



## **RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY**

### **DIRECTION NO.25 OF 2017**

#### **DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF MASTER OF COMPUTER MANAGEMENT (MCM) Choice Based Credit System (CBCS)**

**WHEREAS** the Maharashtra Universities Act No. XXXV of 1994 has come into force with effect from 22<sup>nd</sup> July, 1994.

**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 14.2.2012 have decided to update and upgrade the existing syllabus for the award of the degree of Master of Computer Management 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 .

**AND**

**WHEREAS** the Special Task Committee in Computer Application in its meetings held on 24.2.2016 updated the existing syllabi and recommended some modifications in the scheme of examination for postgraduate 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 Master of Computer Management 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** it is expedient to provide an Ordinance for the purpose of prescribing examinations leading to the degree of Master of Computer Management in the Faculty of Commerce and phasic repeal of Ordinance No. 21 of 1994 governing the existing course of Master of Computer Management.

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 4.1.2016 constituted sub-committee for syllabus restructuring of MCM with Semester pattern.

AND

Whereas, The Sub-committee submitted the Semester Draft Syllabus of MCM in meeting held on 24.2.2016;

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 of exemption and ATKKT, 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, RashtrasantTukadojiMaharaj 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 REGARDING EXAMINATIONS LEADING TO THE MASTER OF COMPUTER MANAGEMENT IN THE FACULTY OF COMMERCE, RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR**”.

1. There shall be FOUR examinations leading to the degree of Master of Computer Management namely:

**Part-I**

- (1) The Master of Computer Management (MCM) Semester - I Examination,
- (2) The Master of Computer Management (MCM) Semester - II Examination,

**Part-II**

- (3) The Master of Computer Management (MCM) Semester - III Examination,
- (4) The Master of Computer Management (MCM) Semester - IV Examination,

2. The duration of the Degree Course under this shall be of two academic years. The MCM Semester - I Examination at the end of the first Semester and MCM Semester - II Examination at the end of the Second Semester in First Year and MCM Semester - III Examination at the end of the Semester - III and MCM Semester - IV Examination at the end of Semester - IV in Second 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 **MCM Semester – I** Examination shall have :
    - (i) Obtained a Bachelor degree of this University or an equivalent Bachelor Degree of any statutory University in any faculty.
    - (ii) Prosecuted a regular course of study for not less than one Semester in any recognized institution or college affiliated to the R. T. M. Nagpur University where the course will be conducted.
  - (B) An applicant of the **MCM Semester - II** Examination shall have :

Appeared MCM Semester – I Examination of this University

- (C) An Applicant of MCM Semester - III Examination shall have passed MCM Semester - I and appeared in Semester - II Examination.

**OR**

Passed PGDCCA/Post B.Sc. Diploma in Computer Science & Application  
of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur.

- (D) An applicant of MCM Semester - IV Examination shall have appeared in Semester - III Examination.

<b>Admission to Semester</b>	<b>Candidate should have passed in following examinations</b>	<b>Candidate should have competed the term and filled examination form</b>
Semester - I	Degree Examination	----
Semester - II	----	Semester – I
Semester - III	PGDCCA /PGDCS/ MCM Semester-I	(Not applicable for PGDCCA/ PGDCS) Semester-II
Semester - IV	-----	Semester - III

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 43 of 2016 (Choice Based Credit System) shall stand repealed.

Sd/-

Nagpur  
Date : 29.08.2017

**Dr. S. P. Kane**  
Vice-Chancellor

## 7. Teaching and Examination Scheme

### Master of Computer Management (MCM)

#### (A) MCM Part-I

##### Semester – I

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
<b>Theory</b>								
1T1	Fundamental of Information Technology	I	4	80	40	20	10	4
1T2	Programming in C & OOPs Concept	II	4	80	40	20	10	4
1T3	Introduction to Operating Systems	III	4	80	40	20	10	4
1T4	Computerized Accounting (Tally ERP 9)	IV	4	80	40	20	10	4
<b>Practical</b>								
1P1	<b>Practical-I</b> :Programming in C & Operating Systems	P-I	8	100	50	Nil	Nil	4
1P2	<b>Practical-II</b> :Tally (ERP 9)& MS-Office	P-II	8	100	50	Nil	Nil	4
	<b>Total</b>		32	520				24

#### Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.
4. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
5. The odd semester may be scheduled from July to December and even semester from January to June.

## (B) MCM Part-I

### Semester – II

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
<b>Theory</b>								
2T1	Management Information Systems	I	4	80	40	20	10	4
2T2	Core Java	II	4	80	40	20	10	4
2T3	Quantity Techniques & Operation Research	III	4	80	40	20	10	4
2T4	E-Commerce and Web Designing	IV	4	80	40	20	10	4
<b>Practical</b>								
2P1	<b>Practical-I</b> :Core Java	P-I	8	100	50	Nil	Nil	4
2P2	<b>Practical-II</b> : HTML, JavaScript	P-II	8	100	50	Nil	Nil	4
	<b>Total</b>		32	520				24

#### Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of teaching or two hours of practical Work per week.
4. Each semester will consist of 15 – 18 weeks of academic Work equivalent to 90 actual teaching days.
5. The odd semester may be scheduled from July to December and even semester from January to June.

## (C) MCM Part-II

### Semester – III

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
<b>Theory</b>								
3T1	Advance Database Management System	I	4	80	40	20	10	4
3T2	Principles & Techniques of Management	II	4	80	40	20	10	4
3T3	<b>Electives :</b> (i) PHP & MySQL (ii) VB.Net (iii) C#.Net	III	4	80	40	20	10	4
3T4	<b>Compulsory Foundation</b> (i) Research Methodology	IV	4	80	40	20	10	4
<b>Practical</b>								
3P1	<b>Practical- I</b> :SQL & PL/SQL	P-I	8	100	50	Nil	Nil	4
3P2	<b>Practical-II</b> :Electives	P-II	8	100	50	Nil	Nil	4
	<b>Total</b>		32	520				24

#### Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of teaching or two hours of practical work per week.
4. Each semester will consist of 15 – 18 weeks of academic work equivalent to 90 actual teaching days.
5. The odd semester may be scheduled from July to December and even semester from January to June.

## (D) MCM Part-II

### Semester – IV

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
<b>Theory</b>								
4T1	ASP.Net	I	4	80	40	20	10	4
4T2	<b>Electives:</b> (i) Advance Java (ii) Android Programming (iii) Python	II	4	80	40	20	10	4
4T3	<b>Elective Foundation:</b> (i) Big Data &Hadoop (ii) Software Engineering (iii)Strategic Management	III	4	80	40	20	10	4
<b>Practical</b>								
4P1	<b>Practical-I:</b> ASP.Net	P-I	8	100	50	Nil	Nil	4
4P2	<b>Practical-II:</b> Electives	P-II	8	100	50	Nil	Nil	4
<b>Project</b>								
4P3	PROJECT	Project	8	100	50	-----	-----	4
<b>Total</b>			36	540				24

#### Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of teaching or two hours of practical work per week.
4. Each semester will consist of 15 – 18 weeks of academic work equivalent to 90 actual teaching days.
5. 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 50 % marks in each of the theory papers and each of the practical and the project and Internal Assessment (Sessional) separately.
- (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 insyllabi.
- (B) The Medium of instructions and examinations shall be in ENGLISH only.
10. Applicant for MCM Examination prosecuting regular course of study shall not be permitted to join any other course in this or any other University.

11. **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 be based on class test, attendance, project assignments, 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
<b>Total Internal Assessment Marks</b>		<b>20</b>

- 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 MCM Semester - I, Semester - II, Semester - III and Semester - IV Examination are as indicated in Paragraph 7. A, B, C and D respectively.
- A copy of Project work shall be submitted to college prior to commencement of Semester - IV 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.
- If an examinee failed to pass the MCM Degree within five successive years from the date of his/her first admission to particular programme he/she shall be declared as **“Not Fit for the Course” (NFC)** and he/she will not be allowed to appear further for any examination of the course.

#### **STANDARD OF PASSING**

- Every candidate must secure 50% marks in each head of passing.
  - The passing marks for external examination will thus be 40 out of 80 and for internal examination, 10 out of 20 and aggregate marks taking both together will be 50 marks.
  - There shall be no internal marks in Practical and Project Examination.
11. (A) There shall be no classification of examinees successful at the MCM Semester-I, Semester – II, Semester - III and Semester-IV Examinations 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 =  $\Sigma CG$ :** Sum of Product of Credits & Grades points /  $\Sigma C$ : 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
00 - 49	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 MCM Semester - IV Examination shall be declared based on the aggregate marks at the MCM Semester - I, Semester – II, Semester - III and Semester - IV Examination taken together and the CGPA will be calculated and notified.

- (C) Successful examinees at the MCM Semester - IV Examination shall be awarded division based on CGPA as follows:

<b>CGPA Range</b>	<b>Final Grade</b>	<b>Equivalent Class/ Division</b>
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)
0.00 to 4.99	F (Fail)	Fail
0	AB(Absent)	Absent

12. Successful examinees in the MCM Semester Examination shall be awarded Distinction in each subject in which examinees obtain 75% or more marks in that subject at the respective Examination.
13. 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 by university.
14. 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.
15. 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.
16. Examinees successful at MCM Semester - I, Semester - II, Semester-III and Semester-IV Examination shall on payment of the prescribed fees receive a Degree in the prescribed form signed by the Vice-Chancellor.
17. This Scheme shall come into force from the academic session 2016-17.
18. The Provisions of Ordinance No. 21 of 1994 governing the existing course for Master of Computer Management stands repealed physically on implementation of this Direction.

# APPENDIX –A

## QUESTION PAPER PATTERN

### First / Second / Third / Fourth Semester Master of Computer Management (MCM) Examination Choice Based Credit System (CBCS)

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. }  
b. } Unit - I
- c. }  
d. } Unit - II
- e. }  
f. } Unit - III
- g. }  
h. } Unit - IV

#### Part - B

- N. B. – 1. Each question carries three marks.  
2. Answers should not more than ten lines.

