambhav trading company

a. On 07-09-2014, purchased Cement worth Rs. 1, 50,000/- from Ultratech cement Ltd. That will be shared equally between Project A and Project B. A credit period of 30 days was provided.
b. Record transaction on 09-09-2014 for the purchase of Steel worth Rs. 4,50,000/- from Embee Enterprises. Allocate Rs. 50,000/- to Project A and the the rest to Project B. a credit period of 45 days was allowed.

12. Create cost centers Mumbai and Pune under primary cost category and record the following transaction in the books of Universal co. Limited

a. On 05-10-2014, purchases done worth Rs. 2, 50,000/- from Hindustan Unilever Ltd. That will be shared equally between Mumbai and Pune.

b. Record transaction on 09-10-2014 for the purchase worth Rs. 6,00,000 /- from Hindustan Unilever Ltd. Allocate Rs. 2,50,000/- to Mumbai and the rest to Pune. A credit period of 45 days was allowed.
c. On 18-10-2014 record a transaction for the sale on Super technologies for Rs. 15,75,000/- of which 1200000 would be allocated to Mumbai branch and the rest to Pune.
d. On 22-10-2014 one more sales entry was made for Rs. 16,00,000/- to Super technologies of which Rs. 10,00,000/- was allocated to pune branch and the rest to Mumbai.

13. Record the following transaction in the books of Universal Co. Ltd.

a. On May 11/2014 they received a bill no. May /005/2014 for a sum of Rs. 125000/- from M/s. Rajesh shah and Co., architects for consultancy towards designing their office and training centre.
b. Universal company Ltd. Made the payment after deducting the TDS amount.
c. On 27th May 2014, company received bill no May/015/2014 for a sum of Rs. 75000 from M/s Rajesh shah and co., architects for consultancy.
d. On 28thMay, company made the payment after deducting TDS.

14. Record the following transaction in the books of Raj enterprises.

1. Goods purchase from “Kirti sales” on credit Bill no. 115 Rs. 62000
   a. Color tv (lg) 4% 3qty Rs. 30000
   b. Washing machine (Samsung) 4% 4 qty Rs. 32000
2. Cash received from sangamenter prizes Rs. 15000
3. Goods purchase in cash bill no. 69 Rs. 35000
   a. B/W tv (Sony) 4% 4 qty Rs. 20000
   b. Audio (onida) 4% 5 qty Rs. 15000
4. Goods sale on cash rs, 19000
   a. Color tv (Lg) 4% 1 qty Rs. 15500
   b. Audio (Onida) 4% 1 qty Rs. 3500
5. Goods purchase in cash from vikram enterprises bill no. 45 Rs. 40000
   a. Color tv (lg) 4% 2 qty Rs. 20000
   b. Refrigerator (Videocon) 4% 2qty Rs. 20000
6. Cheque no. received from ravi agency Rs. 10000 and deposited in state bank .
7. Credit sale to vijay enterprises bill no. 93 Rs.17200
   a. Washing machine (Samsung) 4% 1qty Rs. 8000
   b. B/W tv (Sony) 4% 1 Qty Rs. 5700
   c. Audio (Onida) 4% 1 qty Rs. 3500
8. Cash paid to ravi kulkarnirs. 1500
9. Cheque no. 159 paid to central engineering co. Rs 15000
10. Refrigerator purchase on cash Rs. 30000 fom k k agency 3 qty (Videocon) 4%
11. Office rent paid in cash Rs. 1700
12. Received cheque from vijay enterprises Rs. 10000 & deposited in canara bank.
13. Bill received from lokmat Rs. 1500 bill no.5
14. Amount received from vaishali agency in cash rs. 5000 & cheque no. 336791 Rs. 10000 only. Cheque deposited in state bank.
15. Cash sale to Telco ltd. Rs. 29900

a. Color tv (Lg) 4% 1 qty Rs. 10000
b. Washing machine (Samsung) 4% 1 qty Rs. 9100
c. Refrigerator (Videocon) 4% 1qty Rs. 10800

16. Cheque deposited in canara bank Rs.5000
17. Cash withdrawn from bank Rs. 34000

15. Record the following transaction in the books of Maharashtra Traders.

1. Opening stock for Wadi Godown
   a. Akai color TV 4% 10 qty Rs.10500 each.
   b. Refrigerator (Videocon) 7qty 12000 each.
   c. Washing machine (Samsung) 5 qty 8000 each
   d. Audio (Philips) 4% 2Qty 2000
   e. Onida color tv 4% 5 qty 12000 each
   f. B/W tv (akai) 4% 5 qty 18000

2. Opening stock for nandanwangodown
   a. Akai color tv 2 qty 10500 each
   b. refrigerator (Videocon) 3qty 12000 each
   c. Audio (Philips) 3 qty 1000 each.
3. Cash sale to Bhagwandas Co. Rs. 41500 in wadi godown.
   a. Color tv (akai) 4% 2 qty Rs.21000.
   b. Refrigerator (Vedeocon) 4% 1qty Rs. 11300
   c. Washing Machine (samsung) 4% 1 qty Rs. 9200.
4. Goods purchase in cash from national Trading co. & store Nandanwan godown.
   a. Audio (Philips) 2qty 4% Rs.6000
   b. W/M (Samsung) 1qty 4% Rs. 10000
5. Credit sales to Ravina traders Rs. 51800 wadi godown.
   a. Refrigerator (Videocon) 2qty 4% Rs. 22000.
   b. W/M (Samsung) 1qty 4% Rs.8300
   c. Color tv (akai) 2qty 4% 21500
6. Cheque received from vikas enterprises Rs. 20000 & deposited in state bank.
7. Cash withdrawn from state bank cheque no. 16 Rs. 15000/-
8. Received loan from state bank Rs. 10,00,000/- invested in business, interest 10%.
9. Cheque paid to kirti sales rs. 25000/-
10. Goods purchase on credit from rama & sons Rs. 44000 store nandanwan.
    a. W/M (Lg) 3 qty 4% Rs. 24000
    b. Refrigerator (Videocon) 1qty 4% Rs. 10000.
    c. Color tv (onida) 1qty 45 Rs. 10000
11. Akai color Tv purchase in cash Rs. 20000 2qty 4% Rao store in nandanwan.
12. Paid salary Rs. 10000
13. Paid bank loan Rs. 8,00,000
14. Cash sale on wadi godown Rs 42000\
    a. Audio 2 qty 4% Rs.7000
    b. w/m (s.s.) 2qty 4% Rs. 17000
    c. b/w tv (akai) 3qty 4% Rs. 18000
15. Paid to rama & sons by cheque Rs. 18000 chq. No. 1152.
16. Paid electric bill Rs. 10000
17. Total cash sale after allowing discount Rs. 1000.

18. Paid total balance loan on state bank.
19. Advertisement exp. Rs.10000
20. Carriage exp. Rs. 5000
21. Purchase furniture for nandan wangodown Rs.28000 in cash.
22. Withdrawn for personal use Rs, 10000.

16. Record the following transaction in the books of Rathore Traders.

1. Goods purchase from sohan & sons Rs. 20000/-
   a. Gold 10gm (12.5%) Rs. 10000/-
   b. Silver 1kg (12.5%) Rs.10000/-
2. Goods purchase from sagar computer Rs. 25000/-
   a. Monitor (Compaq) 1qty 5000/- 4%
   b. Cpu (Intel) 1qty 15000/- 4%
   c. Speaker (Logitec) 1qty 5000/- each
3. Goods sold on cash Rs. 22000/-
   a. Gold (12.5%) 10gm 12000/-
   b. Silver(12.5%) 1kg 10000/-
4. Withdrawn 400/- Rs. From canara bank.
5. Cash given to sagar computers Rs. 24000/- in full settlement.
6. Cheque given to mr.sohan& sons. Rs 20000.
7. Salary given to mr.sahil Rs. 2000/-
8. Withdrawn Rs. 4000/-
9. Paid insurance premium Rs. 200/-
10. Purchase table without vat Rs.2000/-

Paper - II: VB.Net (5T2)

UNIT- I

Welcome to Visual Basic.NET – Windows Versus DOS Programming, Installing Visual Basic.NET, The Visual Basic.NET IDE, Creating a Simple Application, Using the Help System. **The Microsoft.NET Framework** – Microsoft's Reliance on Windows, Writing Software for Windows, Common Language Runtime, The Common Type System and Common Language Specification. **Writing Software –** Information and Data, **Variables**, Comments and Whitespaces, Data Types, Sorting Variables, Methods. **Controlling the Flow** – Making Decisions, The if Statement, Select Case, Loops.

UNIT- II

Working with Data Structure – Understanding Array, Understanding Enumerations, Understanding Constants, Structures, Working with Collection and Lists, Building Lookup Tables with Hashtable, Advanced Array Manipulation. **Building Windows Application** – Responding to Events, Building a Simple Application, Creating Complex Applications, Using Multiple Forms. **Displaying Dialog Boxes** – The MessageBox Dialog box, The Open Dialog Control, The Save Dialog Control, The FontDialog Control, The ColorDialog Control, The PrintDialog Control.

UNIT- III

Creating Menu – Understanding Menu Features, Creating Menu, Context Menu. **Debugging and Error Handling –** Major Error Types, Debugging, Error Handling. **Building Objects** – Understanding Objects, Reusability, Our First Object, Constructor, Inheritance, The Framework Classes.

UNIT- IV

Accessing Database – What is Database, SQL Select Statement, Queries in Access, Data Access Components, Data Binding. **Database Programming with SQL Server and ADO.NET** –ADO.NET, The ADO.NET Classes in Action, Data Binding. **Deploying Your Application** – What is Deployment?, Creating a Visual Studio .NET Setup Application, Assemblies as Installers, The Core of Deployment, Deploying Different Solution, Advance Deployment Option.

Text Book

1. Jonathan, Richard Blair, Beginning VB.MET 2003, WILEY, Thearon Willis.

Reference Books

1. Thearon Willis, Jonathan Crossland, Richard Blair, Beginning CB.Net 2003, Dreamtech Press, Wiley.
2. Jeffry R. Shapiro, The Complete Reference, Visual Basic .NET, McGraw- Hill.
3. Francesco Balena, Programming Microsoft Visual Basic.net, Microsoft Press.
4. Jeffrey Kent, Visual basic.Net – A Beginner's Guide, McGraw- Hill.

Practical List ofVB. Net

1. Write an algorithm, draw a flowchart and develop a VB.NET console application t calculate the reverse of a number.

2. Write an algorithm, draw a flowchart and develop a VB.NET console application to implement the Cos series.

3. Write an algorithm, draw a flowchart and develop a VB.NET console application to find largest and second largest number from the array.

4. Write an algorithm, draw a flowchart and develop a VB.NET console application to create all possible sets from given set {1, 2, 3}.

5. Write an algorithm, draw a flowchart and develop a VB.NET console application to display the following pattern –

```
*
* *
* * * *
* * * * * *
```

6. Write an algorithm, draw a flowchart and develop a VB.NET console application to check a number is palindrome or not.

7. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate the binary number from decimal number.

8. Write an algorithm, draw a flowchart and develop a VB.NET console application to check a given number is prime or unprimed.

9. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate the reverse of a string and check the string is palindrome or not.

10. Write an algorithm, draw a flowchart and develop a VB.NET console application to Search an element from characters and as well as from numbers using linear search method.

11. Write an algorithm, draw a flowchart and develop a VB.NET console application to sort a given string in the order of alphabets, digits & symbol.

12. Write an algorithm, draw a flowchart and develop a VB.NET console application to input array element, sorting them using bubble sort method.

13. Write an algorithm, draw a flowchart and develop a VB.NET console application to create jagged array.

14. Write an algorithm, draw a flowchart and develop a VB.NET console application to demonstrate exception handling.

15. Write an algorithm, draw a flowchart and develop a VB.NETwindows application to check the user id and password is valid or not.

16. Write an algorithm, draw a flowchart and develop a VB.NETwindows application to create a calculator.

17. Write an algorithm, draw a flowchart and develop a VB.NETwindows application to create notepad.

18. Write an algorithm, draw a flowchart and develop a VB.NET windows application to demonstrate MDI form.

19. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create a start menu using status bar.

20. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create a menu and perform any operation.

21. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create MDI and arrange all forms as tiles and cascade form.

22. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create popup menu.

23. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create data bound control for retrieving the data from database.

24. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create different dialog box and perform any operation.

Paper - III: Management Information Systems (5T3)

UNIT- I

Management Information Systems: An Overview - Introduction, Need for Management Information Systems, Management Information Systems: A Concept, MIS: A definition, Management Information System and Information Technology, Nature and Scope of MIS, MIS Characteristics, Structure of MIS, Types of MIS, Role of MIS in Global Business, Challenges of Managing Information Systems. **Information, System and Organization Concepts -** Introduction: A definition, Types of Information, Information Quality, Dimensions of Information, System: A definition, Kinds of Systems, System -related Concepts, Elements of a System, Information System, Organization : A Concept, Impact of Information System on Organization. **Information System and Competitive Advantage -** Introduction, Changing Role of IS, Competitive Advantage, Strategic Information System (SIS).

UNIT- II

IT Infrastructure and Emerging Technology -

Introduction , A computer System, Computer Categories, Computer Evolution, IT Infrastructure Components ,Emerging Technology. **Data Resource Management -** Introduction, Database Concepts, Files : The Traditional Approach, The Database Management Approach: The Modern Approach, Database Management System, Data Models, Data Warehousing and Data Mining, Application of DBMS using MS-Access. **Telecommunication and Computer Networks -** Introduction, Telecommunications, Types of Signals, Communication Channels, Characteristics of Communication Channels, Communication Hardware, Communication Networks, Computer Networks in India, Internet.