**Q2.**

**8 x 3 =**

**24**

- a. }  
b. } Unit - I
- c. }  
d. } Unit - II
- e. }  
f. } Unit - III
- g. }  
h. } Unit - IV

#### 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) | } | Unit - I | <b>OR</b> | 5  |
| (B) |   |          |           | 5  |
| (C) |   |          |           | 10 |
- Q4. **Either**
- |     |   |           |           |    |
|-----|---|-----------|-----------|----|
| (A) | } | Unit - II | <b>OR</b> | 5  |
| (B) |   |           |           | 5  |
| (C) |   |           |           | 10 |
- Q5. **Either**
- |     |   |            |           |    |
|-----|---|------------|-----------|----|
| (A) | } | Unit - III | <b>OR</b> | 5  |
| (B) |   |            |           | 5  |
| (C) |   |            |           | 10 |
- Q6. **Either**
- |     |   |           |           |    |
|-----|---|-----------|-----------|----|
| (A) | } | Unit - IV | <b>OR</b> | 5  |
| (B) |   |           |           | 5  |
| (C) |   |           |           | 10 |

## 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 Master of Computer Management.
- 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-voce examination for Project Work would be held as per the Examination Time Table of the second 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/OOPSetc.).

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/OOPSetc.).
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 voce (External)	40
Viva voce (Internal)	20

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<b>Total Marks</b>	<b>100</b>
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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-Voce 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 MCM Part \_\_\_\_\_ Semester \_\_\_\_\_ has satisfactorily completed the practical experiments prescribed by Rashtrasant Tukadoji Maharaj Nagpur University for the subject \_\_\_\_\_ during the academic year \_\_\_\_\_.

Signature  
**Practical In-charge Head of the Department**

Signature

Signature  
**Internal Examiner**

Signature  
**External Examiner**

Date: \_\_\_\_\_

# **Classification Of Practical Marks :-**

	<b>Practical – I</b>	<b>Marks</b>
1.	Writing a Program or Problem (Algorithm & Flowchart)	40
2.	Execute on a computer	
3.	Taking Hard Copy	
	<b>Practical – II</b>	
1.	Writing a Program or Problem (Algorithm & Program)	20
	<b>Viva Voce</b>	20
	<b>Practical Record</b>	20
	<b>Total Marks</b>	<b>100</b>

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

## APPENDIX –C

### Absorption Scheme MCM

It is notified for general information of all concerned that the failure students of **MCM OldCourse (SemesterPattern)** shall be absorbed in the **New Course CBCS Pattern** introduced from the session 2016-2017 Examination with the following scheme.

- 1) The Failure students of **MCM – I (Semester – I & Semester - II) and MCM – II (Semester – III & Semester - IV)** as per Old Course (Semester Pattern) **appeared in Sum 2016** should clear their backlog papers of MCM – I (Semester – I & Semester - II) and MCM – II (Semester – III & Semester - IV) Old Course (Semester Pattern) **till Winter 2017**. If they fail to complete & pass till Winter 2017, then they will have to appear in parallel papers of New Course CBCS Pattern (Choice Based Credit System) as per absorption scheme indicated in Appendix - D.
- 2) The Failure students of **MCM – II (Semester – III)** as per Old Course (Semester Pattern) **appeared in Winter 2016** should clear their backlog papers of MCM – II (Semester - III) Old Course (Semester Pattern) **till Summer 2018**. If they fail to complete & pass till Summer 2018, then they will have to appear in parallel papers of New Course CBCS Pattern (Choice Based Credit System) as per absorption scheme indicated in Appendix - D.
- 3) The Failure students of **MCM – II (Semester – IV)** as per Old Course (Semester Pattern) **appeared in Summer 2017** should clear their backlog papers of MCM – II (Semester - IV) Old Course (Semester Pattern) **till Winter 2018**. If they fail to complete & pass till Winter 2018, then they will have to appear in parallel papers of New Course CBCS Pattern (Choice Based Credit System) as per absorption scheme indicated in Appendix - D.

## APPENDIX –D

### (A) MCM Part – I (Semester - I)

#### Old Course (Semester Pattern)→New Course CBCS Pattern (Choice Based Credit System)

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course CBCS Pattern (Choice Based Credit System)	Max Marks
<b>Semester – I</b>					
<b>Theory</b>			<b>Theory</b>		
I	Fundamental of Information Technology	80	1T1	Fundamental of Information Technology	80
II	Programming in C	80	1T2	Programming in C & OOPs Concept	80
III	Introduction to Operating Systems	80	1T3	Introduction to Operating Systems	80
IV	Computerized Accounting (Tally)	80	1T4	Computerized Accounting (Tally ERP 9)	80
<b>Practical</b>			<b>Practical</b>		
P - I	<b>Practical - I</b> : Programming in C & Operating Systems	100	1P1	<b>Practical - I</b> : Programming in C & Operating Systems	100
P - II	<b>Practical -II</b> : Tally & MS-Office	100	1P2	<b>Practical - II</b> : Tally (ERP 9) &Ms-Office	100

### (B) MCM Part – I (Semester - II)

#### Old Course (Semester Pattern)→New Course CBCS Pattern (Choice Based Credit System)

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course CBCS Pattern (Choice Based Credit System)	Max Marks
<b>Semester – II</b>					
<b>Theory</b>			<b>Theory</b>		
I	Management Information Systems and Software Engineering	80	2T1	Management Information Systems	80
II	Visual Basic Programming	80	2T2	Core Java	80
III	Principles & Techniques of Management	80	2T3	Quantity Techniques & Operation Research	80
IV	E-Commerce and Web Designing	80	2T4	E-Commerce and Web Designing	80
<b>Practical</b>			<b>Practical</b>		
P - I	Practical-I : Visual Basic	100	2P1	<b>Practical-I</b> :Core Java	100
P - II	Practical-II : HTML, JavaScript	100	2P2	<b>Practical-II</b> : HTML, JavaScript	100

**(C) MCM Part – II (Semester - III)**

**Old Course (Semester Pattern)→New Course Pattern (Choice Based Credit System)**

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course Pattern (Choice Based Credit System)	Max Marks
<b>Semester – III</b>					
<b>Theory</b>			<b>Theory</b>		
I	Quantitative Techniques & OR	80	3T1	Advance Database Management System	80
II	Core Java	80	3T2	Principles & Techniques of Management	80
III	DBMS and oracle	80	3T3	<b>Electives :</b> (i) PHP & MySQL (ii) VB.Net (iii) C#.Net	80
IV	Research Methodology & Software Product & Project Management	80	3T4	<b>Compulsory Foundation</b> (i) Research Methodology	80
<b>Practical</b>			<b>Practical</b>		
P - I	Practical-I : Core Java	100	3P1	<b>Practical- I :SQL &amp; PL/SQL</b>	100
P - II	Practical-II : Oracle	100	3P2	<b>Practical-II :Electives</b>	100

**(D) MCM Part – II (Semester - IV)**

**Old Course (Semester Pattern)→New Course Pattern (Choice Based Credit System)**

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course Pattern (Choice Based Credit System)	Max Marks
<b>Semester – IV</b>					
<b>Theory</b>			<b>Theory</b>		
I	Information Security & Cyber Laws	80	4T1	ASP.Net	80
II	PHP& My-SQL	80	4T2	<b>Electives:</b> (i) Advance Java (ii) Android Programming (iii) Python	80
III	Electives : (i) Advanced Java (ii) OOPS & C++ (iii) ASP.Net	80	4T3	<b>Elective Foundation:</b> (i) Big Data &Hadoop (ii) Software Engineering (iii)Strategic Management	80
<b>Practical</b>			<b>Practical</b>		
P - I	Practical-I : PHP& My-SQL	80	4P1	<b>Practical-I:ASP.Net</b>	100
P - II	Practical-II : Elective	100	4P2	<b>Practical-II:Electives</b>	100
<b>Project</b>			<b>Project</b>		
Proj	PROJECT	100	4P3	PROJECT	100

# APPENDIX –E

## MCM Part-I

### Semester-I

#### Paper- I:Fundamental of Information Technology (1T1)

##### Unit – I

**Computers:** Introduction to computers, Characteristics of computer, Evolution of computer, Generations of computer, Basic organization of computer system (Block Diagram), Functioning of computer, Concept of system. **Number system:** non-positional number systems, Positional number systems, Conversion from one number system to another, Fraction numbers. **Computer codes:** BCD, EBCDIC, ASCII, Unicode, Collating sequence. **Computer arithmetic:** Need of binary, Binary arithmetic.

##### Unit – II

**Processor & memory:** Central processing unit (CPU), Components of CPU (CU, ALU, Instruction set, Registers, Processor speed, Type of processor), Main memory, Types of memory. **Secondary storage devices:** Sequential & direct access devices, Magnetic tapes, Magnetic disks, Optical disks, Memory storage devices, Mass storage devices, Data backup, On-line, Near line and Off-line storage, Hierarchical storage devices(HSS), Input-output devices.

##### Unit– III

**Computer software:** Define software, Types of software, Logical system architecture, Firmware, Middleware, Acquiring software, Software development life cycle (SDLC), Software engineering, CASE tools. **System implementation & operation:** Software testing & debugging (Types of program errors, Testing a program, Debugging a program for syntax errors & logical errors, Difference between testing & debugging), Software documentation, Software deployment, System evaluation, Software maintenance. **Business data processing:** Meaning of data processing, Data storage hierarchy, Standard methods of organizing data, File management system, Database management system.

##### Unit – IV

**Data communication and computer networks:** Basic elements of a communication system, Data transmission modes, Data transmission speed, Data transmission media, Digital & analog data transmission, Data transmission services, Multiplexing techniques, Switching techniques, Routing techniques, Network topologies, Types of network, Communication protocols, Network interface card (NIC), OSI model, Ernet working tools, Wireless Networks. **Multimedia:** What is multimedia, Multimedia components, Multimedia applications, and media center computer. **Classification of computers:** Notebook computers (Laptops), Personal computer (PCs), Workstations, Mainframe systems, Super computers, Client & server computers, Handheld computers (Tablet PC, PDA/Pocket PC, Smartphone).

**Text Book:**

1. P. K. Sinha & Priti Sinha, Computer Fundamentals, BPB Publication.

**Reference Books:**

1. Madhulika Jain, Shashank Jain, Satish Jain, Information Technology Concepts, BPB Publication.
2. B. Ram, Computer Fundamentals (Architecture & organization), New Age International Publisher.
3. Turban, Rainer, Potter, Introduction to Information Technology, Wiley India Edition.
4. Peter Norton, Introduction to Computers, McGraw-Hill Education.
5. S. Jaiswal, I.T. Today, Encyclopedia.

**Practical List of Fundamental of Information Technology**

- A1. Use a contemporary letter template of MS-WORD and provide information about launching of new products of a company.  
Also write down the steps to perform above in MS-WORD.
- A2. Use a professional letter template of MS-WORD and write an application to the principal for two days leave.  
Also write down the steps to perform above in MS-WORD.
- A3. Using Mail Merge of MS-WORD, write a letter to the students of MCM-I to submit their Original Documents (Mark Sheet, Migration Certificate, TC etc) along with their balance fees up to 10<sup>th</sup> March 2008 in the office of the college during office timings morning 8:00 AM to 5:00 PM.  
Also write down the steps to perform above in MS-WORD.
- A4. Using Mail Merge of MS-WORD, write a letter to your friends, invite them on your Birth Day Party on 10<sup>th</sup> March 2008 at the Venue- B04, Amar Apartment, Narendranagar, Nagpur-440021  
Also write down the steps to perform above in MS-WORD.
- A5. Using Mail Merge of MS-WORD, write a letter to all the selected candidate for their final interview on 10<sup>th</sup> March 2008 at the Centre Point College, 7 Nawab Layout, Tilaknagar, Nagpur-10 at 11:00 AM along with all original documents and 2 passport size photographs.  
Also write down the steps to perform above in MS-WORD.
- A6. Draw and Analyze the DFD of Book Issuing System of College Library in MS-PowerPoint.  
Also write down the steps to perform above in MS-POWERPOINT.
- A7. Draw and Analyze the DFD of Hotel Management System in MS-PowerPoint.  
Also write down the steps to perform above in MS-POWERPOINT.
- A8. Draw and Analyze the DFD of Examination Management System in MS-PowerPoint.  
Also write down the steps to perform above in MS-POWERPOINT.

- A9. Create a Mark-Sheet of MCM-Part I using MS-Excel. Mark-Sheet format should be as per below. Fill the information about 10 students.

Roll No.	Name of Student	IT (100)	ICP (100)	IOS (100)	C (100)	MIS& SA (100)	Practical -I (100)	Practical-II (100)	Total Marks (Out of 700)	% age
1										

Draw a pie chart for above Mark-sheet

Also write down the steps to perform above operation in MS-EXCEL.

- A10. Create a Employee Payment Sheet using MS-Excel. Employee Payment Slip format should be as per below. Fill the information about 10 employees.

Sr.No.	Name of Employee	Basic Salary	HRA 5%	TA 7%	DA 9%	Gross_Salary
1						
<u>Total salary</u>						

Draw a bar chart for above Employee Payment Sheet

Also write down the steps to perform above operation in MS-EXCEL.

- A11. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India Ltd	India	20	Rs.19.00
2	Milkmaid	Amul India Ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever Ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle Ltd	India	32	Rs.12.00
5	Papad	Haldiram Ltd	India	12	Rs.10.00
6	Chocolate	Cadbury Ltd	Australia	150	Rs.15.00
7	Paneer	Amul India Ltd	India	23	Rs.25.00
8	Bournvita	Cadbury Ltd	Australia	20	Rs.45.00
9	Poppins	Parle Ltd	India	27	Rs.6.00
10	Sauce	Amul India Ltd	India	16	Rs.21.00

a) Sort by Product Name, by company name, by country in ascending order.

b) Sort by Country in descending order.

Also write down the steps to perform above operation in MS-EXCEL.

- A12. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India Ltd	India	20	Rs.19.00
2	Milkmaid	Amul India Ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever Ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle Ltd	India	32	Rs.12.00
5	Papad	Haldiram Ltd	India	12	Rs.10.00
6	Chocolate	Cadbury Ltd	Australia	150	Rs.15.00
7	Paneer	Amul India Ltd	India	23	Rs.25.00
8	Bournvita	Cadbury Ltd	Australia	20	Rs.45.00
9	Poppins	Parle Ltd	India	27	Rs.6.00
10	Sauce	Amul India Ltd	India	16	Rs.21.00



- a) List only those records whose country ="India".  
 b) List only those records whose company name="Amul".  
 Also write down the steps to perform above operation in MS-EXCEL.

A13. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India ltd	India	20	Rs.19.00
2	Milkmaid	Amul India ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle ltd	India	32	Rs.12.00
5	Papad	Haldiram ltd	India	12	Rs.10.00
6	Chocolate	Cadbury ltd	Australia	150	Rs.15.00
7	Paneer	Amul India ltd	India	23	Rs.25.00
8	Bournvita	Cadbury ltd	Australia	20	Rs.45.00
9	Poppins	Parle ltd	India	27	Rs.6.00
10	Sauce	Amul India ltd	India	16	Rs.21.00

a) List the records whose quantity is  $\geq 10$  and  $\leq 100$ .

b) List the records whose rate is  $\geq$  Rs. 35.00.

Also write down the steps to perform above operation in MS-EXCEL.

A14. By the help of following information prepare cost sheet for the month of March 1980:

	Rs.
1. Stock (1-3-1980)	
a) Raw Materials	25,000
b) Finished goods	17,360
2. Stock (31-3-1980)	
a) Raw Materials	26,250
b) Finished goods	15,750
3. Raw material purchased	21,900
4. Work-in-progress (1-3-80)	8,220
5. Work-in-progress (31-3-80)	9,100
6. Sale of finished goods	72,310
7. Direct wages	17,150
8. Unproductive Wages	830
9. Factory Expenses	8,340
10. Office and management expenses	3,160
11. Selling and distribution expenses	4,210

Prepare cost sheet and find out following information:

1) Total Cost 2) Cost of goods sold 3) Profit on sold out goods

Also write down the steps to perform above operation in MS-EXCEL.

A15. Following information is received from the books of a factory:

1. Closing stock of raw materials	25,150
2. Closing stock of finished goods	14,650
3. Raw materials purchased	20,800
4. Work in progress (1-1-78)	8,220
5. Work in progress (31-12-78)	8,000
6. Opening stock of raw material	24,000
7. Opening stock of finished goods	16,200
8. Sale of finished goods	62,800
9. Office expenses	2,150

10. Selling and Distribution expenses	4,000
11. Direct wages	16,000
12. Factory expenses	9,000

Prepare cost sheet and find out the following items:

- 1) Cost of materials consumed
- 2) Production Cost
- 3) Cost of goods sold
- 4) Net profit.

Also write down the steps to perform above operation in MS-EXCEL.

- A16. By the help of following information prepare a statement of cost and in that statement indicate prime cost, works cost, office cost (production cost) and cost of goods sold, for the half year ending 30th June, 1978. Production 500 units.

1. Material consumed	30,000
2. Direct Wages	40,000
3. Direct Expenses	4,000
4. Works on Cost Expenses	
a) Unproductive wages	9,000
b) Factory lighting and heating	11,000
c) Factory rent, rates and insurance	3,000
d) Factory Director's fees	
e) Depreciation of machinery	1,500
f) Factory stationery	375
g) Factory cleaning	400
h) Depreciation of loose tools	900
i) Indirect material	500
j) Estimating expenses	500
5. Office expenses (Office overhead)	
a) Director fees	3,000
b) Office printing and stationery	750
c) Legal Expenses	500
d) Depreciation of office building	800
e) Bank fee	75
f) Salary of office employees	5,000
6. Selling and Distribution expenses	
a) Selling commission	1,000
b) Rent of warehouse	1,800
c) Bad debt	150
d) Advertisement	500
e) Depreciation and maintenance of delivery vans	700

Also write down the steps to perform above operation in MS-EXCEL.

- A17. Prepare cost sheet by the help of following information and find out (i) Prime cost (ii) Factory cost (iii) Total Cost; (iv) Net Profit.

1. Raw Material purchased		66,000
2. Direct wages	52,500	
3. Indirect wages	2,750	
4. Stock of Raw Materials (1-9-83)		75,000
5. Stock of Raw material (30-9-83)		91,500
6. Stock of finished goods (1-9-83)		54,000
7. Stock of finished goods (30-9-83)		31,000
8. Stock of work in progress (1st Sep.83)		28,000
9. Stock of work in progress (30th sept.83)		35,000
10. Sales		2,11,000
11. Rent, rates and electric of factory		15,000
12. Depreciation of machinery		3,500
13. Carriage inward		1,500
14. Sundry factory exp.		10,000

15.Travelling wages and commission	6,500
16.Office rent and rates	2,500
17.Sundry Office expenses	6,500
18.Advertisement	3,500
19.Carriage outward exp.(exp. on sale)	2,500

Also write down the steps to perform above operation in MS-EXCEL.

A18. By the help of following information prepare cost sheet for the year 1976.

1.Opening Stock (1-1-1976)		
a) Of Raw Materials	22,000	
b)Of Unfinished goods	5,000	
c)Of Finished goods	10,000	
2.Closing Stock: (31-12-76)		
a) Of Raw Materials	2,350	
b) Of Unfinished goods	3,000	
c) Of Finished goods	2,000	
3.Direct Wages		30,000
4.Direct Expenses		10,000
5.Material Purchased	70,500	
6.Carriage Inward		2,000
7.Factory on cost		70,000
8.Factory Supervision		8,800
9.Office Rent		6,000
10.Factory Rent		9,000
11.Rent of sales department		6,000
12.Lighting bill (out of this 30% of factory, 20% of sales dept. and balance for office)		10,000
13.Advertisement		6,000
14.Salary of Manager (30% of Factory, 40% of Sales dept. and balance for office)		37,000
15.Profit 10% on total cost.		

Also write down the steps to perform above operation in MS-EXCEL.

A19. Following information is available from the books of Zenith manufacturing company as on 31st Dec. 1974.

1.Salary of Drawing room staff	6,500
2.Salary of distribution department	12,600
3.Outward carriage expenses	4,300
4.Cash discount	2,900
5.Inward carriage exp. on purchase	7,150
6.Bad debts written off	6,500
7.Machine repairing	4,450
8.Rent, taxes and insurance (Factory)	8,500
9.Rent, taxes and insurance (office)	2,000
10.Sales	4,61,100
11.Stock of Raw material (31-12-73)	62,800
12.Stock of Raw material (31-12-74)	48,000
13. Material Purchased	1,85,000
14. Travelling Expenses	2,100
15.Salary and Commission of travelling agent	7,700
16.Productive wages	1,26,000
17.Depreciation of machinery & equipment	6,500
18.Depreciation of office furniture	300
19.Director fee	6,000
20.Gas and Water (Factory)	1,200
21.Gas and Water (Office)	400
22.Salary of manager (3/4 for factory & 1/4 for office)	10,000

23. General Expenses		3,400
24. Income tax		1,500
25. Dividend	1,000	

Prepare cost sheet and indicate the following items:-

1) Materials Consumed (2) Prime cost (3) Factory on cost and factory cost(4) General and selling overhead (5) Total cost (6) Net profit (7) Percentage of factory on cost to wages (8) percentage of general overhead to factory cost.