UNIT- III

E-Commerce, e-Business and e-Governance - Introduction, e-Commerce, e-Commerce Sales Life Cycle, e-Commerce Infrastructure, e-Commerce Applications , e-Commerce Challenges and Opportunities, E-Business, e-Governance. **Enterprise Systems -** Introduction, Enterprise Systems, Enterprise Resource Planning (ERP) System, Customer Relationship Management (CRM) System, Supply Chain Management (SCM) System. **Decision Support Systems -** Introduction, Decision-Making: A Concept, Simon's Model of Decision Making, Types of Decisions, Methods for Decision-Making, Decision Support Techniques, Decision Making and Role of MIS, Decision Support Systems (DSSs), Business Intelligence, Knowledge Management Systems.

UNIT- IV

Information System Planning - Introduction, Information System Planning, Creating an IS Plan (CRISP), Resource Allocation Project Planning, Organization Structure and Location of MIS Department. **Is Choices and System Acquisition -** , Introduction Is Choices, Acquisition of Hardware and Software. **Is Development and Project Management -** Introduction, System Development Models, Project Management. **Information Requirements Analysis & Systems Design -** Introduction, Systems Analysis, Requirements Determination, Strategies for Requirements Determination, Structured Analysis Tools, System Design. **Evolution and Maintenance of IS -** Introduction Evaluation Approaches, Evaluation Classes, Product-Based MIS Evaluation, Cost/benefit –Based Evaluation, Models Used in Evaluation, Process-based Evaluation, System Maintenance.

Text Book

1. D. P. Goyal, Management Information System, Vikas Publishing House Pvt Ltd.

Reference Books

1. Waman S. Jawadekar, Management Information Systems, McGraw-Hill.

2. D. P. Nagpal, Management Information Systems, S. Chand.
3. Dr. SushilaMaden, Management Fundamental and Information System, Taxmann.
4. S. Sadagopan, Management Information Systems, PHI.
5. A. K. Gupta, Management Information Systems, S. Chand.
6. Mahesh Halale, Management Information Systems, Himalaya publishing house.

Paper - III: System analysis & Design (5T3)

UNIT- I

System Concept And The Information Systems Environment- Introduction, The Systems Concept, Characteristics Of A System, Elements Of A System, Types Of A System. **The System Development Life Cycle** - Introduction, System Development Life Cycle, Considerations forthe Candidate System, Prototyping.**The Role Of System Analyst**- Introduction, Definition, Historical Perspective, What Does It Take To Do Systems Analysis?, The Multifaceted Role Of The Analyst, The Analyst/User Interface, The Place Of The Analyst In The MIS Organization, Rising Positions In System Development, Conclusions.

UNIT- II

System Analysis- System Planning And The Initial Investigation- Introduction, Bases For Planning In System Analysis, Initial Investigation.**Information Gathering-** Introduction, What Kinds Of Information Do We Need?, Where Does Information Originate?, Information Gathering Tools. **The Tools Of Structured Analysis-** Introduction, What Is Structured Analysis?, The Tools Of Structured Analysis. **Feasibility Study-** Introduction, System Performance Definition, Feasibility Study.

UNIT- III

System Design- The Process And Stages Of System Design- Introduction, The Process Of Design, Design Methodologies, Major Development Activities, Audit Consideration. **Input/output And Forms Design-** Introduction, Input Design, Output Design, Forms Design. **File Organization And Data Base Design-** Introduction, File Structure, File Organization, Data Base Design, The Role Of The Data Base Administrator.

UNIT- IV

System Implementation- System Testing And Quality Assurance- Introduction, Why System Testing?, What Do We Test For?, The Test Plan, Quality Assurance, Trends In Testing, Role Of Data Processing Auditor. **Implementation And Software Maintenance-** Introduction, Conversion, Combating Resistance To Change, Post-Implementation Review, Software Maintenance. **Hardware/ Software Selection And The Computer Contract-** Introduction, The Computer Industry, The Software Industry, A Procedure For Hardware/ Software Selection, Financial Considerations In Selection, The Used Computer, The Computer Contract.

Text Book

1. Elias Awad, System Analysis and Design, Galgotia.

Reference Books

1. Jeffrey L Whitten, Lonnie D Bentley, System Analysis and Design Methods, McGraw-Hill.
2. Edward, System analysis and Design, McGraw-Hill.
3. Hawryszkiwyez, Fundamentals of System analysis and Design, PHI.
4. Vinod Garg, Workbook on System analysis and Design, PHI.

Paper - IV: Cost & Management Accounting (5T4)

UNIT- I

Introduction to Cost and Management Accounting: Accounting Framework And Taxonomy, From Cost Accounting To Cost Management, The Dimensions Of Management Accounting. **Forces Shaping Business Environment And Their Effect On Cost And Management Accounting: Drivers** Defining The Future Of Business And Accounting, Trends In Cost And Management Accounting , Evolving Role Of Cost And Management Accountants, Profession Of Cost And Management Accountants.

UNIT- II

Strategic Management Accounting: Linking Strategy to Management Accounting Value Chain for Strategic Management Accounting, Life Cycle Costing, Target Costing, Kaizen Costing. **Cost Measurement and Estimation:** Definition and Measurement Of Cost, Costs On Financial Statements, The Statements Of Financial Position, The Income Statement, Cost Classification, Cost Estimation Methods.

UNIT- III

Costing Systems: Alternative Cost Accumulation Systems—Contingency Based Approach To Accounting, Levels Of Costing Systems, Income Analysis Under Alternative Costing Systems, Reconciling Income Under Alternative Costing Systems, Impact Of Just In Time (JIT) Inventory System. **Job Order Costing:** An Overview Of Traditional Costing Systems, Job Order Costing System For Manufacturing Companies, Job Order Costing System For Service Companies, Job Order Costing For Planning Purposes.

UNIT- IV

Process Costing: Product And Cost Flows Through Process Costing System, Calculating Unit Cost, Process Costing Methods, Production Cost Report, Operation Costing, Accounting For By-Products, Allocation Of Support Service Costs. **Activity-Based Costing And Customer Profitability Analysis:** Traditional Volume-Based Costing, Activity Based Costing (abc), Comparison Of Traditional Volume-Based With The Activity-Based Costing, Advantage And Disadvantages Of Activity-Based Costing, Activity-Based Management(ABM), Scope And Advances In Activity Based Costing, Customer Profitability Analysis.

Text Book

1. Suveera Gill, Cost and Management Accounting, Vikas Publishing House Pvt. Ltd.

Reference Books

1. M. Hanif, Modern Cost and Management Accounting, McGraw-Hill.
2. Ravi M. Kishor, Cost and Management Accounting, Taxmann.
3. Puneet Bhatia, Cost and Management Accounting, Pooja Law publishing Co.
4. N. S. Zad, Cost and Management Accounting.
5. T. K Basu, Deborshi Bhattacharya, Cost And Management Accounting, Platinum Publishers.

Paper - IV: Corporate Accounting (5T4)

UNIT-I

Corporate Accounting (Company Accounts)—Issue Of Share Capital- Definition, Characteristics Of A Company, Kinds Of Companies (Or) Types Of Companies, Privileges Of A Private Limited Company, Documents, Share Capital, Differences Between "Capital Reserve" And "Reserve Capital", Shares Of A Company, Equity Shares, Management Of Companies, General Meetings Of The Company, Quorum, Voting, Resolutions, Floating Of A Company (Forming A New Company), Minimum Subscription, Issue Of Shares, Accounting Treatment For Issue Of Shares For Cash, Over-Subscription, Under-Subscription, Calls-In-Arrears, Calls-In-Advance, Issue Of Shares From The Standpoint Of Issue Price, Cash Book, More Than One Type Of Shares, Shares Issued For Consideration Other Than Cash, Forfeiture Of Shares, Re-Issue Of Forfeited Shares, Employee Stock Option Plan, Issue Of Bonus Shares, Rights Issue, Sweat Equity, Underwriting, Buy-Back Of Shares, Escrow Account. **Underwriting Of Shares And Debentures**- Underwriting—Definition, Underwriting Commission And Payment, Sub-Underwriters, Brokers, Managers To The Issue, Applications—Marked, Unmarked And Firm-Underwriting Applications, Types Of Underwriting, Accounting Treatment. **Redemption Of Preference Shares-** Issue And Redemption Of Preference Shares, Determination Of The Amount Of New Issue Stages In Solving Problems.

UNIT-II

Issue And Redemption Of Debentures- Meaning And Definition Of Debenture, Meaning Of Some Terms, Types Of Debentures, Differences Between Shares And Debentures, Debenture Trust Deed, Coupon Rate, Accounting For Issue Of Debentures, Terms Of Issue Of Debentures, Interest On Debentures, Discount Or Loss On Issue Of Debentures, Loss On Issue Of Debentures, Redemption Of Debentures. **Acquisition Of Business (Purchase Of Business)-**Factors Associated With Acquisition Of Business, Determination Of Purchase Consideration, Accounting Entries. **Profits Prior To Incorporation-** Meaning, Accounting Treatment Of Profits/Losses Prior To Incorporation In The Books Of The Company, Methods Of Ascertaining Profit Or Loss Prior To Incorporation, Basis Of Apportionment Of Expenses, Advanced Problems—Professional Course Level, Accounting Standard AS-5 Revised. **Final Accounts Of Companies-** Meaning Of Final Accounts, Preparation Of Final Accounts.

UNIT-III

Valuation Of Goodwill And Shares- Valuation Of Goodwill, Need For Valuation Of Goodwill, Factors Affecting The Value Of Goodwill, Components Of Goodwill, Methods Of Valuation Of Goodwill, Valuation Of Goodwill Advanced Problems, Valuation Of Shares, Methods Of Valuation Of Shares, Different Categories Of Equity Shares, Methods Of Valuation Of Shares—Other Methods Illustrated, Price–Earnings Ratio—(PE Ratio)**Amalgamation, Absorption And External Reconstruction-** Meaning, Types Of Amalgamation, Accounting Treatment As Per AS–14, Absorption, External Reconstruction. **Liquidation Of Companies-** Meaning And Salient Features Of Liquidation, Order Of Payments, Statement Of Affairs, Statement Of Deficiency Or Surplus (List H), Liquidator's Final Statement Of Account, "B" List Of Contributories, Receiver For Debentures. **Internal Reconstruction**-Need For Internal Reconstruction, Methods Of Internal Reconstruction, Handling Of Reconstruction Account, Balance Sheet After Reconstruction.

UNIT-IV

Holding Company Accounts- Holding Company, Subsidiary Company, Legal Requirements For A Holding Company Consolidated Financial Statements. **Accounts Of Banking Companies-** Definition And Meaning Of Bank, Banking And Banking Company, Forms Of Business Of Banking Companies, Classification Of Commercial Banks, Important Legal Provisions Of Banking Regulation Act 1949, Principal Books Of

Accounts, Registers, System Of Banking Accounting, Preparation And Presentation Of Final Accounts, Guidelines Of RBI For Profit And Loss Account, Special Transactions, Provision For Non-Performing Assets, Income Recognition, Guidelines Of RBI For Preparing Balance Sheet. **Double Account System-** Double Account System, Final Accounts. **Cash Flow Statement-** Cash Flow Statement, Cash Flow Statement—Preparation, Cash Inflow From Debtors, Cash Inflow From Trading Commission, Calculation Of Cash Outflow On Purchases—Purchases Include Both Cash And Credit Purchases, Cash Outflow On Expenses Incurred.

Text Book

1. Corporate Accounting,V. Rajasekaran, R. Lalitha, Pearson.

Reference Books

1. Corporate Accounting, V. K. Goyal, RuchiGoyal, PHI.
2. Corporate Accounting, S N Maheshwari&Suneel K Maheshwari, Vikas Publishing House Pvt. Ltd..
3. Corporate Financial Accounting, Dr. S.K. Singh, SBPD.

BCCA Part – III

Semester – VI

Paper - I: C#.Net (6T1)

UNIT - I

Introducing C# - What is C#? Evaluation of C#**,** Characteristics of C#**,** Application of C#**,** how does C# differ from C++? How does C# differ from Java? **Understanding .NET: The C# Environment –** The .NET Strategy, The Origin of .NET Technology, The .NET Framework, The Common Langue Runtime, Framework Base Class, User and Program Interface, Visual Studio .NET, .NET Languages, Benefits of the .NET Approach, C# and .NET. **Overview of C#** - Introduction, A Simple C# Program, Namespaces, Adding Comments, Main Running Value, Using Aliases for Namespaces Classes, Passing String Objects to WriteLine Method, Command Line Argument, Main with Class, Providing Interactive Input, Using Mathematical Function, Multiple Main Methods, Compile Time Error, Program Structure, Program Coding Style. **Literals, Variables and Data Types** – Introduction, Literals, Variables, Data Types, Value Types, Reference Type, Declaration Types, Initialization of Variables, Default Value, Constant Variable, Scope of Variables, Boxing and Unboxing. **Operators and Expressions** – Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversion, Operator Precedence and Associativity, Mathematical Function.

UNIT - II

Decision Making and Branching – Introduction, Decision Making with if Statement, Simple if Statement, The if…else Statement, The else if Ladder, The Switch Statement, The ? : Operator, Decision Making and Looping – Introduction, The while Statement, The do Statement, The for Statement, The foreach Statement, Jumps in Loops. **Methods in C#** - Introduction, Declaring Methods, The Main Method, Invoking Methods, Nesting of Methods, Method Parameters, Pass by Value, Pass by Reference, The Output Parameters, Variables Argument List, Methods Overloading. **Handling Arrays** – Introduction, One-Dimensional Array, Creating an Array, Two-Dimensional Array, Variable-Size Arrays, TheSystem.Array Class, ArrayList Class. Manipulating Strings – Introduction, Creating String, String Methods, Inserting String, Comparing String, Finding String, Mutable String Arrays of String, Regular Expressions.