Also write down the steps to perform above operation in MS-EXCEL.

- A20. From the given information prepare Flexible budget for the capacity 70%, 80% & 100 % & show the results.

The sales for the above capacity would be 50,00,000/-, 60,00,000/-, 85,00,000 respectively. Fixed expenses will be constant at all capacities. Semi variable will be constant between 55% to 75% capacity.

It will be increased by 10% between the capacity 75% to 90% & will be increased by 20% between the capacity 90% & 100%. Following expare on the capcity of 60%.

Particulars	Rs.
Semi variable exp:	
Maintenance & repairs	1,25,000
Labour	5,00,000
Sales dept. Expenses	1,50,000
Other overheads	<u>1,25,000</u>
	<u>9,00,000</u>
Variable Cost :	
Material	12,00,000
Labour	13,00,000
Other Expenses	<u>2,00,000</u>
	<u>27,00,000</u>
Fixed Cost :	
Wages & salaries	4,20,000
Rent & Taxes	2,80,000
Depreciation	3,50,000
Other overheads	<u>4,50,000</u>
	<u>15,00,000</u>
Total Cost	<u>51,00,000</u>

Also write down the steps to perform above operation in MS-EXCEL.

- A21. The following data is taken from the manufacturing record of a company for 1/2 year period.

Fixed expenses:

Wages & salaries	84,000
Rent, rates & taxes	56,000
Depreciation	70,000
Sundry administration Exp.	<u>89,000</u>
	<u>2,99,000</u>

Semi-variable exp : (at 50% capacity)

Maintenance & Repairs	25,000
Indirect Labour	99,000
Sales Department salaries	29,000
Sundry administration exp.	<u>26,000</u>
	<u>1,79,000</u>

Variable Exp. (at 50% capacities)

Materials	2,40,000
Labour	2,56,000
Other expenses	<u>38,000</u>

5,34,000

Assume that the fixed expenses remain constant for all levels of production. Semi- Variable expenses remain constant between 45% & 65% of capacity. Increasing by 10% between 65% & 80% capacity & by 20% between 80% & 100% of capacity. Sales at various levels are :-

Capacity	Rs.
60%	10,00,000
75%	12,00,000
90%	15,00,000
100%	17,00,000.

Prepare Flexible budget for the above capacity.

Also write down the steps to perform above operation in MS-EXCEL.

- A22. The following budget is prepared for 10,000 units. Per unit cost will be as under:-

Particulars	P.U. (Rs.)
Material	60
Wages	55
Fixed cost (2,00,000)	20
Variable expenses	5
Selling expenses (10% fixed)	15
Administration exp. (90,000)	9
Distribution exp. (20% fixed)	15

Prepare budget for 7,500 & 6,500 units.

Also write down the steps to perform above operation in MS-EXCEL.

- A23. The following figures are available from sales & cost forecast of M/s ALANKAR & Co. for the year ended 31st.Dec. 1990 at 50% (5,000 units) capacity. Prepare a profit forecast statement through flexible budget at 60%, 75%, 90% & 100% capacity assuming that

- 1) The fixed expenses remain constant for all levels of production & sales.
- 2) Selling price between 50% & 75% capacity is Rs. 25/- per unit.
- 3) Semi variable expenses will remain unchanged at 50% & 65% capacity but will increase by 10% between 65% to 80% capacity & by 30% between 80% & 100% capacity.
- 4) At 90% level (capacity) material Cost increase by 5% & Selling Price is reduced by 5%.
- 5) At 100% level both material & labour cost increase by 10% & selling Price is reduced by 8%.
- 6) Semi variable expenses are Rs. 50,000 /-
- 7) Fixed expenses are Rs. 50,000/-
- 8) Variable expenses are :  
Material Rs. 5 p.u.  
Labour Rs. 2 p.u.  
Direct Exp. Rs. 1 p.u.

Also write down the steps to perform above operation in MS-EXCEL.

- A24. Prepare Flexible budget & find out overhead rate.

Particulars	50%	60%	70%
	Rs.	Rs.	Rs.
Variable Overheads			
A) Material	---	60,000	---
B) Labour	---	24,000	---
Semi-Variable Exp.			
1) Electric (20% fixed)	---	15,000	---
2) Repairs & Maint. (20% variable)	---	7,500	---
Fixed Expenses			

a) Depreciation	---	20,000	---
b) Rent & tax	---	2,250	---
c) Insurance	---	2,500	---
d) Salary	---	15,000	---
e) Indirect wages	---	8,000	---
Budgeted Direct labour hours	---	30,000	---

Also write down the steps to perform above operation in MS-EXCEL.

- A25. Estimated cash balance on 1st may 1990 Rs. 2,50,000 From the following information Prepare Cash budget for the month of may, June, July 90.

Month	Sales	Purchase	Wages	Manu. Exp.	Office Exp.	Selling Exp.
March	50,000	30,000	6,000	5,000	4,000	3,000
April	56,000	32,000	6,500	5,500	4,000	3,000
May	60,000	35,000	7,000	6,000	4,000	3,500
June	80,000	40,000	9,000	7,500	4,000	4,500
July	90,000	40,000	9,500	8,000	4,000	4,500

Adjustments:-

- Out of total sale 20% sales in cash & balance will be collected in the next month.
- Suppliers allowed the credit period of 2 months.
- Wages and all other exp. will be paid in the following months.
- Dividends to share holders & Bonus to employees will be paid in the month of may Rs. 10,000 & Rs. 15,000 Respectively.
- An order of machine is given, the cost of which is Rs. 80,000, Machine will be received in the month of June & payment will be done in same month.
- Income tax will be paid Rs. 25,000/- in the month of July.

Also write down the steps to perform above operation in MS-EXCEL.

- A26. From the following information Prepare Cash budget for the 3 months ending 30<sup>th</sup> June.

Month	Sales	Materials	Wages	Overheads
Jan	60,000	40,000	11,000	6,200
Feb.	56,000	48,000	11,600	6,600
Mar.	64,000	50,000	12,000	6,800
Apr.	80,000	56,000	12,400	7,200
May	84,000	62,000	13,000	8,600
June	76,000	50,000	14,000	8,000

- Payment of material & overheads will be done in the following month.
- Payment of wages will be done in the same month.
- Terms & conditions of sales as under :- Half amount of credit sales will be recovered in following months & balance amount will be recovered in the next month of the following month.
- Dividend on Preference shares Rs. 30,000/- will be paid on 1st may.
- The amount of share call each Rs. 25,000/- will be received on 1st April & of 1st June each.
- Machines costing Rs. 10,000/- will be established in the month of January but payment will be done in the month of June.
- The selling commission 5% will be paid in the following months of actual sales.
- On 1st April Expected Cash balances Rs. 20,000/-

Also write down the steps to perform above operation in MS-EXCEL.

- A27. From the following information Prepare Cash budget for 3 months commencing from 1st June. On 1st June Cash balance is Rs. 1,00,000/-

Month	Sales	Purchase	Wages	Manu. Exp	Selling & Admn. exp.
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April	80,000	41,000	5,600	3,900	10,000
May	76,500	40,500	5,400	4200	1400
June	78500	38500	5400	5100	15000
July	90,000	37,000	4,800	5,100	17000
Aug.	95,500	35,000	4,700	6,000	13000

Additional Information :-

- 1) Commission on sales 5% will be paid after 2 months of the sales. ( This commission is in addition of Selling Exp.)
- 2) Machine Costing Rs. 65,000/- will be purchased in the month of April but payment will be done in the month of August.
- 3) Dividend of last year Rs. 15,000/- will be paid in the month of July.
- 4) Lag time allowed to customers for the payment is 2 months, and 2 months credit period allowed from suppliers.

Also write down the steps to perform above operation in MS-EXCEL.

A28. Budgeted information given as under :-

Month	Sales	Purchases Exp. Exp.	Wages Exp.	Manu.	Office	Selling
Mar.	50,000	30,000	5,000	1,000	1,000	6,000
April	60,000	35,000	6,000	4,000	2,000	7,000
May	70,000	37,000	7,000	2,000	3,000	8,000
June	80,000	42,000	8,000	4,000	3,000	9,000
July	90,000	60,000	9,000	3,000	2,000	15,000
Aug	1,00,000	70,000	11,000	4,000	1,000	20,000

Additional Information :-

- 1) Cash balance on 1st may Rs. 80,000/-
- 2) 20% sales in cash & out of total Credit sales 50% amount Recovered in the following month & balances 50% in the next month of the following month.
- 3) Suppliers allowed a credit period of 2 months.
- 4) Lag time for wages 1/2 month.
- 5) Delay in payment of office expenses 1 month.
- 6) Delay in payment of manufacturing exp. 1 month.
- 7) Amount of shares call money will be received in the months of may Rs. 50,000/-
- 8) Payment of tax will be done in July Rs. 80,000/-.
- 9) Machine will be purchased in June Rs. 20,000/-.

Prepare Cash Budget for May, June, & July.

Also write down the steps to perform above operation in MS-EXCEL.

A29. A newly established Company wants to prepare Cash budget for four months ending on 30th June.

Month	Sales	Materials	Wages	Overheads	Selling & Admn. Exp
Jan	20,000	20,000	4,000	3,200	800
Feb.	22,000	14,000	4,400	3,300	900
Mar.	24,000	14,000	4,600	3,300	800
Apr.	26,000	12,000	4,600	3,400	900
May	28,000	12,000	4,800	3,500	900
June	30,000	16,000	4,800	3,600	1,000

Adjustment:-

- 1) Expected Cash balance on 1st March Rs. 10,000/-.
- 2) A machinery is purchased for Rs. 30,000/- payment will be done in two equal installments March & April.

- 3) Selling Commission 5% on total sales & this commission will be paid in the following months of actual sales.
  - 4) Amount of 2nd call will be received in the month of marchRs. 10,000/- & Amount of share premium Rs. 2,000/- will be received with 2nd call.
  - 5) Period allowed to customer for payment is1 month.
  - 6) Remaining all other exp. will be paid in the following months.
  - 7) The delay in the payment of wages 1/2 month.
  - 8) You may presume that 50% sales are in cash.
  - 9) Suppliers allowed period of 2 months for payment.
- Also write down the steps to perform above operation in MS-EXCEL.

A30.By the help of following information prepare cost sheet for the month of March 1980:

1. Stock (1-3-1980)	
a) Raw Materials	25,000
b) Finished goods	17,360
2. Stock (31-3-1980)	
a) Raw Materials	26,250
b) Finished goods	15,750
3. Raw material purchased	21,900
4. Work-in-progress (1-3-80)	8,220
5. Work-in-progress (31-3-80)	9,100
6. Sale of finished goods	72,310
7. Direct wages	17,150
8. Unproductive Wages	830
9. Factory Expenses	8,340
10. Office and management expenses	3,160
11. Selling and distribution expenses	4,210

Prepare cost sheet and find out following information:

- 1) Total Cost
- 2) Cost of goods sold
- 3) Profit on sold out goods

Also write down the steps to perform above operation in MS-EXCEL.

## Paper - II: Programming in C& OOP's Concepts(1T2)

### UNIT – I

Design methods, Programming language, Translators, Introduction to C, C character set and keywords, Escape sequence, Constants and variables, Data types, Conversion specification, Input and output statements in C, Operators and expressions (Arithmetic, Relational, Logical, Assignment, Ternary, Bit Wise and Increment & Decrement Operator). **Storage class:** Automatic, Static, External, Register. **Control statement:** If-else, Looping statements (while, do- while and for loop), Switch, Go-to, Use of break and continue statements.

### UNIT – II

**Function:** Arithmetic and string library function, User defined functions, Function definition & declaration, Function call, Return statement, Function arguments, use of void, Types of function, Function with call by value and call by reference, Recursion.

**Arrays:** Declaration, Referring individual elements, Entering data in to an array, Reading data from array, Array initialization, Printing of array, Searching, Sorting and merging of array. **Pointer:** Introduction to pointer, Pointer and function, pointer and structure, Pointer and array, Pointer and string. **Dynamic memory allocation:**Sizeof ( ), malloc ( ), calloc ( ), realloc(), free().



### UNIT – III

**String:** String manipulation using string library function, **Structure:** Declaration structure, initializing structure, Structure variables, accessing structure elements, Arrays of structure, Array within structure. **Unions:** Concept and applications. **Files:** Concept of file, Modes of files, Open and close, Creation and reading of files, Character input/output function, Formatted input/output function, String input and output: sscanf, sprintf, gets, puts. **File input/output:** fprintf, fscanf, getc, putc, and **Block read/write:** fread, fwrite, random access to files, Other file function, command line argument.

### UNIT – IV

Introduction to OOP, Characteristics of OOP's, Advantages & disadvantages of OOP's, Steps in developing the OOP Program, Object Oriented Languages, Importance of C++, Classes and objects, Member function, Concept of overloading, Inheritance & types of inheritance, Data abstraction, Data encapsulation, Concept of polymorphism and virtual function, Namespace and exception handling.

#### Text Books:

1. S. K. Shrivastava & Dipali Srivastava, C in Depth, BPB Publication.
2. D. Ravichandran, Programming with C++, McGraw-Hill.

#### Reference Books:

1. Steve Oualline, Practical C Programming, SPD, O'Reilly.
2. Harshal Arolkar, Simplifying C, Dreamtech Press.
3. Dr. S. Dey & Mridul Ghosh, Computer Fundamentals and C Programming, SPD.
4. Yashwant Kanetkar, Let Us C, BPB Publication.
5. Veugopal Prasad, Mastering C, McGraw-Hill.
6. Balguruswamy, Programming in ANSI C, McGraw-Hill.
7. E. Balguruswamy, Object Oriented Programming with C++, McGraw-Hill.

### Practical List of Programming in C & OOP's Concepts

1. Write an algorithm, draw a flowchart and develop 'C' program to compute the factors of a given number.
2. Write an algorithm, draw a flowchart and develop 'C' program to interchange the values of two numbers without using any temporary variable.
3. Write an algorithm, draw a flowchart and develop 'C' program to calculate and find the nature of roots of given quadratic equation.
4. Write an algorithm, draw a flowchart and develop 'C' program to check given number is prime number.
5. Write an algorithm, draw a flowchart and develop 'C' program to calculate LCM & HCF of two numbers.
6. Write an algorithm, draw a flowchart and develop 'C' program to reverse an n digit number.

7. Write an algorithm, draw a flowchart and develop 'C' program to calculate sum of odd digits and product of even digits of a given n digit number.
8. Write an algorithm, draw a flowchart and develop 'C' program to check a given number is an Armstrong number.
9. Write an algorithm, draw a flowchart and develop 'C' program to convert a decimal number into its equivalent binary number.
10. Write an algorithm, draw a flowchart and develop 'C' program to display the Fibonacci series of n terms.
11. Write an algorithm, draw a flowchart and develop 'C' program to print the following output:-
 

```

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
      
```
12. Write an algorithm, draw a flowchart and develop 'C' program to display the following pattern;-
 

```

1 1
1 2 2 1
1 2 3 3 2 1
1 2 3 4 3 2 1
      
```
13. Write an algorithm, draw a flowchart and develop 'C' program to calculate the series of n terms for x as;-
 
$$S = x + x^2 + x^3 + x^4 + \dots$$
14. Write an algorithm, draw a flowchart and develop 'C' program to calculate the sum of the n terms of the series;-
 
$$S = 1/2! + 2/3! + 3/4! + 4/5! + \dots$$
15. Write an algorithm, draw a flowchart and develop 'C' program to display the following pattern:-
 

```

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
      
```
16. Write an algorithm, draw a flowchart and develop 'C' program to insert an element in an array at appropriate position.
17. Write an algorithm, draw a flowchart and develop 'C' program to sort the given array using bubble sort.

18. Write an algorithm, draw a flowchart and develop 'C' program to find the transpose of a given matrix.
19. Write an algorithm, draw a flowchart and develop 'C' program to check whether the given word is palindrome or not.
20. Write an algorithm, draw a flowchart and develop 'C' program to count vowels in given word using switch statement.
21. Write an algorithm, draw a flowchart and develop 'C' program to count number of letters, words and blank spaces in a given line.
22. Write an algorithm, draw a flowchart and develop 'C' program to find largest and smallest element of given array using function concept.
23. Write an algorithm, draw a flowchart and develop 'C' program to find factorial of given number using recursion function.
24. Write an algorithm, draw a flowchart and develop 'C' program to find reverse of digits of given number using recursion concept.
25. Write an algorithm, draw a flowchart and develop 'C' program to swap the values of two array using user defined function. Use the concept "Call by Value" and "Call by Reference".
26. Write an algorithm, draw a flowchart and develop 'C' program to find and replace a numeric value from an array using function and pointer.
27. Write an algorithm, draw a flowchart and develop 'C' program to create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
28. 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.
29. Write an algorithm, draw a flowchart and develop 'C' program to write and read the 'n' records as an entire block (structure) on a file using fwrite() and fread(). The block structure contains Roll Number and Name of the Students.
30. Write an algorithm, draw a flowchart and develop 'C' program to copy the content of one file to another file by using command line argument.

## Paper-III: Introduction to Operating Systems(1T3)

### UNIT – I

**Introduction** – What operating systems do, Computer system organization, Computer system architecture, Operating system architecture, Operating system operations, Process management, Memory management, Storage management, Protection & Security, Kernel data structures, Computing environments, Open source operating systems. **System Structures** – Operating system services, User and operating system interface, system calls, types of system calls.

### UNIT – II

**Process Management** –Process concept, Process Scheduling, Operations on processes, Interprocess Communication. Deadlocks – Deadlock characterization, Deadlock prevention, Deadlock Avoidance. **Memory Management Strategies** – Background, Swapping, Contiguous memory Allocation, Segmentation, Paging. **File System** – File concept, File system mounting, File sharing.

### UNIT – III

Introduction to Disk Operating System (DOS)

- File types, Directory Structure
- Booting - Warm and Cold Booting
- Types of DOS commands (Internal and External)
- Introduction of Autoexe and Config files.
- Directory commands: DIR, MD, RD, TREE, PATH, SUBST ETC.
- Wild card Definitions
- Commands related to file management: COPY, DEL, ERASE, REN, ATTRIB, XCOPY, BACKUP and RESTORE .
- General commands: TYPE DATE, TIME, PROMPT etc.
- batch commands, wild card characters & its use.

### UNIT – IV

Introduction to Unix overview

- File systems and structure of directories and file
- File Oriented Commands – Cat, cp, mv, rm etc.
- File Permissions
- Directory Oriented commands – ls, mkdir, rmdir, cd, pwd etc.
- Inter user connection commands – write, mail, used, at, wall etc.
- Common commands – skill, date, wo, sleep, who ps.
- Unix Utility Commands – grep, pr, cut, paste, sort, lp shutdown, halt, sys, tar, find etc.
- Basics of shell scripts
- Writing shell scripts, running scripts, using variables, controlling the flow of statement
- Introduction of Linux.

### Text Books:

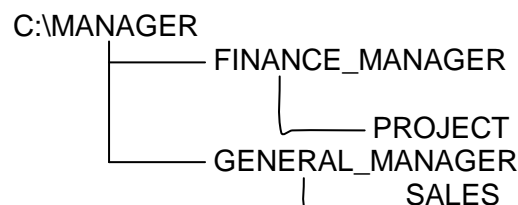
1. Abraham Silberschatz, Peter Galvin, Gerg Gagne, Operating System Concepts, Wiley.
2. Robert M. Thomas, DOS 6 & 6.2, BPB Publications.
3. Yashavant Kanetkar, Unix Shell Programming, BPB Publications.