UNIT - III

Structures and Enumerations – Introduction, Structure, Structs with Methods, Nested Structs, Difference between Classes and Structs, Enumerations, Enumerator Base Type, Enumerator type Conversion. **Classes and Objects** - Introduction, Basic Principle of OOP, Defining a Class, Adding Variables, Adding Methods, Member Access Modifiers, Creating Objects, Accessing Class Members, Constructors, Overloaded Constructors, Static Members, Static Constructors, Private Constructors, Copy Constructors, Destructors, Member Initialization, The This Reference, Nesting of Members, Constant Members, Read-only Members, Properties, Indexers. **Inheritance and Polymorphism** – Introduction, Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Defining Subclass Constructors, Multilevel Inheritance, Hierarchical

Inheritance, Overriding Methods, Hiding Methods, Abstract method, Sealed Class: Preventing Inheritance, Sealed Methods, Polymorphism.

UNIT - IV

Interface: Multiple Inheritances – Introduction, Defining an Interface, Extending Interface, Implementing Interface, Interface and Inheritance, Explicit Interface Implementation, Abstract Class and Interface. **Operator Overloading** – Introduction, Overloadable Operators, Need for Operator Overloading, Defining Operator Overloading, Overloading Unary Operator, Overloading Binary Operator, Overloading Comparison Operator. **Managing Errors and Exceptions** – Introduction, What is Debugging?, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, The Exception Hierarchy, General Catch Handler, Using Finally Statement, Nested Try Blocks, Throwing Our Own Exceptions, Checked and Unchecked Operators, Using Exceptions for Debugging.

Text Book:

1. E. Balagurusamy, Programming in C#, McGraw-Hill.

Reference Books:

1. Rod Stephens, C# 5.0 – Programmer's Reference, WroxA Wiley Brand.
2. Rod Stephens, C# - 24 –Hour Trainer, Wrox A Wiley Brand.
3. Herbert Schildt, The Complete Reference C# 4.0, McGraw-Hill.

Practical List of C#.NET

1. Write an algorithm, draw a flowchart and develop a C#.Net console application to check whether the entered number is even or odd.
2. Write an algorithm, draw a flowchart and develop a C#.Net console application to develop Boxing and Unboxing concept.
3. Write an algorithm, draw a flowchart and develop a C#.Net console application to calculate the reverse of a number, to check the given number is palindrome or not.
4. Write an algorithm, draw a flowchart and develop a C#.Net console application to print the Following Pattern:

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

5. Write an algorithm, draw a flowchart and develop a C#.Net console application to display the following pattern-

```
      *
    * * *
  * * * * *
* * * * * * *
  * * * * *
    * * *
      *
```

6. Write an algorithm, draw a flowchart and develop a C#.Net console application to Print and evaluate the following series. The series is -----
   Sum = (1) + (x^2/2!))+(x^4/4!))+(x^6/6!) +(x^8/8!))+……..

7. Write an algorithm, draw a flowchart and develop a C#.Net console application to perform ascending order sorting using Jagged Array.

8. Write an algorithm, draw a flowchart and develop a C#.Net console application to find out the largest and smallest number from an array using jagged array.

9. Write an algorithm, draw a flowchart and develop a C#.Net console application to print abbreviation form of Name.

10. Write an algorithm, draw a flowchart and develop a C#.Net console application to count number of characters, words and blank spaces of given sentence.

11. Write an algorithm, draw a flowchart and develop a C#.Net console application to withdraw, deposit & transfer money to the account using method overloading.

12. Write an algorithm, draw a flowchart and develop a C#.Net console application to overload unary operator '-' and perform subtraction operation.

13. Write an algorithm, draw a flowchart and develop a C#.Net console application to overload binary operator '+' and perform addition operation between two complex numbers.

14. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of constructor overloading.

15. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of hierarchical inheritance.

16. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of interface.

17. Write an algorithm, draw a flowchart and develop a C#.Net console application to combine two delegates.

18. Write an algorithm, draw a flowchart and develop a C#.Net console application to display the priority of the thread.

19. Write an algorithm, draw a flowchart and develop a C#.Net console application to convert feet to inches using Delegates.

20. Write an algorithm, draw a flowchart and develop a C#.Net console application to copy the contents from one file to another file.

Paper - II: Python (6T2)

UNIT - I

Getting Started -Introducing python, Installing python on windows, Installing python on Linux, Meeting the interpreter, Writing your first program, Employing variables, Obtaining user input, Correcting Errors. **Performing operations-**Doing arithmetic, Assigning values, Comparing Values, Assessing logic. , Examining Conditions, Setting precedence, casting data types, Manipulating bits. **Making statements -**Writing lists, Manipulating lists, Restricting lists, associating list elements, Branching with if, Looping while true, Looping over items, Breaking out of loops.

UNIT - II

Defining Functions-Understanding scopes, Supplying arguments, Returning Values, Using callbacks, Adding placeholders, producing generators, Handling exceptions, Debugging assertions. **Importing Modules -** ,Storing functions, Owning function names, Interrogating the system, Performing mathematics, Calculating decimals, Telling the time, Running a timer, Matching patterns.

UNIT - III

Managing strings -Manipulating strings, Formatting strings, Modifying strings, Accessing files, Reading and writing files, Updating file strings, Pickling data **Programming objects**, Encapsulating data, Creating instance objects, Addressing class attributes, Examining built-in attributes, Collecting garbage, Inheriting features, Overriding base methods, Harnessing polymorphism.

UNIT - IV

Processing requests-Sending responses, Handling values, Submitting forms, Providing text areas, Checking boxes, Choosing radio buttons, Selecting options, Uploading files **Building interfaces-**Launching a window, Responding to buttons, Displaying messages, Gathering entries, Listing options, Polling radio buttons, Checking boxes, Adding images **Developing applications-** Generating random numbers, Planning the problem, Designing the interface, Assigning static properties, Initializing dynamic properties, Adding runtime functionality, Testing the program, Freezing the program, Deploying the application.

Text Book:

1. Mike McGrath, Python in easy steps, McGraw-Hill.

Reference Books:

1. Charles Dierbach, Introduction to Computer Science using Python, Wiley.
2. Laura Cassell& Alan Gauld, Python Projects, Wrox A Wiley Brand.
3. Allen B. Downey, Think Python, Shroff Publishers, O'Reilly.
4. Paul Greis, Jennifer Campbell, Jason Montojo, Practical Programming – An Introduction to Computer Science using Python, Shroff Publishers.

Practical List of Python

1. Write a Python program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. Write a Python program that allows the user to enter any integer base and integer exponent, and displays the value of the base raised to that exponent.
3. Write a Python program that prompts the user for a certain number of cities for the Travelling salesman Problem, and displays the total number of possible routes that can be taken.
4. Write a Python program that prompts the user to enter an upper or lower case letter and displays the corresponding Unicode encoding.
5. Write a Python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80
   Grade C: Percentage>=60 and <70
   Grade D: Percentage>=40 and <60
   Grade E: Percentage<40
6. Write a Python program to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user using user-defined function.
7. Write a Python program to display the Fibonacci series in a given range.
8. Write a Python program to Print and evaluate the following series. The series is -- Sum = (x)-(x^2/2!))+(x^3/3!))-(x^4/4!) +(x^5/5!))- ……..
9. Write a Python program to calculate the subtraction of two compatible matrices.
10. Write a Python program to calculate the addition of diagonal elements of a matrix.
11. Write a Python program to search a given string from the list of strings using recursion.
12. Write a Python program to calculate factorial of a given number using recursion.

Visual Python

13. Write a Python program to create mathematical 3D objects –
    I. curve
    II. sphere
    III. cone
    IV. arrow
    V. ring
    VI. cylinder.
14. Write a Python program to read n integers and display them as a histogram.
15. Write a Python program to display sine and cosine curves.
16. Write a Python program to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user.

17. Write a Python program to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m=60/(t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.

18. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:
    P (t) = (15000(1+t))/(15+ e)
    Where the time t is measured in hours. Write a Python program to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.

19. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
    I. velocity wrt time (v=u+at)
    II. distance wrt time (s=u*t+0.5*a*t*t)
    III. distance wrt velocity (s=(v*v-u*u)/2*a)

20. Write a Python program show a ball bouncing between 2 walls.

Paper - II: Ruby on Rail (6T2)

UNIT - I

Introduction - A Tour of Ruby, Try Ruby, A Sudoku Solver in Ruby. **The Structure and Execution of Ruby Programs -** Lexical Structure, Syntactic Structure, File Structure, Program Encoding, Program Execution. **Data types and Objects -** Numbers, Text, Arrays, Hashes, Ranges, Symbols, True, False, and Nil, Objects.

UNIT - II

Expressions and Operators - Literals and Keyword Literals, Variable References, Constant References, Method Invocations, Assignments, Operators. **Statements and Control Structures -**Conditionals, Loops, Iterators and Enumerable Objects, Blocks, Altering Control Flow, Exceptions and Exception Handling, BEGIN and END, Threads, Fibers, and Continuations. Methods, Procs, **Lambdas, and Closures -** Defining Simple Methods, Method Names, Methods and Parentheses, Method Arguments, Procs and Lambdas, Closures, Method Objects, Functional Programming.

UNIT - III

Classes and Modules - Defining a Simple Class, Method Visibility: Public, Protected, Private, Subclassing and Inheritance, Object Creation and Initialization, Modules, Loading and Requiring Modules, Singleton Methods and the Eigenclass, Method Lookup, Constant Lookup. **Reflection and Meta programming -** Types, Classes, and Modules, Evaluating Strings and Blocks, Variables and Constants, Methods, Hooks, Tracing, ObjectSpace and GC, Custom Control Structure, Missing Methods and Missing Constants, Dynamically Creating Methods, Alias Chaining, Domain-Specific Languages.

UNIT - IV

The Ruby Platform – Strings, Regular Expressions, Numbers and Math, Dates and Times, Collections, Files and Directories, Input/Output, Networking, Threads and Concurrency. **The Ruby Environment -** Invoking the Ruby Interpreter, The Top-Level Environment, Practical Extraction and Reporting Shortcuts, Calling the OS, Security.

Text Book:

1. David Flanagan, Yukihiro Matsumoto, The Ruby Programming language, O'Reilly.

Reference Books:

1. Noel Rappin, Professional Ruby on Rails, Wrox.
2. Michael Fitzgerald, Ruby – Pocket Reference, O'Reilly.
3. Timothy Fisher, Ruby on Rails – Bible, Wrox.
4. Daniel Kehoe, Learn Ruby on Rails, Book One.
5. MichaelHartl, Ruby on Rail Tutorial,

Practical List of Ruby on Rail

1. Write a program of Ruby on Rail to find the largest number between three numbers.

2. Write a program of Ruby on Rail to swap the values of two variables with and without using third variable.

3. Write a program of Ruby on Rail to perform the following arithmetic operations using arithmetic operators in switch statement. The Arithmetic operations are addition (+), Subtraction (-), Multiplication (*), Integer Division (/) Real Division (/), modulo (%) and Raise to power (^).

4. Write a program of Ruby on Rail to generate and print Fibonacci series of a given range.

5. Write a program of Ruby on Rail to calculate LCM & HCF of two numbers.

6. Write a program of Ruby on Rail to check the entered number is Armstrong number or not.

7. Write a program of Ruby on Rail to check the entered number is Palindrome or not.

8. Write a program of Ruby on Rail to perform parallel iteration with external iterators.

9. Write a program of Ruby on Rail to find factorial of given number using function.

10. Write a program of Ruby on Rail to find reverse of given number using function.

11. Write a program of Ruby on Rail to demonstrate class and object.

12. Write a program of Ruby on Rail to demonstrate after and every method.

13. Write a program of Ruby on Rail to demonstrate thread.

14. Write a program of Ruby on Rail to tracing method invocations with method_missing.

15. Write a program of Ruby on Rail to perform attribute methods with define_method.

16. Write a program of Ruby on Rail to perform Alias chaining for thread safety.

17. Write a program of Ruby on Rail to check the string is palindrome or not.

18. Write a program of Ruby on Rail to calculate number of characters, words and blank spaces from a sentence.

19. Write a program of Ruby on Rail to insert and modify the data into the database.

20. Write a program of Ruby on Rail to upload a file on the server.

Paper - III: Entrepreneurship Development (6T3)

UNIT - I

Entrepreneurs: Introduction, Evolution of the concept of Entrepreneur, Characteristics of successful Entrepreneurs, The charms of becoming Entrepreneur, The Entrepreneurial decision process, Functions of Entrepreneur, Need of Entrepreneur, Types of Entrepreneurs, Distinction between an Entrepreneur and a Manager, Entrepreneur, social Entrepreneur **Entrepreneurship:** Concept of Entrepreneurship, Growth of Entrepreneurship in India, Role of Entrepreneurship in economic development. **Women Entrepreneurship:** Concept of women Entrepreneur, Functions of women Entrepreneurs, Growth of women Entrepreneurship in India, Problems of women Entrepreneurs, Developing women Entrepreneurship. **Rural Entrepreneurship:** Meaning of rural Entrepreneurship, Need of rural Entrepreneurship, Rural Entrepreneurship/ Industrialization in retrospect, Problems of rural Entrepreneurship, How to develop Rural Entrepreneurship? **Tourism Entrepreneurship:** Meaning of tourism Entrepreneurship, The perspective, Tourism enterprise, Entrepreneur and Entrepreneurship, Policy Measures of Tourism Entrepreneurship in India.

UNIT - II

Agri-Preneurship: Introduction, Need for developing Agri-Preneurship in India, Opportunities for developing Agri-Preneurship, Challenges involved in developing Agri-Preneurship. **Social Entrepreneurship:** Introduction, Meaning of Social Entrepreneurship, the Perspective of Social Entrepreneurship. **Family Business:** Introduction, Manning of family business, Types of family business, family business in India: A Historical Perspective, Advantages of family business, Disadvantages of family business, Major challenges faced by family business in India. **Factors affecting Entrepreneurship growth:** Factors affecting Entrepreneurship, Government Actions.
Entrepreneurial Motivation: Meaning of Entrepreneurial Motivation, Motivational Cycle or Process, Theories of Entrepreneurial Motivation. **Entrepreneurial Competencies:** Meaning of Entrepreneurial Competency, Major Entrepreneurial Competencies, Developing Entrepreneurial Competencies.

UNIT - III

Entrepreneurship Development Programmes (EDPs): Meaning of EDP, Need of EDPs, Objectives of EDPs, Entrepreneurship Development Programmes in India: A Historical Perspective, Course contents and curriculum of EDPs, Phase of EDP, Evaluation of EDPs, and Problems of EDPs. **Micro and small enterprises:** Small enterprise: Meaning & Definition, Micro & Macro units, Essentials, features & Characteristics, Relationship between Micro and Macro enterprises, Rationale behind Micro & small enterprises, Scope of Micro and Small Enterprises, Objectives of Micro enterprises, Enterprise & Society, Role of Micro enterprise in economic development, Quick Estimates of 4th All India Census of MSME, Package for promotion of Micro and Small-scale enterprise. **Opportunity Identification and Selection:** Need for Opportunity Identification and Selection, Environmental dynamics and change, Business opportunities in various sectors, Identification of business opportunity, Opportunity selection, Steps in setting up of a small business enterprise. **Formulation of Business Plans:** Meaning of business plan, Contents of business plan, Significance of business plan, Formulation of business plan, Planning Commission's Guidelines for formulating Project report 310, Network Analysis, Common Errors in business plan formulation.

UNIT - IV

Project Appraisal: Concept of Project Appraisal, Methods of Project Appraisal, and Environmental clearance of SMEs. **Financing of Enterprise:** Meaning and need for financial planning, Source of Finance, Capital Structure, Capitalization, Term Loans, Sources of short-term Finance, Venture Capital, Export Finance. **Forms of business Ownership:** Sole Proprietorship, Partnership, Company, Cooperative, And Selection of an appropriate form of ownership structure, Ownership Pattern in Micro-sale Enterprise

in India: The Empirial Evidence. **Institutional Finance of entrepreneurs:** Need for institutional finance, Institutional Finance. **Institutional Support to Entrepreneurs:** Need for institutional support, Institutional Support to small Entrepreneurs.

Text Book

1. Dr. S. S. Khanka, Entrepreneurial Development, S. Chand.

Reference Books

1. Robert D. Hisrich, Mathew J. Manimala, Michael P. Peters, Dean A. Shepherd, Enterpreneurship, McGraw-Hill.
2. CA Dr. AbhaMathur, Business Entrepreneurship and Management, Taxmann.
3. Charles E. Bamford, Garry D. Bruton, Enterpreneurship – A Small Business Approach, McGraw-Hill.

Paper - III: Company Law and Secretarial Practice (6T3)

UNIT - I

Introduction to Company Law : Meaning And Scope Of Company Law, History Of Company Law In India, The Companies Act, 2013, Landmark Provisions Of New Act, Definitions Of Important Terms, Frequently Referred Provisions, Securities And Exchange Board Of India And Provisions Of Companies Act. **Nature of Companies:** Definition, Meaning Of Company, Characteristics of a Company, Principles of Separate Legal Existence, Lifting or Piercing the Corporate Veil, Body Corporate or Corporation, Compulsory Registration Of Associations/Partnerships. **Classification of Companies**: On The Basis Of Mode Incorporation, On The Basis Of Number Of Members, On The Basis Of Liability Of Members, On The Basis Of Control, On The Basis Of Ownership, On The Basis Of Access To Capital Market, Other Companies. **Private and One Person Company** :Private Company, Privileges And Exemptions Of Private Companies, Distinction Between A Private And A Public Company, Conversion Of A Private Company Into A Public Company, Conversion Of A Public Company Into A Private Company, One Person Company, Provisions For The Formation Of OPC, Change /Alteration Of Nominee, Contract By A OPC With The Member, Privileges Of a OPC Over a MPC, Distinction Between a OPC and a MPC, cessation of OPC, conversion of OPC into a Public Or A Private Company, Conversion Of A Private Company Into a OPC.

UNIT - II

Formation and Incorporation of Company : Promotion Of A Company, Promoter , Legal Position Of A Promoter, Functions Of Promoter, Duties Of Promoter, Liabilities Of The Promoter, Remuneration Of The Promoters, Registration And Incorporation Of Company, Commencement Of Business, Integrated Process Of Incorporation, Incorporation On Incorrect Information: Implications, Effects Of Incorporation Of Company, Preliminary/ Pre-Incorporation Contracts. **Memorandum of Association:** Meaning And Definition, Framing The Memorandum, Contents Of The Memorandum, The Name Of The Company/Name Clause, The Registered Office/Place Clause, Object Of The Company And The Object Clause, The Liability Of Members Or The Liability Clause, The Capital Or The Capital Clause, The Subscribers Clause, The Nomination Clause, Alteration Of The Memorandum, Alteration Of The Name Or The Name Clause, Procedure Of Change In Name, Alteration Of Place Or Registered Office Clause, Alteration In Objects And The Object Clause, Alteration Of Liability Or The Liability Clause, Alteration Of Capital Or Capital Clause. **Articles of Association:** Definition And Meaning , Forms And Formalities Of Articles, Provision With Respect To Contents Of Articles, Relation Between The Memorandum And The Articles, Distinction Between The Memorandum And The Articles, Effects Of Memorandum And Articles, Alteration Of Articles, Procedure Of Alteration, Restrictions Or Limitations On Alteration, , Doctrine Of Constructive Notice, Doctrine Of Indoor Management.

UNIT - III

Share Capital: Concept Of Share Capital, Kinds Of Share Capital, Alteration Of Capital Or Capital Clause, Further Issue Of Capital, Further Issue Of Shares To Existing Shareholders, Issue Of Shares To Employees Of The Company, Issue Of Share To Any Person On Preferential Basis, Global Depository Receipts, Sweat Equity Shares, Capitalization Of Profits/Bonus Shares, Restriction On Purchase Of Own Shares, Buy-Back Of Own Securities By A Company, Conversion Of Debentures Or Loans Into Shares, Reduction Of Share Capital. **Securities / Share:** Definition And Nature Of Share, Distinction Between Share And Stock, Kinds Of Share, Redemption Of Preference Share, Voting Rights Of Shareholders /Members, Variation Of Shareholders Rights, Price Of Issue Of Shares, Issue At Par, Share/Security Certificate, Issue Of Share Certificate, Effects Of Share Certificate, Issue Of Renewed Or Duplicate Certificate, In Case Of Exchange Of Existing Certificate, Calls On Shares /Securities, Forfeiture Of Shares. **Deposits, Loans, Investments and Related Party Transactions :** Acceptance Of Deposits, Acceptance Of Deposits From Members Only, Deposits By Eligible Companies Or Public Deposits, Loan To Directors, Investment By Companies, Loan By Companies Or Intercorporate Loans, Investments In Own Name, Disclosure Of Interest By Director, Related Party And Relative, Related Party Transactions.

UNIT - IV

Directors Position, Appointment And Removal: Definition Of Directors, Position Of Director In A Company, Composition Of Board Of Directors, Number Of Directorship, Methods Of Appointment Of Directors, Some Other Provisions As To Directors Appointment, Appointment/Reappointment Of Rotational Directors, Appointment Of Directors By Board, Director Identification Number, Disqualifications For Director, Vacation Of Office Of Director, Resignation Of Director, Removal Of Directors. **Company Secretary :** Definition Of Company Secretary, Company Secretary In Practice, Provisions As To Appointment Of Company Secretary, Provision And Role Of Company Secretary, Importance Of Company Secretary, Functions Of Company Secretary, Duties Of Company Secretary, Rights Of Company Secretary, Legal Liabilities Of Company Secretaries, Removal /Dismissal Of Company Secretary, Secretarial Audit For Bigger Companies. **Company Meetings :** Annual General Meetings, Report On Annual General Meetings, Extraordinary General Meetings, Persons Entitled To Call EGM, Notice, Quorum, Proxy, Resolutions, Etc., Circulation Of Members Resolution, Class Meetings, Certain Other Secretarial Standards.

Text Book

1. RatanNolakha, Company law and Practice, Vikas Publishing House Pvt. Ltd.

Reference Books

1. Dr. Ashok Sharma, Company Law & Secretarial Practice, V. K. (India) Enterprises.
2. P. P. S. Gogna, A Text Book of Company Law, S. Chand.
3. Dr.M.R.Sreenivasan, Company Law & Secretarial Practice,Margham Publications.
4. Dr. G. K. Kapoor, Sanjay Dhamija, Company Law and Practices, Taxmann.
5. Arun Kumar, Rachana Sharma, Secretarial Practice& Company Law, Atlantic.
6. Appannaiah, Reddy, Prabhudev, Company Law & Secretarial Practice, Himalaya Pub.House.

SYLLABUS for M. Sc. Computer Science
Choice Based Credit System (Semester Pattern)
Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Effective from 2018-2019

Candidates opting for this course are advised to go through the direction relating to the course "DIRECTION RELATING TO THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF SCIENCE, SEMESTER PATTERN (CHOICE BASED CREDIT SYSTEM) AND DEGREE OF MASTER OF SCIENCE AND TECHNOLOGY (APPLIED GEOLOGY). SEMESTER PATTERN, (CHOICE BASED CREDIT SYSTEM) (FACULTY OF SCIENCE & TECHNOLOGY)" which is available on R. T. M. Nagpur University website.

The direction will provide details on admission criteria, rules for ATKT, scheme of examination, absorption scheme for CBS students into CBCS pattern, elective papers, foundation course papers, subject centric papers, coding pattern, pattern of question papers, practicals, distribution of marks, seminars, project work, internal assessment, calculation of SGPA and CGPA, etc.

Scheme of teaching and examination under semester pattern Choice Based Credit System (CBCS) for M.Sc. Computer Science

Semester I for M.Sc. Computer Science											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Paper 1	**1T1 Discrete Mathematical Structure**	4	-	4	4	3	80	20	100	40	
Paper 2	**1T2 Programming in Java**	4	-	4	4	3	80	20	100	40	
Paper 3	**1T3 Digital Electronics and Microprocessor**	4	-	4	4	3	80	20	100	40	
Paper 4	**1T4 Advanced DBMS and Administration**	4	-	4	4	3	80	20	100	40	
Practical 1	**1P1 based on theory paper- 1T1 and 1T2**	-	8	8	4	3-8*	100 **	-	100		40
Practical 2	**1P2 based on theory paper- 1T3 and 1T4**	-	8	8	4	3-8*	100 **	-	100		40
Seminar 1	Seminar 1	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester II for M.Sc. Computer Science											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Paper 1	**2T1 Windows Programming using VC++**	4	-	4	4	3	80	20	100	40	
Paper 2	**2T2 Theory of Computation and Compiler Construction**	4	-	4	4	3	80	20	100	40	
Paper 3	**2T3 Computer Architecture and Organization**	4	-	4	4	3	80	20	100	40	
Paper 4	**2T4 Computer Graphics**	4	-	4	4	3	80	20	100	40	
Practical 1	**2P1 based on theory paper- 2T1 and 2T2**	-	8	8	4	3-8*	100 **	-	100		40
Practical 2	**2P2 based on theory paper- 2T3 and 2T4**	-	8	8	4	3-8*	100 **	-	100		40
Seminar 2	Seminar 2	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester III for M.Sc. Computer Science											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Paper 1	**3T1 Data Communication and Networks**	4	-	4	4	3	80	20	100	40	
Paper 2	**3T2 Software Engineering**	4	-	4	4	3	80	20	100	40	
Paper 3 (Core Elective 1)	**3T3 CE1-1 Neural Network CE1-2 Multimedia Technologies CE1-3 ASP.NET**	4	-	4	4	3	80	20	100	40	
Paper 4 (Foundation Course 1/ Core(Discipline Centric)1)	**3T4 FC1 Operating System Concepts CDC1 Mobile Computing**	4	-	4	4	3	80	20	100	40	
Practical 1	**3P1 based on theory paper- 3T1 and 3T2**	-	8	8	4	3-8*	100 **	-	100		40
Practical 2	**3P2 based on theory paper 3T3**	-	8	8	4	3-8*	100 **	-	100		40
Seminar 3	Seminar 3	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Semester IV for M.Sc. Computer Science											
Code	Theory / Practical	Teaching scheme (Hours / Week)			Credits	Examination Scheme					
						Duration in hrs.	Max. Marks		Total Marks	Minimum Passing Marks	
		Th	Pract	Total			External Marks	Internal Ass		Th	Pract
Paper 1	**4T1 Data Mining**	4	-	4	4	3	80	20	100	40	
Paper 2	**4T2 Artificial Intelligence & Expert System**	4	-	4	4	3	80	20	100	40	
Paper 3 (Core Elective 2)	**4T3 CE2-1 Design and Analysis of Algorithm CE2-2 Embedded System CE2-3 Pattern Recognition**	4	-	4	4	3	80	20	100	40	
Paper 4 (Foundation Course 2/ Core(Discipline Centric)2)	**4T4 FC2 Advances in Information Technology CDC2 Parallel Computing**	4	-	4	4	3	80	20	100	40	
Practical 1	4P1 **based on theory paper 4T1, 4T2 and 4T3.**	-	8	8	4	3-8*	100 **	-	100		40
Project	Project		8	8	4		100 **	-	100		40
Seminar 4	Seminar 4	2	-	2	1			25	25	10	
	TOTAL	**18**	**16**	**34**	**25**		**520**	**105**	**625**	**170**	**80**

Note: Th = Theory; Pr = Practical/lab, * = If required, for two days.

** = The Practical and Project shall be evaluated by both External and Internal Examiner in the respective Department / Center / Affiliated College as per guidelines appended with this direction.