### Reference Books:

1. Tanenbaum, Modern Operating Systems, PHI.
2. Stuart E. Madnick, John J. Donovan, Operating Systems, McGraw-Hill.
3. Dhananjay M. Dhamdhere, Operating Systems, McGraw-Hill.
4. Sumitabha Das, Unix Concepts & Applications, McGraw-Hill.
5. Kernighan & Pike, The Unix Programming Environment, PHI.
6. Christopher Negus, Ubuntu Linux Toolbox, Wiley.
7. S. Jaiswal, DOS / Unix & Windows: IT Today, Encyclopedia.
8. Burnett, Using Linux: Tackett, PHI.
9. MS-DOS Manual.

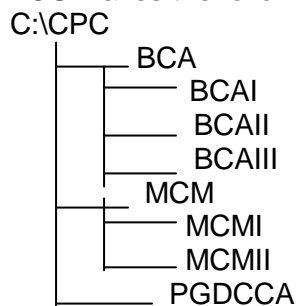
### Practical List of Introduction to Operating Systems

1. Make a directory naming VMV 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.
2. Using Tree Command in DOS make the following tree diagram



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

3. Using tree command in DOS makes the following tree diagram



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

4. 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.
5. 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.txt to computer.txt. Also explain the commands used in making the file and copying the contents of one file to another file.

6. 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.
7. Write a shell script in UNIX to calculate area of a triangle.
8. Write a shell script in UNIX to calculate area and circumference of a circle.
9. Write a shell script in UNIX to calculate the simple interest.
10. Write a shell script in UNIX to calculate the total marks and percentage of five subjects.
11. Write a shell script in UNIX to calculate largest and smallest number among three numbers.
12. Write a shell script in UNIX to calculate the gross salary of an employee. The salary includes – Basic Salary, HRA (20% of Basic Salary), DA (20% of Basic Salary) and CCA (10% of Basic Salary).
13. Write a shell script in UNIX to enter the two strings and then compare the two strings. If strings are equal then display the message “Strings are Equal” else “Strings are not Equal”.
14. Write a shell script in UNIX to check whether the given file is directory or ordinary file.
15. Write a shell script in UNIX to check entered character is in uppercase or in lowercase.
16. Write a shell script in UNIX to check whether the entered number is EVEN or ODD.
17. Write a shell script in UNIX to check whether the entered number is prime or not.
18. Write a shell script in UNIX to print the Fibonacci series.
19. Write a shell script in UNIX to calculate the factorial of a given number.
20. Write a shell script in UNIX to calculate reverse a number.
21. Write a shell script in UNIX to find sum of digits of a number.
22. Write a shell script in UNIX to implement Break statement.
23. Write a shell script in UNIX to search whether element is present in the list or not.
24. Write a shell script in UNIX to copy contents of one file to another.
25. Write a shell script in UNIX to count number of files in a directory.
26. Write a shell script in UNIX to implement FCFS Algorithm.

## Paper - IV: Computerized Accounting (TALLY ERP 9)(1T4)

### UNIT - I

**Accounting Basics** -Defining the need for accounting, Defining accounting, Exploring the branches of accounting, Describing the functions of accounting, Listing the advantages of accounting, Listing the limitations of accounting, Explaining important terms in accounting, Exploring the concepts of accounting, Understanding the conversions of accounting, Describing an account and its types, Explaining the rules of debit and credit, Describing a journal, Describing a ledger, Describing trial balance, Describing a financial entries, Understanding adjustment entries.

**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.

### UNIT - II

**Stock and Godown in Tally.ERP 9** –Stock groups, Stock categories, Stock items, Units of measure, Godowns.**Group, Ledgers, Vouchers and Orders** – Introducing groups, Introducing ledgers, Introducing vouchers, Introducing purchase orders, Introducing a sales order, Introducing invoices.

### UNIT - III

**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. **Payroll** – Exploring payroll in Tally.ERP 9, Required features to create a pay slip, Description of payroll info, Working with payroll vouchers, Defining payroll reports, working with statements of payroll report, Describing salary disbursement.

### UNIT - IV

**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.

#### Text Book:

1. Vikas Gupta, Business Accounting with MS Excel and Tally.ERP 9 Course Kit, Dreamtech Press.

#### Reference Books:

1. Computerized Accounting using Tally ERP 9, Sahaj Enterprise, Tally Education Private Ltd (TEPL).
2. Vishnu Priya Singh, Tally 9.
3. K. K. Nadhani, Accounting with Tally, BPB Publication.
4. K. K. Nadhani and A.K. Nadhani, Tally Tutorial, BPB Publication.
5. Anthony R. N. and J. S. Richard, Accounting Principles, Irwin Inc.

## Practical List of Computerized Accounting (TALLY ERP 9)

### 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, girgaamchaupaty, 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 in Tally ERP9.

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 in Tally ERP 9.**

Name of ledger	Under (group)	Bill wise details set to	Opening balance
ProprietorsCapital	Capital Account	No	10,00,000
Purchase Account	Purchase Account	No	Nil
Sales Accounts	Sales Accounts	No	Nil
Hindustan Lever 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 PvtLtd	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 barodaand transeferred 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 receivedcheque 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. 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 Steelworth Rs. 450000 from Embee Enterprises. Allocate Rs. 50000 to Project A and the rest to Project B. a credit period of 45 days was allowed.

**8. 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. 600000 from Hindustan Unilever Ltd. Allocate Rs. 250000 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. 1575000/- 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 1600000 to Super technologies of which 10,00,000 was allocated to pune branch and the rest to Mumbai.

**9. 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 27<sup>th</sup> May 2014, company received bills no May/015/2014 for a sum of Rs. 75000 from M/s Rajesh shah and co., architects for consultancy.
- d. On 28<sup>th</sup> May, company made the payment after deducting TDS.

**10. Journalize the following Transaction in the books of Mr. Anil for the month of March 2012 and prepare Trial balance**

March 2010	Particular		Amt
1	Start business with cash		80000
3	Purchase goods for cash		5000
4	Purchase goods from Akash		9000
6	Sold goods to Vikas	7000	
7	Return goods to Akash	700	
9	Goods return by Vikash		400
11	Cash paid to Raman	4000	
17	Withdrew from Bank	10000	
20	Wage paid		1000

**11. Akhilesh started his business on 1<sup>st</sup> Jan. 2012 with Rs.5000, his transaction for the month were as following, prepare Cash A/C.**

January 2012	Particular		Amt
1	Bought goods on credit from Sachine & Sons		5000
5	Paid salary		500
10	Sold to Roy		2000
15	Cash sales		2200
19	Cash Purchase		3000
25	Deposit in Bank		1000
27	Goods returned to Sachine & Sons		500
31	Cash Withdrawn by Akhilesh for personal use		500

**12. Journalize the following transactions in the books of Sudhir Kumar 2003 and prepare a Trial Balance :**

Jan 2003	Particular	Amt
1	Sudhir Commenced business with cash	40000
3	Purchased goods for cash	500
5	Sold goods for cash	300
6	Purchased one Motor Car for cash	15000
9	Sold Machinery for cash	9000
11	Purchased a Building on credit from Narendra	20000
15	Sold Furniture on credit to RandhirKappor	9500
17	Paid Cartage	110
22	Received Commission	50
27	Cash Sales	1200
29	Cash Purchase	600
30	Received on account from Ahmed	350
31	Paid cash to Sunitkumar on account	190

**13. Journalize the following transactions in the books of Royal & Co. and prepare a Trial Balance :**

Nov. 2003	Particular	Amt
1	Cash invested in Business	150000
2	Cash deposited In to SBI Current A/C	30000
3	Goods Purchased in cash	20000
4	Goods Sold in cash	12000
5	Commission received Rs. 500 from Sushma Traders	
6	Goods Sold on credit to Roshan	25000
7	Goods return from Roshan	5000
8	Depreciation charged on Machine @ 12% for four month Machine Cost 45000	
10	Cheque received from Roshan	10000
11	Salary Paid	1500

**14. Journalize the following transaction in the books of Sanjay Potdar for the month of March 2012.**

- Ashok starts business with Rs. 100000/-
- Purchase machinery for Rs. 50000/ and furniture for Rs. 10000
- Paid amount for rent Rs. 1000/
- Deposits Rs.,. 10000/- in Bank
- Purchase of goods for Rs. 20000/ from Mr. Ram on credit.
- Sold goods to Mr. Rakesh for Rs. 10000/
- Rs. 5000/ withdraws from bank for personal use.
- Withdraws Rs. 1000/ for office use.
- Received cash from Mr. Rakesh.
- Paid to Mr. Ram.

**15. Record the following transaction in the books of Raj enterprises.**

- Goods purchase from "Kirti sales" on credit Bill no. 115 Rs. 62000
  - Color tv (Lg) 4% 3qty Rs. 30000
  - Washing machine (samsung) 4% 4 qtyRs. 32000
- Cash received from sangamenterprisesRs. 15000
- Goods purchase in cash bill no. 69 Rs. 35000
  - B/W tv (sony) 4% 4 qtyRs. 20000
  - Audio (onida) 4% 5 qtyRs. 15000
- Goods sale on cash rs, 19000
  - Color tv (lg) 4% 1 qtyRs. 15500

- b. Audeo (onida) 4% 1 qtyRs. 3500
- 5. Goods purchase in cash from vikram enterprises bill no. 45 Rs. 40000
  - a. Color tv (Lg) 4% 2 qtyRs. 20000
  - b. Refrigerator (Videocon) 4% 2qty Rs. 20000
- 6. Cheaque 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 QtyRs. 5700
  - c. Audio (onida) 4% 1 qtyRs. 3500
- 8. Cash paid to ravikulkarnirs. 1500
- 9. Cheque no. 159 paid to central engineering co. Rs 15000
- 10. Refrigerator purchase on cash Rs. 30000 form 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 lokmatRs. 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 qtyRs. 10000
  - b. Washing machine (Samsung) 4% 1 qtyRs. 9100
  - c. Refrigerator (Videocon) 4% 1qty Rs. 10800
- 16. Cheque deposited in canara bank Rs.5000
- 17. Cash withdrawn from bank Rs. 34000

**16. Record the following transaction in the books of Maharashtra Traders.**

- 1. Opening stock for WadiGodown
  - 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 wadigodown.
  - a. Color tv (akai) 4% 2qty Rs.21000.
  - b. Refrigerator (Videocon) 4% 1qty Rs. 11300
  - c. Washing Machine (samsung) 4% 1qtyRs. 9200.
- 4. Goods purchase in cash from national Trading co. & store Nandanwangodown.
  - a. Audio (Philips) 2qty 4% Rs.6000
  - b. W/M (Samsung) 1qty 4% Rs. 10000
- 5. Credit sales to Ravina traders Rs. 51800 wadigodown.
  - 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 vikasenterprises 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) 1 qty 4% Rs. 10000.
  - c. Color tv (Onida) 1 qty 45 Rs. 10000
11. Akai color TV purchase in cash Rs. 20000 2 qty 4% Rao store in Nandanwan.
12. Paid salary Rs. 10000
13. Paid bank loan Rs. 8,00,000
14. Cash sale on Wadigodown Rs. 42000\
  - a. Audio 2 qty 4% Rs. 7000
  - b. w/m (s.s.) 2 qty 4% Rs. 17000
  - c. b/w tv (Akai) 3 qty 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 Nandanwangodown Rs. 28000 in cash.
22. Withdrawn for personal use Rs. 10000.