M.Sc. (Computer Science)
Semester I
1T1

Paper 1: Discrete Mathematical Structure

Unit-1 :

Fundamental – Sets and Subsets, operations on sets, sequence, Division in the integer, Matrices, Mathematics Structures. Logic-Proposition and Logical Operation Conditional Statements, Methods of Proof, Mathematical Induction,

Mathematics Logic- Statements and Notation, Connectives ,Normal Forms ,The Theory of Interface for the statement Calculus ,Inference Theory of the Predicate Calculus,

Unit-2 :

Counting- Permutation, Combination, The pigeonhole Principle, Recurrence Relations. Relational and Digraphs- Product sets and Partitions, Relations and Digraphs, Paths in Relations and Digraphs Properties of Relations, Equivalence Relations, Computer Representation of Relations and Digraph, Manipulation of Relations, Transitive Closure and Warshall's Algorithms. Functions-Definition and Introduction, Function for Computer Science, Permutation Functions, Growth of Functions.

Unit-3 :

Graph Theory : Basic Concept of Graph Theory, Euler Paths and Circuits, Hamiltonian Paths and Circuits. Other relations and Structure- Partially Ordered Sets, Lattices Finite Boolean-Algebra, Functions of Boolean Algebra's, Boolean function as Boolean Polynomials. Tree-Introduction Unidireted Tree, Minimal Spanning Trees.

Unit-4 :

Semigroups and Groups**:** Binary Operations Revisited, Semigroups, Products and Quotations of Groups. Introduction to computability **–**Languages Finite –State Machines, Semigroup, Machines and Language.

Books :

1. Discrete Mathematical Structures By Bernard Kolman c,Busby & Sharon Ross [PHI]
2. Discrete Mathematical Structures with Application to computer science By J.P.Tremblay & R.Manohar [Tata McGraw –Hill]
3. Combinational Mathematics By.C.J.Liu

Reference Books:

1.Discrete Mathematics with Graph Theory By Goodaire[PHI]
2. Discrete Mathematics by J.K.Sharma(McMillan)
3. Discrete Mathematics and its Applications By Kenneth Rosen (TMH)
4. Discrete Mathematics By Seymour Lipschutz, Marc Lipson (TMH)
5. Discrete Mathematics : Rajendra Akerkar, Pearson

1T2
Paper 2: Programming in Java

Unit-1 :

Java and Internet, Features of java: security, portability, multithreading, etc, Bytecode, Datatypes, variables and Arrays, Operators, Classes : declaring objects, methods, constructor, overloading constructor, garbage collection, finalize() method, static variable and method, final variable, command line argument. Inheritance: super keyword, final with inheritance. Packages and Interfaces.

Exception handling : Overview, types, Uncaught exception, try -catch block, multiple catch, nested try, throw, throws, finally, bulit-in and user- defined exception.

Multithreading : Life Cycle, Thread class and Runnable Interface, isAlive(), join(),Priorites, Synchronization : sleep() , run(). Interthread communication : wait(), notify(), notifyAll(), deadlock. String Handling.

Unit-2:

Wrapper classes, Applet: Applet Class, Architecture, Life Cycle, Display methods, HTML APPLET Tag, Passing parameter to Applet

AWT : working with Windows, Controls, Layout Manager, Menus. Swings. Event handling.

Unit-3:

JDBC : Architecture, JDBC-ODBC bridge driver, SQL Package, ResultSet and its methods.

Networking : Socket, Reserve socket, Internet Addressing, InetAddress, TCP/IP client socket, TCP/IP server socket, URL, URL Connection, Datagram.

RMI : Introduction, Architecture, Remote Interface, java.rmi. server package, class naming, creating Rmi server and client ,transmitting files using rmi, client side callback, RMISECURITYMANAGER class, RMI Exception, Stub and Skeleton.

Unit-4:

Servlet : Life Cycle, Tomcat, javax. servlet package, reading servlet parameter, javax.servlet.http package, handling http request and response with HTTPGET and HTTPPOST, cookies,session tracking.

JSP : Introduction, Types of JSP tags, Application using JSP and Servlet.

JavaBeans : Advantages of Beans, BDK, JAR files, Introspection, Developing Beans using BDK.

Books:

1. Complete Reference by Herbert Schildt (TMH)
2. Programming with Java By C Muthu (McGraw Hill)
3. Black Book on java.

1T3
Paper 3 : Digital Electronics and Microprocessor

Unit-1 :

Number System and Data Representation

Number System : Binary, Octal, Decimal and Hexadecimal number system and their inter conversion. Binary Codes : BCD, Excess3 , Parity, Gray, ASCII, EBCDIC codes and their advantages and disadvantages. Data Representation : Positive , negative ,maximum and minimum number representation (related to 8 bit number), real number representation, underflow, overflow , range and accuracy. Binary Arithmetic : Binary addition, decimal subtraction using 9's and 10's compliment, binary subtraction using 1's and 2's compliment, multiplication and division. Logic gates: Truth table, properties and symbolic representation of NOT, AND, OR, NOR , NAND, EXOR, EXNOR gates. NOR and NAND gates as a universal gates .

Unit-2 :

Boolean Algebra: Laws and Identities of Boolean algebra, DeMorgan's Theorem , use of Boolean Algebra for simplification of logic expression, K-Map for 2,3,4 variables, simplification of SOP and POS logic expression using K-Map.

Combinational circuits: Half adder, Full Adder, Parallel adder, Half subtractor, Full Subtractor, 4-bit binary adder subtractor, Multiplexer, Demultiplexer, Decoder, Encoder, Parity detector.

Unit 3 :

Sequential Circuits : Flip-Flops : Construction and working of RSFF, JKRSFF, DFF, TFF, JKFF, and JKMSFF . Counters : Construction and working of asynchronous, synchronous, up-down counter, shift registers and their types, Ring counter, Jonhson counter with their time diagram.

Unit-4 :

Architecture of 8086 and Assembly Language Programming

Block diagram of 8086, Pin diagram of 8086, Addressing modes, Instruction set: Data transfer, Arithmetic, Logical, String manipulations, Control Transfer, Unconditional branch, Conditional branch, Flag, Processor control. Assembler directives and operators, simple assembly programs.

Books:

1.Digital Electronics by Gothman(PHI)
2.Digital and analogue technique by Navaneeth, Kale and Gokhale
3.Fundamental of Micropocessor by B Ram
4.Microcomputers Systems: The 8086/8088 family by Liu. Gibson
5. Modern Digital Electronics By Jain (TMH)

1T4

Paper 4: Advanced DBMS and Administration

Unit-1 :

Relational Database design: Functional dependencies, and Normalization Normal forms based on primary keys (1 NF, 2 NF, 3 NF, BCNF, 4 NF, 5 NF) Loss less joins and dependency preserving decomposition Query Processing: Query Processing Stages, Query Interpretation, Equivalence of Expressions, Query Resource Utilization, Query Execution Statistics, Query Execution Plan, Estimation of Query Processing Cost, Table Scan, Sample Index Access, Fill Factor, Multiple Index Access, Methods for Joining Tables (Nested Loop, Merge Join, Hybrid Join, Multiple Join) Structure of a Query Optimizer

Unit-2 :

Transaction Processing & Concurrency Control: Concept and definition of transaction, ACID properties, serializibility, Prioritization, states of transaction, Types of failure, desirable properties of transaction schedules and recoverability, serial usability of schedules, levels of transaction consistency, deadlocks, long duration transactions, transaction performance, transaction processing as implemented in contemporary database, management system. Concurrency Control, locking techniques, techniques based on time-stamp ordering, multiple granularity. Crash Recovery**:** failure classification, recovery concepts, database backup, recovery concepts based on deferred update and on immediate update. Shadow paging, check points, on-line backup during database updates, crash recovery techniques.

Client/Server database: Evolution of client concept, Client/Server environment, characterization of Client/Server computing. Functions of clients server , application partitioning, the two-layer and three-layer architectures, communication between clients and servers.

Unit-3 :

Oracle Database Architecture and Administration: Oracle database architecture, Design, Creation, Migration and Management of Oracle Databases and related database schemes, Data Dictionary views and standard package Maintaining the control, Redo Loa files, Managing Tablespaces and Data Files, Storage structure and relationships, Managing rollback segment, Managing tables, Indexes, Managing data Integrity, Managing password security and resources, Managing users, Privileges, roles.

Oracle Backup and Recovery Strategies: Backup and recovery considerations, Oracle recovery structure and processes, Oracle backup and recovery configuration, Physical backup, Complete recovery of an Oracle database, Incomplete recovery of an Oracle database with Archiving, Oracle Export / Import utilities, Oracle standby database.

Unit-4 :

Oracle Tuning and Troubleshooting:Oracle performance tuning methodology,'Oracle alert and trace files, Tuning the shared pool, Buffer Cache, Redo Log buffer, Database configuration and I/O issues, Using Oracl Blocks efficiently, Optimizing sort operations, Rollback segment tuning, Monitoring and detecting lock contention, SQL issues and tuning considerations for different application. Integrity, Security: Need for Database Integrity, Integrity Constraints, Non-Procedural and Procedural Integrity Constraints Specifications in SQL, Introduction to Database Security issues, Authorization and use.

Books :

1. Fundamental of Database Systems by R. Elmasri; S. Navate; Benjamin Cummings;
2. Introduction to database systems by C. J .Date
3. Database system concept by Korth
4. DBA Handbook oracle press by Loney

Reference Books:

1. Principles of Database Management by James Martin
2. Relational database design for Micro computers Application by Prentice Hall (Jackson)
3. Database Management Systems by Bipin Desai

M.Sc. (Computer Science)
Semester II
2T1
Paper 1: Windows Programming using VC++

Unit-1 :

Windows, Visual C++, Application Frameworks Fundamentals and MFC Libraries View Class.
Introduction, MFC, ATL and WFC, Windows Programming Model, Components, Application Framework, MFC Library, Event Handling, Mapping Modes and Scrolling Views, Graphic Device Interface, Colors and Fonts, Modal Dialog and Windows Common Control, Modeless Dialog and Windows Common Dialog, ActiveX Controls and Internet Explorer Common Controls, Win32 Memory Management, Bitmaps, Message Processing and Multithreaded Programming.

Unit-2 :

Document View Architecture : Menus, Keyboard Accelerators, Rich Edit Control and Property Sheets, Tool bar and Status Bars, Reusable Frame Window Base Class, Separating the Documents from its View, Reading and Writing Documents- SDI applications, MDI applications, Printing and Print Preview, Splitter Windows and Multiple Views, Context-Sensitive Help, DLL's, MFC Programs without Documents or View Classes

Unit-3 :

Active X: COM, Automation and OLE : Component Object Model, Automation, Uniform Data Transfer- Clipboard Transfer and OLE, Drag and Drop, Structured Storage, OLE Embedded Components and Containers, Introducing the Active Template Library, ATL and ActiveX Controls.

Unit-4 :

Database Management: Database Management with Microsoft ODBC, Database Management with Microsoft Data Access Objects, OLE DB Templates.
Programming for the Internet: TCP/IP, Winsock, WinInet, Programming the Microsoft Internet Information Server, ActiveX document Servers and the Internet, Introducing the Dynamic HTML, Visual C++ for Windows CE.

Books :

1. Programming Microsoft Visual C++ by D. J. Kruglilski, G Shepherd and Scot Wingo Publication : Microsoft Press Fifth Edition.

Reference Books:

1. Visual C++ 6 From The Ground Up: Mueller: TMH Publication
2. VC++ 6 The Complete Reference: Pappas, TMH Publication

2T2
Paper 2: Theory of Computation and Compiler Construction

Unit-1 :

Finite Automation and Regular Expression : Finite State systems, Basic Definitions, Non - deterministic finite Automata, Finite Automata with moves, Regular Expressions, Two way finite automata, Finite automata with output, Application on Finite Automata.

Properties of Regular Sets : The pumping lemma for Regular Sets, Close properties of Regular sets, Decision Algorithms for Regular Sets.

Context Free Grammars : Motivation and Introduction, Context Free Grammar, Derivation Tree, Simplification of context Free Grammars, Chomsky Normal form, Greibach normal form, The existence of inherently ambiguous context free languages.

Properties of Context free languages : The pumping lemma for CFL's , Closure properties of CFL's, Decision Algorithm for CFL's

Unit-2 :

Push Down Automata : Informal description, Definitions, Push – Down Automata & Context free languages.

Turing Machine : Introduction, The Turing Machine Model, Computable languages and functions , Techniques Turing Machine construction, Modification of Turing Machines, Churchs Hypothesis, Turing Machine as enumerators, Restricted Turing Machine equivalent to the basic model. Undecidability : Problems, properties of recursive and recursively enumerable problem, Turing Machine and undecidable problem, Rice theorem, Tool for proving CFL undecidable, Greibach's Theorem.

The Chomsky : Regular Grammars, Unrestricted Grammars, Context – Sensitive languages, Relation between classes of languages.

Unit-3 :

Introduction to Compilers :

Compilers and translators, need, the structure of a compiler, Lexical Analysis, Syntax analysis, Intermediate code Generation, Optimization, Code Generation, Book keeping, Error Handling, Compiler writing tools. Basic parsing Techniques: Parsers, Shift-reduce parsing, Operator precedence parsing, Top-down parsing, predictive parsers, automatic construction of efficient parsers : LR parsers the canonical collection of LF (O) items, constructing SLR parsing tables, constructing LALR parsing tables, Ambiguous grammar.

Unit-4 :

Syntax directed translation : syntax directed translation schemes, implementation, intermediate code,postfix notation, parse tree and syntax trees, tree- address code, quadruple, triple, translation of

Symbol Table: Data Structure, Representation of Scope Information,

Code Optimization: The principal source optimization, Loop optimization, The DAG Representation of basic blocks, Value number and algebraic laws, Global data-flow analysis.

Code Generation : Object Programmers Problems in code generation, A machine model, a simple code generator, Register Allocation and assignment, Code Generation from DAG's Peephole Optimization.

Books :

1. Introduction to Automata Theory, Languages and Computation: John E. Hoperott & Jeffery D. Ullman.
2. Compilers Principles, Techniques and Tools Aho, Ullman, Ravisethi, Pearson Education.
3. Theory of Computer Science : E. V. Krishmamoorty.
4. Theory of computer Science : K. L. P. Mishra.

Reference Books:

1. D. I. A. cohen : Introduction to Computer Theory (JW)
2. H. R. Lewis & C. H. Papadimitrion : Elements of Theory Of Computation (PHI)
3. J. Caroll and D. Long : Theory of Finite Automata (PHI)
4. M. Davis & Weyukur : Computability, Complexity & Languages.
5. M. Machtey & P. R. Young : An introduction to Genral Theory of Algorithm (Elsevier).
6. Zvihohavi : Switching and Finite Automata Theory (TMH).

2T3
Paper 3 : Computer Architecture and Organization

Unit-1 :
Principle of computer design : Software, hardware interaction, layers in computer architecture, central processing and machine language instruction, addressing modes, instruction types, instruction set selection, instruction and execution cycle.

Unit-2 :
Control Unit : Data path and control path design, microprogramming v/s hardwired control, pipelining in CPU design, RISC v/s CISC, superscalar processors.

Unit-3 :
Memory subsystem : Storage technologies, memory array organization, memory hierarchy, interleaving , cache memory and virtual memory including architectural aids to implement these.

Unit-4 :
Input/ Output Processing : Bus Interface, Data transfer techniques, I/O interrupts and channels,. Performance evaluation : SPECmarks , Transaction Processing Benchmarks.

Books :

1. Computer Architecture and Organization by Tenenbaum
2. Computer Architecture and Organization by J. P. Hayes.
3. Parallel Processing by Hwang
4. Computer Organization by Hamacher, Vranesic, Zaky (TMH)

2T4
Paper 4: Computer Graphics

Unit-1 :
Introduction of computer Graphics and its applications, Overview of Graphics systems, Video display devices, Raster scan display, Raster scan systems, video controller, Raster scan display processor, Random scan display, random scan systems, color CRT monitor, Flat panel display, Interactive input devices, Logical classification of input devices, Keyboard, mouse, Trackball and spaceball, Joysticks, Image scanner, Light pens, Graphics software, Coordinates representations, Graphics functions.

Unit-2 :
Line drawing algorithms, DDA, Bresenham's, Circle generating, Mid-point circle algorithm, Ellipse generating, Polygon , Scan-line polygon fill, Boundary fill.

Unit-3 :
Basic transformation's, Translation, Rotation, Scaling, Matrix representation's & homogeneous co-ordinates, Composite transformation's, Reflection, Two dimensional viewing, Two dimensional clipping, Line, Polygon, Curve, Text. 3D-transformation, Projection, Viewing, Clipping.
Spline representation, Cubic spline, Bezier curve, Bezier surfaces, Beta spline, B-spline surfaces, B-spline curve, Hidden surfaces, Hidden lines, Z-buffer.

Unit-4 :
Fractal's geometry Fractal generation procedure, Classification of Fractal, Fractal dimension, Fractal construction methods. Color models, XYZ, RGB, YIQ, CMY & HSV, Shading algorithms, Shading model, Illumination model, Gouraud shading, Phong shading**.**

Books :

1. Computer Graphics by M. Pauline Baker, Donald Hearn, 2nd Edition PHI.
2. Mathematical Element for Computer Graphics By. David F. Roger., J. Alan Adams, 2nd Edition, Tata McGHill.

Reference Books:

1. Principles of Interactive Computer Graphics By. William. M. Newmann. 2nd Edition Mc. Graw Hill.
2. Procedural Element for Computer Graphics By. David F. Roger. Mc. Graw Hill.
3. Computer Graphics By A.P. Godse, 2nd Editio TPPublication,
4. Computer Graphics By V.K. Pachghare, 2nd Edition, Laxmi Publication
5. Computer Graphics By Apurva Desai (PHI)

M.Sc.(Computer Science)
Semester III
3T1
Paper 1 : Data Communication and Network

Unit-1 :

Introduction: Network structure and architectures and services OSI reference model.

The Physical Layer: theoretical basis for data communication, transmission media. Analog Transmission, Digital Transmission, Transmission and Switching, ISDN.

The Data Link Layer: Design issues, Error detection and correction, Elementary data link protocols, sliding window protocol, protocols performance, protocols specification and verification. Examples of the Data link layer.

Network Layer: Design issues, routing algorithms, Congestion control algorithms, Internet working, Examples of the network layer.

Unit-2 :

The Transport Layer: Design issues, Connection Management.

The session layer: Design issues and remote procedure call.

The Presentation Layer: Design issues, data compression techniques, cryptography.

The Application Layer: Design issues, file transfer, access and management, virtual terminals.

Unit-3 :

Network Security Fundamentals: Introduction, security Vulnerabilities and Threats, Classification of Security Services. Cryptography: Encryption principles, Conventional Encryption DES, IDEA, Algorithms, CBC, Location of Encryption Devices key Distribution.

Unit-4 :

Message Digests and Checksums, Message Authentication, Message Digests, Hash Functions and SHA, CRCs. Public key Systems: RSA Diffie-Heliman, DSS, Key Management.

Intruders: Intrusion Techniques, Intrusion Detection, Authentication, Password- Based Authentication, Address- Based Authentication, Certificates, Authentication Services, Email Security, Firewalls, Design Principles, Packet Filtering, Access Control, Trusted Systems, Monitoring and Management.

Books :

1. Computer Networks – Andrew S Tanenbum (PHI)
2. Network Security and Essentials: Application and standers
3. Willam Stalling – Pearson Education.
4. Cryptography and network security
5. Willam Stalling – Pearson Education.

Reference Books:

1. Internet Security: Timspeed, Juanita Ellis, Digital Press Publication
2. Internet Security: Jan L. Harington, Morgan Kaufmann Publication
3. Firewall Network System: John R. Vacca, Scott R. Ellis, Digital Press
4. Network Algoritm, George Varghese, Morgan Kaufmann Publication
5. TCP/IP Addressing: Buck Graham, Morgan Kaufmann Publication
6. Data Communication and Networking: Behrouz A. Forouzan, TMH.

3T2

Paper 2: Software Engineering

Unit-1 :

Introduction to Software Engineering : The evolving role of software, Changing Nature of Software, Software myths.

A Generic view of process : Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Process models : The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Software Requirements **:** Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Unit-2 :

Requirements engineering process : Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models : Context Models, Behavioral models, Data models, Object models, structured methods. Modeling with UML .

Design Engineering : Design process and Design quality, Design concepts, the design model.

Creating an architectural design : Software architecture, Data design, Architectural styles and patterns, Architectural Design.

Unit-3 :

Object-Oriented Design : Objects and object classes, An Object-Oriented design process, Design evolution. Performing User interface design : Golden rules, User interface analysis and design, interface analysis, interface design steps, Design evaluation.

Testing Strategies : A strategic approach to software testing, test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics **:** Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance.

Unit-4 :

Metrics for Process and Products **:** Software Measurement, Metrics for software quality.

Risk management **:** Reactive vs. Proactive Risk strategies, software risks, Risk identification, Risk projection, Risk refinement, RMMM, RMMM Plan.

Quality Management : Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability, The ISO 9000 quality standards.

Books :

1.Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition.McGrawHill International Edition.
2. Software Engineering- Sommerville, 7th edition, Pearson education.

Reference Books:

1. Software Engineering- K.K. Agarwal & Yogesh Singh, New Age International Publishers
2. Software Engineering an Engineering approach- James F. Peters, Witold Pedrycz, John Wiely.
3. Systems Analysis and Design- Shely Cashman Rosenblatt,Thomson Publications.
4. Software Engineering principles and practice- Waman S Jawadekar, The McGraw-Hill.

3T3
Paper 3: CE1-1(Core Elective 1)
Neural Network

Unit-1 :

Introduction: Feedforward Neural Networks: Artificial Neurons, Neural Networks and Architectures: Neuron Abstraction, Neuron Signal Functions, Mathematical Preliminaries, Neural Networks Defined, Architectures: Feed forward and Feedback, Salient Properties and Application Domains of Neural Network Geometry of Binary Threshold Neurons and Their Network: Patterns Recognition and Data Classification, Convex Sets, Convex Hulls and Linear Separability, Space of Boolean Functions, Binary Neurons are pattern Dichotomizes, Non-linearly separable Problems, Capacity of a simple Threshold Logic Neuron, Revisiting the XOR Problem, Multilayer Networks.

Unit-2 :

Supervised Learning I: Perceptrons and LMS: Learning and Memory, From Synapses to Behaviour: The Case of Aplysia, Learning Algorithms, Error Correction and Gradient Descent Rules, The Learning Objective for TLNs, Pattern space and Weight Space, Perceptron Learning Algorithm, Perceptron Convergence Theorem, Perceptron learning and Non-separable Sets, Handling Linearly Non-Separable sets, á-Least Mean Square Learning, MSE Error Surface and its Geometry, Steepest Descent Search with Exact Gradient Information, ì-LMS: Approximate Gradient Descent, Application of LMS to Noise Cancellation

Unit-3 :

Supervised Learning II: Backpropagation and Beyond: Multilayered Network Architectures, Backpropagation Learning Algorithm, Structure Growing Algorithms, Fast Relatives of Backpropagation, Universal Function Approximation and Neural Networks, Applications of Feedforward Neural Networks, Reinforcement Learning

Unit-4 :

Neural Networks: A Statistical Pattern Recognition Perspective: Introduction, Bayes Theorem, Classification Decisions With Bayes Theorem, Probabilistic Interpretation Of A Neuron Discriminant Function, Interpreting Neuron Signals As Probabilities, Multilayered Networks, Error Functions And Posterior Probabilities, Error Functions For Classification Problems

Generalization: Support Vector Machines and Radial Basis Function Networks: Learning from Examples and Generalization, Statistical Learning Theory Briefer, Support Vector Machines, Radial Basis Function Networks, Regularization Theory Route to RRBFNs, Generalized Radial Basis Function Network, Learning In RRBFNs, Image Classification Application, Other Models for Valid Generalization

Books :

1. Neural Network- A Classroom Approach, Satish Kumar, Tata McGraw Hill
2. Introduction to neural networks using MATLAB 6.0 by Sivanandam, S Sumathi, S N Deepa, Tata Mcgraw Hill

Reference Books:

1. Neural networks A comprehensive foundations, Simon Hhaykin, Pearson Education 2nd edition 2004
2. Artificial neural networks - B.Yegnanarayana, Prentice Hall of India P Ltd 2005.
3. Neural networks in Computer intelligence, Li Min Fu, TMH 2003.

4. Neural networks James A Freeman David M S kapura, Pearson education 2004.

3T3
Paper 3 : CE1-2 (Core Elective 1)
Multimedia Technologies

Unit-1 :

Fundamental concepts in Text and Image: Multimedia and hypermedia, world wide web, overview of multimedia software tools. Graphics and image data representation graphics/image data types, file formats, Color in image and video: color science, color models in images, color models in video. Fundamental concepts in video and digital audio: Types of video signals, analog video, digital video, digitization of sound, MIDI, quantization and transmission of audio.

Unit-2 :

Action Script I : ActionScript Features, Object-Oriented ActionScript, Datatypes and Type Checking, Classes, Authoring an ActionScript Class Action Script II : Inheritance, Authoring an ActionScript 2.0 Subclass, Interfaces, Packages, Exceptions.

Unit-3 :

Application Development **:** An OOP Application Frame work, Using Components with ActionScript MovieClip Subclasses.

Multimedia data compression: Lossless compression algorithm: Run-Length Coding, Variable Length Coding, Dictionary Based Coding, Arithmetic Coding, Lossless Image Compression, Lossy compression algorithm: Quantization, Transform Coding, Wavelet-Based Coding, Embedded Zerotree of Wavelet Coefficients Set Partitioning in Hierarchical Trees (SPIHT).

Unit-4 :

Basic Video Compression Techniques: Introduction to video compression, video compression based on motion compensation, search for motion vectors, MPEG, Basic Audio Compression Techniques.

Multimedia Networks: Basics of Multimedia Networks, Multimedia Network Communications and Applications : Quality of Multimedia Data Transmission, Multimedia over IP, Multimedia over ATM Networks, Transport of MPEG-4, Media-on-Demand(MOD).

Books :

1. Fudamentals of Multimedia by Ze-Nian Li and Mark S. Drew PHI/Pearson Education.
2. Essentials ActionScript 2.0, Colin Moock, SPD O,REILLY.

Reference Books:

1. Digital Multimedia, Nigel chapman and jenny chapman, Wiley-Dreamtech
2. Macromedia Flash MX Professional 2004 Unleashed, Pearson.
3. Multimedia and communications Technology, Steve Heath, Elsevier(Focal Press).
4. Multimedia Applications, Steinmetz, Nahrstedt, Springer.
5. Multimedia Basics by Weixel Thomson.

6. Multimedia Technology and Applications, David Hilman , Galgotia.

3T3
Paper 3: CE1-3 (Core Elective 1)
ASP.Net

Unit-1 :

ASP.NET programming model: Introduction, event driven programming over http, http protocol, structure of ASP.NET page, ASP.NET component model, ASP.NET Provider model, Anatomy of ASP.Net Page: Invoking page, Page class, Page Life cycle.

ASP.NET Core Server controls: Generalities of Server Controls, Properties, events and methods of Control class, HTML controls: Generalities of HTML controls, HTML Containers, HTML input controls.

Unit-2 :

Web controls: Generalities of Web Control, core web control, misc web control, Validation controls: Generalities of validation controls, Gallery of controls, Programming with Web forms; HtmlFrom Class, Multiple forms, cross page postings, Page errors, Page Personalization.