**17. 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) 1 qty 5000/- 4%
  - b. Cpu (Intel) 1 qty 15000/- 4%
  - c. Speaker (Logitech) 1 qty 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/-

# MCM Part-I

## Semester-II

### Paper - I: Management Information Systems (2T1)

#### UNIT - I

##### **Strategic View of MIS:**

**Management information system in a digital firm:** Management Information System (MIS): Concept, Definition, Role of MIS, Impact of the MIS, MIS and the user, Management as a control system, MIS: A support to the management, Management effectiveness and MIS, Organization as a System, MIS: Organization Effectiveness, MIS for a digital firm. **E-Business Enterprise:** A digital firm - Introduction, Organization of business in a digital firm, E-Business, E-Commerce, E-Communication, E-Collaboration, Real Time Enterprise.

**Strategic Management Of Business Performance:** Concept of corporate planning, Essentiality of strategic planning, Development of the business strategies, Types of strategies, Short range planning, Tools of planning, Strategic analysis of business, Balance score card, Score card and dash board, MIS: Strategic business planning.

**Information security challenges in E-Enterprises:** Introduction, Security threats and vulnerability, controlling security threats and vulnerability, managing security threat in E-Business, Disaster management, Information security.

#### UNIT - II

##### **Basic of Management Information Systems:**

**Decision-Making:** Concept, Process, Decision analysis by analytical modeling, **Behavioral concepts in Decision - Making,** Organizational Decision Making.

**Information, Knowledge, Business Intelligence:** Information concepts, Information: A quality product, Classification of the information, Methods of data and information collection, Value of the information, General model of a human as an information processor, Summary of information concept and their implications, Knowledge and knowledge management systems, Business intelligence MIS and the information and knowledge. **System Engineering: Analysis And Design:** System concepts, System control, Types of system, Handling system complexity, Classes of systems, General model of MIS, The need for system analysis, System analysis of the existing system, System analysis of a new requirement, System development model, Structured system analysis and design (SSAD), Object oriented analysis (OOA), System development through OOT: A use case model, OOSAD development life cycle.

#### UNIT – III

**Development process of MIS:** Development of long range plans of the MIS, Ascertain the class of information, Determining the information requirement, Development and implementation of the MIS, Management of information quality in MIS, Organization for development of MIS, MIS: Development Process Model. **Strategic**

**Design of MIS:** Strategic management of the business, Why strategic design of MIS?, Balance score card, Score card, and dash board, Strategic design of MIS, Development process steps for strategic design(SD) of MIS, illustrating SD of MIS for Big Bazaar, Strategic management of business and SD of MIS, Business strategy determination, Business strategy implementation. **Business Process Re-Engineering (BPR):** Introduction, Business process, Process model of organization, Value stream

model of the organization, what delays the Business Process? Relevance of information technology (IT), MIS and BPR.

#### **UNIT - IV**

##### **Applications of Management Information Systems to E-Business:**

**Application in manufacturing sector:** Introduction, Personnel management (PM), financial management (FM), Production management (PM), Raw material management (RMM), Marketing management, Corporate overview. **Application in Service Sector:** Introduction to service sector, Creating a distinctive service, Service concept, Service process cycle and analysis, Customer service design, Service management system, MIS application in service industry, MIS: Service industry. **Decision support systems and knowledge management:****Decision support systems (DSS):** Concept and philosophy, Group decision support system(GDSS), DSS application in E-Enterprise, Knowledge management, Knowledge management systems, Knowledge based expert system (KBES), MIS and the benefits of DSS. **Enterprise Management Systems:** Enterprise management systems(Ems), Enterprise resource planning (ERP) system, ERP models and modules, Benefits of the ERP, ERP product evaluation, ERP implementation, Supply chain management (SCM), Information management in SCM, Customer relationship management (CRM), EMS and MIS.

##### **Text Book:**

1. Waman S. Jawadekar, Management Information Systems, McGraw-Hill.

##### **Reference Books:**

1. D. P. Goyal, Management Information Systems, Vikas Publishing.
2. D. P. Nagpal, Management Information Systems, S. Chand.
3. S. Sadagopan, Management Information Systems, PHI.
4. A. K. Gupta, Management Information Systems, S. Chand.
5. Mahesh Halale, Management Information Systems, Himalaya publishing house.
6. Kanter, Managing with Information, PHI.

## Paper - II: Core Java (2T2)

### UNIT - I

**Java Evolution** - Java history, Java features, How java differ from C and C++, Java and internet, Java and world wide web, Web browsers, Hardware and software requirements, Java support systems, Java environment. **Overview of Java Language** – Introduction, Simple Java programs, More of Java, An application with two classes, Java program structure, Java tokens, Java statements, Implementing a Java program, Java virtual machine, Command line arguments, Programming style. **Constants, Variables, and Data Types** – Introduction, Constants, Variables, Data Types, Declaration of variables, Giving value to variables, Scope of variables, Symbolic constants, Type casting, Getting values of variables, Standards default values. **Operators and Expressions** - Introduction, Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic expression, Evaluation of expression, Precedence of arithmetic operators, Type conversion in expression, Operator precedence and associativity, Mathematical functions. **Decision Making and Branching** – Introduction, Decision making with If Statement, Simple If statement, The If...Else statement, Nesting of If...Else statement, The Else If ladder, The switch statement, The ? : Operators. **Decision Making and Looping** – Introduction, The while statement, The do statement, The for statement, Jumps in loops, Labeled loops.

### UNIT - II

**Classes, Objects and Methods** – Introduction, Defining a class, Fields declaration, Methods declaration, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods, Inheritance: Extending a class, Overriding methods, Final variables and methods, Final classes, Finalizer methods, Abstract methods and classes, Methods with varargs, Visibility Controls. **Arrays, Strings and Vectors** – Introduction, One-Dimensional Array, Creating an array, Two-Dimensional Array, Strings, Vectors, Wrappers classes, Enumerated types, Annotations. **Interfaces: Multiple Inheritance** – Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface variables.

### UNIT - III

**Packages: Putting Classes Together** – Introduction, Java API Packages, Using system packages, Naming conventions, Creating packages, Accessing a package, Using a package, Adding a class to package, Hiding classes, Static import. **Multi Threaded Programming** – Introduction, Creating threads, Extending the thread class, Stopping and blocking a thread, Life cycle of thread, Using thread methods, Thread exception, Thread priority, Implementing the 'Runnable' interface, Inter-thread communication. **Managing Errors and Exceptions** – Introduction, Types of errors, Exceptions, Syntax of exceptions handling code, Multiple catch statements, Using finally statements, Throwing our own exceptions, Improved exception handling in Java ES 7, Using exceptions for debugging.

### UNIT - IV

**Applet Programming** – Introduction, How applet differ from application, Preparing to write applet, Building applet code, Applet life cycle, Creating an executable applet, Designing a web page, Applet tag, Adding applet to HTML file, Running the applet, More about applet tag, Passing parameters to applet, Aligning the display, More about HTML



tags, Displaying numerical values, Getting input from the user, Event handling. **Graphics Programming** – Introduction, The graphics class, Lines and rectangles, Circles and ellipses, drawing arcs, Drawing polygons, Line graphs, Using controls loops in applets, Drawing bar charts, Introduction to AWT packages, Introduction to swing. **Managing Input / Output Files in JAVA** – Introduction, Concepts of streams, Streams classes, Bytes streams classes, Character streams classes, Using streams, Other useful I/O classes, Using the file classes, Input / Output exception, Creation of files, Reading/Writing character, Reading/Writing bytes, Handling primitive data types, Concatenating and buffering files, Random access file, Interactive input and output, Other stream classes. **JAVA Collections** – Introduction, Overview of interfaces, Overview of classes, Overview of algorithm.

**Text Book:**

1. E. Balagurusamy, Programming with Java, McGraw-Hill.

**Reference Books:**

1. Dr. R. NageswaraRao, Core Java – An Integrated Approach, Dreamtech Press.
2. RashmiKanta Das, Core Java for Beginners, Vikas Publishing.
3. Joel Murach, Murach’s Java Programming, ShroffPubishers.
4. SharanamShah &Vaishali Shah, Core Java 8 for Begineers, ShroffPubishers.
5. Patrick Naughton& Herbert Schildt, JAVA 2 – The Complete Reference 3/E, McGraw-Hill.
6. B. M. Harwani, Java for Professionals, ShroffPubishers.