Ritch Page Composition: Working with master page, working with themes, working with wizards,ADO.NET data Providers, Connecting to data sources: connection strings, connection pooling, Executing commands: ADO Data Readers, Data Adapters, working with transactions, procedures etc. Data container objects: Data sets, Data tables, Data Relations, Data binding models: expressions and components.

Unit-3 :

Creating bindable grid of data: DataGrid Control, GridView control, Managing list of records: ListView control and Managing views of records: DetailView Control, FromView Control, Initialization of Application: HttpApplicationClass, Application module, methods and events of HttpApplication Class, The global.asax file, HttpContext Class, Server Object, HttpResponse Object, HttpRequest Object.

Unit-4 :

ASP.NET state management: Application state, Session State: working with session state,
customizing session state, view state of page. ASP.NET caching: Caching Application data, the Cache Class, ASP.NET Security: Using Form authentication, membership and role management API, Security related controls, AJAX Enabled web services: Web services as application specific services, remote call via web services,

Books :

1. Programming with Microsoft ASP.NET 3.5 by Dino Esposito, Microsoft Press
2. Programming with Microsoft ASP.NET 4.0 by Microsoft Press
3. The Complete Reference ASP.NET by MacDonald(TMH)

3T4
Paper 4 : FC1 (Foundation 1)

Operating System Concepts

Unit I - Introduction
OS As An Extended Machine, OS As An Resource Manager, History Of OS & Its Generation, Mainframe OS, Server OS, Multiprocessor OS, Personal Computer OS, Real Time OS, Embedded OS, Smart Card OS, Processor, Memory, I/O Devices, Buses, Processes, Deadlocks, Memory Management, I/O, Files, Security, The Shell, System Calls, OS Structure.

Unit II - Processes & Threads
Process Model, Process Creation, Process Termination, Process Hierarchies, Process State Implementation Of Processes, Thread Model, Thread Model, Thread Usage, Implementing Threads In User Space & Kernel, Hybrid Implementation, Scheduler Activations, Pop-Up Threads, Interprocess Communication, Scheduling.

Unit III - File System Concepts in OS.
File Name, File Structure, File Types, File Access, File Attributes, File Operations Memory Mapped Files, Single Level Directory System, Two Level Directory System, Hierarchical Directory System, Path Name, Directory Operations, File System Layout, Implementing Files, Implementing Directories, Shared Files, CD-Rom File System, Ms-Dos File System, Windows File System, Unix File System.

Unit IV
Introduction to Disk Operating System (DOS) - File types, Directory Structure, Booting - Warm and Cold Booting, Types of DOS commands (Internal and External), Directory commands, Commands related to file management, General commands, batch commands, wild card characters & its use.
Introduction to windows Operating System Advantages of windows operating system, GUI, use of help features, changing system settings, system tools, use of run command, setting peripherals, drivers, editing graphics in windows, new features in windows XP/Vista versions.
Introduction to UNIX Operating System
History of UNIX File System: Pdp-11 UNIX, Portable UNIX, Berkeley Unix, Standard Unix, Linux. Overview Of Unix, Processes In Unix Memory Management In Unix, I/O In Unix, Security In Unix.

Books:
1. Modern Operating System By Andrew Tannenbaum, PHI Publication.
2. UNIX the Complete Book a Guide for the professional By Jason Manger, Galgotia Publication
3. Red Hat Linux 7 By Brain Proffitt, PHI Publication.
4. Dos/Unix & Windows: I.T. Today (Encyclopedia) By S. Jaiswal
5. Operating System Concept: Sillberschatz Galvin
6. MSDOS; Manual

3T4
Paper 4 : CDC1 (Core Discipline Centric 1)

Mobile Computing

Unit-1 :

Mobile Communications: An Overview: Mobile Communication, Mobile Computing, Mobile Computing Architecture, Mobile Devices, Mobile System Networks, Data Dissemination, Mobility Management, Security Mobile Devices and Systems: Mobile Phones, Digital Music Players, Handheld Pocket Computers, Handheld Devices: Operating Systems, Smart Systems, Limitations of Mobile Devices, Automotive Systems GSM and Similar Architectures: GSM-Services and System, Architecture, Radio Interfaces, Protocols, Localization, Calling Handover, Security, New Data Services, General Packet Radio Service, High-speed Circuit Switched Data, DECT

Unit-2 :

Wireless Medium Access Control and CDMA based Communication: Medium Access Control, Introduction to CDMA-based Systems, Spread Spectrum in CDMA Systems, Coding Methods in CDMA, IS-95 cdma One System, IMT- 20 0 0, i - m o d e , O F D M , Mobile IP Network Layer: IP and Mobile IP Network Layers, Packet Delivery and Handover Management, Location Management, Registration, Tunnelling and Encapsulation Route Optimization, Dynamic Host Configuration Protocol, Mobile Transport Layer, Conventional TCP/IP Transport, Layer Protocols, Indirect TCP, Snooping TCP, Mobile TCP, Other Methods of TCP-layer Transmission for Mobile Networks, TCP Over 2.5G/3G Mobile Networks

Unit-3 :

Databases: Database Hoarding Techniques, Data Caching, Client-Server Computing and Adaptation, Transactional Models, Query Processing, Data Recovery Process, Issues relating to Quality of Service, Data Dissemination and Broadcasting Systems**:** Communication Asymmetry, Classification of Data-Delivery Mechanisms, Data Dissemination Broadcast Models, Selective Tuning and Indexing Techniques, Digital Audio Broadcasting, Digital Video Broadcasting, Data Synchronization in Mobile Computing Systems**:** Synchronization, Synchronization Software for Mobile Devices, Synchronization Protocols, SyncML Synchronization Language for Mobile Computing, Sync4J (Funambol), Synchronized Multimedia ,Markup Language (SMIL)

Unit-4 :

Mobile Devices Server and Management: Mobile Agent, Application Server, Gateways, Portals, Service Discovery, Device Management, Mobile File Systems, Security, Mobile Adhoc and Sensor Networks: Introduction to Mobile Ad-hoc Network, MANET, Wireless Sensor Networks, Applications Wireless LAN, Mobile Internet Connectivity, and Personal Area Network: Wireless LAN (WiFi) Architecture and Protocol Layers, WAP 1.1 and WAP 2.0, Architectures, XHTML-MP (Extensible Hypertext Markup Language Mobile Profile), Bluetooth-enabled Devices Network, Layers in Bluetooth Protocol, Security in Bluetooth Protocol, IrDA, ZigBee Mobile Application Languages XML, Java, J2ME, and Java Card: Introduction, XML, JAVA, Java 2 Micro Edition (J2ME), JavaCard, Mobile Operating Systems : Operating System PalmOS, Windows CE, Symbian OS, Linux for Mobile Devices 530

Books :

1. Mobile Computing, Raj Kamal, Oxford University Press

Reference Books:

1. Mobile Communications Jochen Schiller, Addison-Wesley.
2. Handbook of Wireless Networks and Mobile Computing, Stojmenovic and Cacute, Wiley,
3. Mobile Computing Principles: Designing and Developing Mobile
4. Applications with UML and XML, Reza Behravanfar, Cambridge University Press,

M.Sc. (Computer Science)
Semester IV
4T1
Paper 1 : Data Mining

Unit-1 :

Introduction to Data Mining: Why Mine Data? Commercial Viewpoint, Scientific Viewpoint Motivation, Definitions, Origins of Data Mining, Data Mining Tasks, Classification, Clustering, Association Rule Discovery, Sequential Pattern Discovery, Regression, Challenges of Data Mining, Data Mining-Data: What is Data? Attribute Values, Measurement of Length, Types and Properties of Attributes, Discrete and Continuous Attributes, Types of data sets, Data Quality, Data Preprocessing, Aggregation, Sampling, Dimensionality Reduction, Feature subset selection, Feature creation, Discretization and Binarization, Attribute Transformation, Density.

Unit-2 :

Data Mining: Exploring Data: Data Exploration Techniques, Summary Statistics, Frequency and Mode, Percentiles, Measures of Location: Mean and Median, Measures of Spread: Range and Variance, Visualization, Representation, Arrangement, Selection, Visualization Techniques: Histograms, , Box Plots, Scatter Plots, Contour Plots, Matrix Plots, Parallel Coordinates, Other Visualization Techniques, OLAP : OLAP Operations, Data Mining Classification: Bask Concepts, Decision Trees, and Model Evaluation: Classification: Definition, Classification Techniques, Tree Induction, Measures of Node Impurity, Practical Issues of Classification, ROC curve, Confidence Interval for Accuracy, Comparing Performance of Two Models, Comparing Performance of Two Algorithms.

Unit-3 :

Data Mining Classification: Alternative Techniques: Rule-Based Classifier, Rule Ordering Schemes, Building Classification Rules, Instance-Based Classifiers, Nearest Neighbor Classifiers, Bayes Classifier, Naive Bayes Classifier, Artificial Neural Networks (ANN), Support Vector Machines. Data Mining Association Analysis: Basic Concepts and Algorithms: Association Rule Mining, Frequent Itemset Generation, Association Rule Discovery : Hash tree, Factors Affecting Complexity, Maximal Frequent Horible Closed Itemset, Alternative Methods for Frequent Itemset Generation, FPgrowth Algorithm, Tree Projection, Rule Generation, Pattern Evaluation, Statistical Independence, Properties of A Good Measure, Support-based Pruning, Subjective Interestingness Measure.

Unit-4 :

Data Mining Cluster Analysis: Basic Concepts and Algorithms: Applications of Cluster Analysis, Types of Clusters, Clustering Algorithms: 'K-means and its variants, Hierarchical clustering, Density based clustering. Graph-Based Clustering, Limitations of Current Merging Schemes, Characteristics of Spatial Data Sets, Shared Near Neighbor Approach, ROCK (RObust Clustering using linKs), Jarvis Patrick Clustering, SNN Clustering Algorithm, Data Mining Anomaly Detection: Anomaly jOutlier Detection, Importance, Anomaly Detection Schemes, Density-based: LOF approach

Books :

1. Introduction to Data Mining by Tan, Steinbach, Kumar.
2. Data Mining: Concepts and Techniques by Jiawei Han, Micheline Kamber, Morgan Kaufmann

Reference Books:

1. Data Mining: Practical Machine Learning Tools and Techniques by Ian H. Witten and Eibe Frank, Morgan Kaufmann, 2nd Edition (2005).
2. Principles of Data Mining: David Hand, Heikki Mannila & Padhraic Smyth, PHP Publication.

4T2
Paper 2 : Artificial Intelligence & Expert System

Unit-1 :

AI problems, AI Techniques, Tic-tac-toe, Question Answering, Problem as a state space search, A water jug problem, production system, Control strategies, Heuristic Search, Problem Characteristics, Production system characteristics, Design of search programs

AI Search techniques :- Depth-first, Breadth-first search, Generate-and-test, Hill climbing, Best-first search, Constraint satisfaction, Mean-ends-analysis, A* Algorithm, AO* algorithm.

Unit-2 :

Knowledge Representation:- Representations and mappings, Knowledge Representations, Issues in Knowledge Representation, Predicate Logic:- Representing Instance and Isa Relationships, Computable Functions and predicates, Resolution, Natural Deduction, Logc programming, Forward versus Backward Reasoning, Matching, Control knowledge, Expert System.

Unit-3 :

Games playing : Minimax search procedure , adding alpha-beta cutoffs, additional refinements,

Planning :- Component of a planning system, Goal task planning, Nonlinear planning, Hierarchical Planning.

Unit-4 :

Understanding, Understanding as Constraint satisfaction, Natural Language Processing, Syntactic Processing, Unification grammars, Semantic Analysis, Introduction to pattern recognition, Parallel and Distributed AI, Psychological Modeling, Distributed Reasoning Systems,

Books :

1. Artificial Intelligence by Elaine Rich, Mcgrawhill Inc.
2. Artificial Intelligence and Expert Systems – Jankiraman, Sarukes (M)

Reference Books:

1. Expert System : Theory and Practice- Ermine (PHI)
2. Lisp Programming – Rajeo Sangal – (TMH)
3. Rule based Expert System – M.Sasikumar (Narosa)
4. Artificial intelligence – Russell-Pearson- Ist Text book.
5. Principles of AI- Nils Nilson
6. A.I. by R.J.Winston - Pearson
7. ES : Theory and Practice- Ermine – PHI.
8. Int. ti Expert System – Jackson – Pearson.

4T3
Paper 3 : CE2-1 (Core Elective 2)

Design and Analysis of Algorithm

Unit-1 :
Elementary Algorithmics: Introduction- Problems and Instances- The Efficiency of algorithms- Average and worst case Analysis. Asymptotic Notation: A notation for the order of – Other asymptotic notation- Conditional asymptotic notation- Asymptotic notation with several parameters- Operations on asymptotic notation.
Analysis of Algorithms: Introduction- Analyzing control structures- Average case analysis- Amortized Analysis- Solving recurrences.

Unit-2 :
Greedy Algorithms: Making change- General Characteristics of Greedy algorithms- Minimum spanning trees and shortest paths- Knapsack Problems- Scheduling.
Divide and Conquer: Introduction- Multiplying large numbers- The general template- binary search- sorting- Finding the median- Matrix multiplication- Introduction to cryptography.

Unit-3 :
Dynamic Programming: The Principle of Optimality- making change the knapsack problem- shortest paths- Chained matrix multiplication- approaches using recursion- Memory functions.

Unit-4 :
Back tracking & Brach Bound: Traversing trees- Depth first search of directed and ndirected graph- Breadth first search- Back tracking- Branch and bound- The minimax principle, Introduction to NP-Completeness; Classes P and NP- Polynomial reductions- NP- Complete Problems NP- Hard problems- Non- Deterministic algorithms.

Books :

1. Fundamentals of Algorithms - Gilles Brassard & Paul Brately. Prentice-Hall (India)Ltd.

Reference Books:

1. Fundamentals of Computer Algorithms by Ellis Horowitz & Sartaj Sahani. Galgotia Publication.
2. Computer Algorithms: Introduction to Design & Analysis. Sara Baase & Alien Van Gelder. Addison Wesley Publishing Company.

4T3
Paper 3 : CE2-2 (Core Elective 2)
Embedded System

Unit-1 :

Introduction to Embedded Systems: Embedded Systems, Processor Embedded into a System, Embedded Hardware Units and Devices in a System, Embedded Software in a System, Examples of Embedded Systems, Embedded System-on-chip (Soc) and Use of VLSI Circuit Design Technology, Complex Systems Design and Processors, Design Process in Embedded System, Formalization of System Design, Design Process and Design Examples, Classification of Embedded Systems, Skills Required for an Embedded System Designer 8051 and Advanced Processor Architectures, Memory Organization and Realworld Interfacing:

8051 architecture, Real World Interfacing, Introduction to Advanced Architectures, Processor and Memory Organization,Instruction-Level Parallelism, Performance Metrics,Memory-Types, Memory-Maps and Addresses, Processor Selection, Memory Selection, Devices and Communication Buses for Devices Network :Types and Examples, Serial Communication

Devices, Parallel Device Ports, Sophisticated Interfacing Features in Device Ports, Wireless Devices, Timer and Counting Devices, Watchdog Timer, Real Time Clock, Networked Embedded Systems, Serial Bus Communication Protocols, Parallel Bus Device Protocols-Parallel Communication Network Using ISA, PCI, PCI-X and Advanced Buses, Internet Enabled Systems-Network Protocols, Wireless and Mobile System Protocols

Unit-2 :

Device Drivers and Interrupts Service Mechanism: Programmed-I/O Busy-wait Approach without Interrupt Service Mechanism, ISR Concept, Interrupt Sources, Interrupt Servicing (Handling) Mechanism, Multiple Interrupts, Context and the Periods for Context Switching, Interrupt Latency and Deadline, Classification of Processors Interrupt Service Mechanism from Context-Saving Angle, Direct Memory Access, Device Driver Programming,

Programming Concepts and Embedded Programming in C, C++ and Java: Software Programming in Assembly Language (ALP) and in High-Level Language 'C' 235 , C Program Elements: Header and Source Files and Preprocessor Directives, Program Elements:

Macros and Functions, Program Elements: Data Types, Data Structures, Modifiers, Statements, Loops and Pointers, Object-Oriented Programming, Embedded Programming in C++, Embedded Programming in Java,

Program Modeling Concepts: Program Models, DFG Models, State Machine Programming

Models for Event-controlled Program Flow, Modeling of Multiprocessor Systems, UML Modelling

Unit-3 :

Interprocess Communication and Synchronization of Processes, Threads and Tasks: Multiple Processes in an Application, Multiple Threads in an Application, Tasks, Task States, Task and Data, Clearcut Distinction between Functions, ISRS and Tasks by their Characteristics, Concept of Semaphores, Shared Data, Interprocess Communication, Signal Function, Semaphore Functions, Message Queue Functions, Mailbox Functions, Pipe Functions, Socket Functions, RPC Functions,

Real Time Operating Systems : OS Services, Process Management, Timer Functions, Event Functions,

Memory Management, Device, File and 10 Subsystems Management, Interrupt Routines in RTOS Environment and Handling of Interrupt Source Calls, Real-time Operating Systems, Basic Design Using an RTOS, Rtos Task Scheduling Models, Interrupt Latency and Response of the Tasks as Performance Metrics, OS Security Issues,

Unit-4 :

Real time Operating System ProgrammingI:

MicrodOS-II and VxWorks, Basic Functions and Types of RTOSES, RTOS mCOS-II, RTOS VxWorks,

Realtime Operating System ProgrammingII:

Windows CE, OSEK and Real-time Linux Functions,Windows CE, OSEK, Linux 2.6.x and RTLinux,

Design Examples and Case Studies of Program Modeling and Programming with RTOS **I:**Case Study of Embedded System Design and Coding for an Automatic, Chocolate Vending Machine (ACYM) Using Mucos RTOS, Case Study of Digital Camera Hardware and Sofware Architecture, Case Study of Coding for Sending Application Layer Byte Streams on a TCPIIP Network Using RTOS Vxworks

Design Examples and Case Studies of Program Modeling and Programming with RTOS 2:

Case Study of Communication Between Orchestra Robots, Embedded Systems in Automobile, Case Study of an Embedded System for an Adaptive Cruise Control (ACC) System in a Car, Case Study of an Embedded System for a Smart Card, Case Study of a Mobile Phone Software for Key Inputs,

Embedded Software Development Process and Tools: Introduction to Embedded Software Development Process and Tools, Host and Target Machines, Linking and Locating Software, Getting Embedded Software into the Target System, Issues in Hardware-Software Design and Co-design,

Testing, Simulation and Debugging Techniques and Tools: Testing on Host Machine: Simulators, Laboratory Tools

Books :

1. Embedded Systems: Architecture, Programming and Design, Raj Kamal, McGraw Hill

Reference Books:

1. Embedded System Design" Frank Vahid&Tony Givargis; John Wiley &sons, Inc.
2. Real – Time Systems and software"Alan C. Shaw ; John Wiley &Sons Inc
3. Fundamentals of embedded Software", Daniel W. Lewis, Pearson
4. Real time Systems", J. W. S. Liu, Pearson
5. Embedded Realtime System Programming", S. V. Iyer and P. Gupta, TMH
6. An Embedded System Primer" David E. Simon; Addison-Wesley Pub
7. Embedded System Design" Steve Heath; Butterworth-Heinemann Pub.
8. Embedded System Computer Architecture" Graham Wilson, Butterworth-Heinemann
9. Introduction to Embedded Systems by Shibu K V (TMH)

4T3
Paper 3 : CE2-3 (Core Elective 2)
Pattern Recognition

Unit-1 :
Introduction to Pattern Recognition, Bayesian decision theory: Classifiers, Discriminant functions, Decision surfaces, Normal density and Discriminant functions, discrete features

Unit-2 :
Maximum Likelihood and Bayesian Estimation: Parameter estimation methods, MaximumLikelihood estimation, Bayesian estimation, Bayesian Parameter Estimation, Gaussian Case, General Theory, Problem of Dimensionality, Accuracy, Dimension, and Training Sample Size, ComputationalComplexity and Overfitting, Component Analysis and Discriminants, Principal Component Analysis (PCA), Expectation Maximization (EM), Hidden Markov models for sequential pattern classification, First-Order Markov Models, First-Order Hidden Markov Models, Hidden Markov Model Computation, Evaluation, Decoding and Learning.

Unit-3 :
Non-parametric: Density estimation, Parzen-window method, Probabilistic Neural Networks (PNNs),K-earest Neighbour, Estimation and rules, Nearest Neighbour and Fuzzy Classification. Linear Discriminant function based classifiers: Perceptron, Linear Programming Algorithm, Support Vector Machines (SVM)

Unit-4 :
Multilayer Neural Network: Feed Forward Classification, Back Propagation Algorithm, Error Surface Stochastic Data: Stochastic search, Boltzmann Learning, Evolutionary method and Genetic Programming.Non-metric methods for pattern classification: Decision trees, Classification and Regression Trees (CART) and other tree methods, String recognition and Rule Based method. Unsupervised learning and clustering : Mixture Densities and Identifiability, Maximum Likelihood estimation, Application Normal Mixture, Unsupervised Bayesian Learning, Data Description and Clustering, Hierarchical Clustering, Graph theory method, Problem of validity, Component analysis

Books :

1. R.O.Duda, P.E.Hart and D.G.Stork, "Pattern Classification 2nd Edition", John Wiley, 2007 2. 2. Christopher M. Bishop, "Neural Network for Pattern Recognition", Oxford Ohio Press.

Reference Books:

1. E. Gose, R. Johansonbargh, "Pattern Recognition and Image Analysis", PHI
2. Ethen Alpaydin, "Introduction to Machine Learning", PHI
3. SatishKumar, "Neural Network- A Classroom Approach", McGraw Hill.
4. Dr. Rao & Rao,Neural Network & Fuzzy Logic
5. S. S.Theodoridis and K.Koutroumbas, "Pattern Recognition", 4th Ed., Academic Press,
6. C.M. Bishop, "Pattern Recognition and Machine Learning", Springer, 2006
7. Rajjan Shinghal : Pattern Reognition (TMH)

4T4
Paper 4 : FC2 (Foundation 2)
Advances in Information Technology

Unit I:
Software and programming languages. Introduction, The Software: Software types, Systems Software, Application Software, Types of Programming Languages. Characteristics of good programming language, Development of programming languages-machine language, assembly language, high level language. Introduction to Microsoft Office, working with MS Word, MS Excel, MS Power point, Data Base, Data Base Management System

Unit II:
Computer communication, need for networks, forms of data communication – analog, digital; data transmission modes, data transmission media (Twisted pair, co-axial, Fibre Optic, Microwave, Satellite communication), Bandwidth, Protocols, modems, Multiplexing, Types of network-, LAN, WAN, MAN, Network topology, types of topologies, advantages & limitations .

Unit III:
Concept of E-Commerce and Internet. Brief history and development of internet, WWW, Internet architecture – servers, browsers, URL; service providers – shell account, TCP/IP internet services and Internet applications , Intranet, Extranet, Virus, Types of Viruses, Anti-Virus, Firewall and Anti-Spy ware Utilities, Open Source Software.

Unit IV:
Current Trends in Wireless communication: Mobile Internet, GPS, 3G, 4G, Wi-Fi, Bluetooth, Wireless Application Protocol,
Electronic Commerce, Types of E-Commerce and their utilities, M-Commerce.
Advanced Trends in IT - Mobile Computing, Cloud Technology, Bioinformatics, Virtual Reality, Neural Network, Grid Computing, Intelligent Software Agent, , Virtual LAN Technology, Distributed Computing, OLAP, Data Mining, BPO & KPO, Artificial Intelligence & Expert System, ERP, E-Banking.

Books:
1) Dr. Madhulika Jain, Shashank & Satish Jain ,"Information technology Concepts", BPB Publication, New Delhi, ISBN-- 8176562769
2) Information Technology - Dr. Sushila Madan (Taxmann's)
3) Computer Fundamentals By P. K. Sinha
4) Business On The Net An Introduction To The Whats And Hows Of Ecommerce By K. N. Agarwala & Others (Macmilan)
5) Verma,"Computer, Internet & Multimedia – Dictionary", Universities Press

4T4
Paper 4 : CDC2 (Core Discipline Centric 2)
Parallel Computing

Unit-1 :

Introduction to Parallel Computing: Motivating Parallelism, Scope, Applications, Parallel Programming Platforms: Implicit Parallelism: Limitations of Memory System Performance, Dichotomy of Parallel Computing Platforms, Physical Organization of Parallel Platforms, Communication Costs in Parallel Machines, Routing Mechanisms for Interconnection Networks, Impact of Process-Processor Mapping and Mapping Techniques

Unit-2 :

Principles of Parallel Algorithm Design: Preliminaries ,Decomposition Techniques, Characteristics of Tasks and Interactions, Mapping Techniques for Load Balancing, Methods for Containing Interaction Overheads, Parallel Algorithm Models, Basic Communication operations:One-to-All Broadcast and All-to-One Reduction, All-to-All Broadcast and Reduction, All-Reduce and Prefix-Sum Operations, Scatter and Gather, All-to-All Personalized Communication, Circular Shift , Improving the Speed of Some Communication Operations

Unit-3 :

Analytical Modeling of Parallel Programs: Performance Metrics for Parallel Systems, The Effect of Granularity on Performance, Scalability of Parallel Systems, Minimum Execution Time and Minimum Cost-Optimal Execution Time, Asymptotic Analysis of Parallel Programs, Other Scalability Metrics, Programming Using the Message Passing Paradigm: Principles of Message-Passing Programming, The Building Blocks: Send and Receive Operations , MPI: the Message Passing Interface, Topologies and Embedding, Overlapping Communication with Computation, Collective Communication and Computation Operations, Groups and Communicators,

Unit-4 :

Programming Shared Address Space Platforms: Thread Basics, Why Threads? The POSIX Thread API, Thread Basics: Creation and Termination, Synchronization Primitives in Pthreads, Controlling Thread and Synchronization Attributes, Thread Cancellation, Composite Synchronization Constructs, Tips for Designing Asynchronous Programs, OpenMP: a Standard for Directive Based Parallel Programming, Dense Matrix Algorithms: Matrix- Vector Multiplication, Matrix-Matrix Multiplication, Solving a System of Linear Equations Sorting: Issues in Sorting on Parallel Computers, Sorting Networks, Bubble Sort and its Variants, Quicksort, Bucket and Sample Sort, Other Sorting Algorithms,
Graph Algorithms: Minimum spanning tree Prims Algorithm, Single-Source Shortest Paths: Dijkstra's Algorithm Search Algorithms for Discrete Optimization Problems: Sequential Search Algorithms, Search Overhead Factor, Parallel Depth-First Search, Parallel Best-First Search, Speedup Anomalies in Parallel Search Algorithms, Dynamic Programming: Overview of Dynamic Programming, Serial Monadic DP Formulations, Monadic DP Formulations, The Longest-Common- Subsequence Problem, Serial Polyadic DP Formulations, Floyd's All-Pairs Shortest-Paths Algorithm, Nonserial Polyadic DP Formulations, The Optimal Matrix-Parenthesization Problem, Fast Fourier Transform: The Serial Algorithm, The Binary-Exchange Algorithm, The Transpose Algorithm

Books :

1. Introduction to Parallel Computing, Ananth Grama, Pearson Education

Reference Books:

1. Fundamental of Paralle Processing, Harry F. Jordan, Gita Alaghband, Pearson Education
2. Parallel Programming, Michael Allen, Barry Wilkinson, Pearson Education