**Practical List ofCore Java**

1. Write an algorithm, draw a flowchart and develop a Java program to find the sum of any number of integers entered as command line arguments.
2. Write an algorithm, draw a flowchart and develop a Java program to perform addition, subtraction, multiplication and division using switch case statement.
3. Write an algorithm, draw a flowchart and develop a Java program to find the factorial of a given number.
4. Write an algorithm, draw a flowchart and develop a Java program to display the following pattern –

```

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

5. Write an algorithm, draw a flowchart and develop a Java program to learn use of single dimensional array by defining the array dynamically.
6. Write an algorithm, draw a flowchart and develop a Java program to convert a decimal number to binary number.
7. Write an algorithm, draw a flowchart and develop a Java program to find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument.
8. Write an algorithm, draw a flowchart and develop a Java program to Write a program that show working of different functions of String and StringBufferclasses like setCharAt(), setLength(), append(), insert(), concat()and equals().

9. Write an algorithm, draw a flowchart and develop a Java program to create a distance class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer.
10. Write an algorithm, draw a flowchart and develop a Java program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions(from lower to higher data type).
11. Write an algorithm, draw a flowchart and develop a Java program to show the use of static functions and to pass variable length arguments in a function.
12. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the concept of boxing and unboxing.
13. Write an algorithm, draw a flowchart and develop a Java program to find the area of rectangle using constructor.
14. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the method overloading concept.
15. Write an algorithm, draw a flowchart and develop a Java program to find even, odd, factorial of a number using inheritance.
16. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the Interfaces.
17. Write an algorithm, draw a flowchart and develop a Java program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
18. Write an algorithm, draw a flowchart and develop a Java program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages.
19. Write an algorithm, draw a flowchart and develop a Java program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
20. Write an algorithm, draw a flowchart and develop a Java program to implement the concept of loading & displaying images.
21. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the animation.
22. Write an algorithm, draw a flowchart and develop a Java program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).
23. Write an algorithm, draw a flowchart and develop a Java program to create URL object, create a URLConnection using the openConnection() method and then use it examine the different components of the URLand content.
24. Write an algorithm, draw a flowchart and develop a Java program to implement a simple datagram client and server in which a message that is typed into the server window is sent to the client side where it is displayed.

25. Write an algorithm, draw a flowchart and develop a Java program that creates a Banner and then creates a thread to scrolls the message in the banner from left to right across the applet's window.
26. Write an algorithm, draw a flowchart and develop a Java program to get the URL/location of code (i.e. java code) and document(i.e. html file).
27. Write an algorithm, draw a flowchart and develop a Java program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
28. Write an algorithm, draw a flowchart and develop a Java program to demonstrate different keyboard handling events.
29. Write an algorithm, draw a flowchart and develop a Java program to generate a window without an applet window using main() function.
30. Write an algorithm, draw a flowchart and develop a Java program to display the following output using applet -

```

A
A P
A P P
A P P L
A P P L E
A P P L E T

```

### Paper - III: Quantity Techniques & Operation Research(2T3)

#### UNIT - I

**Introduction to statistics** - Origin and growth of statistics, meaning of statistics, Definitions of statistics, Characteristics of statistics, Main division of statistics, Nature of statistics: a Science or an Art, Scope of statistics , relation of statistics to other sciences, Function of statistics, Importance of statistics, Limitations of statistics, Distrust Misuse of statistics, Statistical thinking, statistical inferences. **Measures of central Tendency or Averages** - Definition and meaning of average, Qualities of good average, Types of averages, Arithmetic mean, median, Mode, geometric mean ,harmonic mean, Relation among mean ,median and mode, Relation among arithmetic mean, geometric mean and harmonic mean, Quartiles ,deciles, and percentiles. **Measures of dispersion-** Definition of dispersion , meaning of dispersion , purpose of dispersion, quartiles of a good Measures of dispersion, Measures of dispersion, range, quartile deviation or semi-inter quartile range, mean deviation or average deviation, standard deviation or root-mean square deviation, co-efficient of variation, variance, combined standard deviation, relation among quartile deviation, mean deviation and standard deviation, Lorenz curve—graphical presentation of dispersion.

#### UNIT - II

**Correlation Analysis** - Meaning of correlation, definition of correlation, usefulness of correlation analysis, types of correlation, co-efficient of correlation , measurement of correlation, probable error of co-efficient of correlation, standard error of co-efficient of correlation, co-efficient of determination, correlation ratio. **Regression Analysis** - Introduction, meaning of regression, definition of Regression, usefulness of Regression analysis, types of Regression, Regression lines, Regression equation, Regression co-

efficient, standard error of estimate (SEE), ratio of variation, Galton graph, limitations of Regression analysis, distinguish between correlation and Regression. **Probability Analysis** - Introduction, meaning of Probability, properties of Probability, importance of Probability, Probability related events, theorems of Probability, fundamental rules of Probability, calculation of Probability.

### UNIT - III

**Operation Research: An Introduction** – Operation Research – Quantitative approach to decision making, The history of Operation Research, Definition of Operation Research, Characteristics of Operation Research approach, Applications of Operation Research, Computer software for Operation Research. **Linear Programming: Application & Model Formulation** – Introduction, Structure of linear programming model, Advantage of using linear programming, Limitations of linear programming, Application areas of linear programming, General mathematical model of linear programming problem, Guidelines on linear programming model formulation, Example of linear programming model formulation. **Linear Programming: The Graphical Method** – Introduction, Important definitions, Graphical solution methods of LP problem. **Linear Programming: The Simplex Method** – Introduction, Standard form of an LP problem, Simplex algorithm (Maximization & Minimization Case), Types of linear programming solutions.

**Transportation Problem** – Introduction, Mathematical model of transportation problem, Methods of finding initial solution. **Assignment Problem** – Introduction, Mathematical model of statement assignment problem, Solution methods of assignment problem (Hungarian Method).

### UNIT - IV

**Decision Theory and Decision Trees** – Introduction, Steps of decision making process, Types of decision making environments, Decision making under uncertainty, Decision making under risk, Decision trees analysis, Decision making with utilities. **Theory of Games** - Introduction, Two Person zero sum games, Pure strategies (Minimax and minimum principles): games with saddle point, Mixed strategies: game without saddle point, the rules of dominance, Solution methods for games without saddle point. **Project management: PERT and CPM** –Introduction, Basic difference between PERT and CPM, Phases of project management, PERT/CPM network components and precedence relationships, Critical path analysis, Project scheduling with uncertain activity times, Project time-cost trade-off, Updating of the project progress. **Replacement and Maintenance Models** –Introduction, Types of failure, Replacement of items whose efficiency deteriorates with time, Replacement of items that fail completely, Other replacement problems.

#### Text Book:

1. E. Narayanan Nadar, Statistics, PHI.
2. J. K. Sharma, Operation Research – Theory & applications, Macmillan.

#### Reference Books:

1. P. N. Arora, S. Arora, Statistics, S. Chand.
2. Richard A. Johnson & Gouri K. Bhattavharyya, Statistics – Principles and Methods, Wiley.
3. S. C. Gupta, V. K. Kapoor, Fundamentals of Mathematical Statistics, S. Chad & Sons.

4. Ken Black, Applied Business Statistics, Wiley.
5. Ravindran, Phillips & Solberg, Operation Research – Principles & Practice, Wiley.
6. R. Panneerselvam, Operations Research, PHI.
7. Prem Kumar Gupta, D. S. Hira, Operations Research, S. Chand.

## **Paper - IV: E-Commerce & Web Designing(2T4)**

### **UNIT - I**

**Introduction-** Electronic Commerce And Physical Commerce, The DIGITAL Phenomenon, Looking At E-Commerce From Different Perspectives, Different Types Of E-Commerce, Some E-Commerce Scenarios, Changes Brought By E-Commerce, Advantages Of E-Commerce, Myths About E-Commerce Development And Implementation, System Model And Road Map Of This Book. **Internet And World Wide Web-** An Overview Of The Internet, Brief History Of The Web, Web System Architecture, Uniform Resource Locator, Overview Of The Hypertext Transfer Protocol, Hypertext Transfer Protocol (HTTP), Generation Of Dynamic Web Pages, Cookies, HTTP/1.1, Example. **Client Side Programming-** Important Factors In Client-Side Or Web Programming, Web Page Design And Production, Overview Of HTML, Basic Structure Of An HTML Document, Basic Text Formatting, Links, Images, ImageMap, Tables, Frames, Form, Cascading Style Sheets, Javascript.

### **UNIT - II**

**Server-Side Programming I: Servlet Fundamentals-** Revisiting The Tree-Tier Model, Common Gateways Interface (CGI), Active Server Page (ASP), Overview Of Java Servlet, Java Servlet Architecture, Overview Of Servlet API, Building The Virtual Bookstore- Step By Step, Your First Servlet- Welcome To VBS, Compilation And Execution Of Servlets, An Interactive Servlet Program Example: Topics Of Interest, Topics Of Interest: Cookie Approach.

**Server-Side Programming II: Database Connectivity-** Introduction, Relational Database Systems, JDBC Perspectives, A JDBC Program Example: Simple Servlet Book Query, An Advance Book Query: Servletbookquerymulti, Advanced JDBC Servlet: VBS Advance Book Search Engine. **Server-Side Programming III: Session Tracking-** Introduction, Traditional Session Tracking Techniques, The Servlet Session Tracking Techniques, The Servlet Session Tracking API, A Practical Case: VBS Shopping Cart.

**Basic Cryptography Enabling E-Commerce-** Security Concern, Security Requirements, Encryption, Two Basic Principles For Private Key Encryption, The Key Distribution Problem, Diffie-Hellman Key Exchange Protocol, Public Key Encryption, RSA Encryption Algorithm, Hybrid Encryption, Other Public Key Encryption Methods, Stream Cipher And Block Cipher, Message Digest, Message Authentication Code, Digital Signature, Digital Signature Standard, Authentication.

### **UNIT - III**

**Internet Security-** IPSec protocol, setting up associations, the authentication header (AH) service, the encapsulating security payload (ESP) service, preventing replay attack, application of IPSec: virtual private network, firewalls, different types of firewalls, example of firewall system, secure socket layer (SSL), putting everything together. **Advanced techniques for e-commerce-** introduction to mobile agents, WAP: the enabling technology for mobile commerce, XML (eXtensible Markup Language), Data mining.

## UNIT - IV

**Internet Payment System-** Characteristics Of Payment System, 4C Payment Methods, SET Protocol For Credit Card Payment, E-Cash, E-Check, Micropayment System, Overview Of Smart Card, Overview Of Mondex, Putting It All Together For Payment In The VBS. **Consumer Oriented E-Commerce-** Introduction, Traditional Retailing And E-Retailing, Benefits Of E-Retailing, Key Success Factors, Models Of E-Retailing, Features Of Retailing, Developing A Consumer-Oriented E-Commerce System, The PASS Model. **Business Oriented Commerce- Features**Of B2B E-Commerce, Business Model, Integration. **E-Services-** Categories Of E-Services, Web-Enabled Services, Matchmaking Services, Information-Selling On The Web, E-Entertainment, Auctions And Other Specialized Services, Traditional Versus Internet Advertising, Internet Advertising Techniques And Strategies, Business Models For Advertising And Their Revenue Streams, Pricing Models And Measurement Of The Effectiveness Of Advertisements, Web Publishing- Goals And Criteria, Web Site Development Methodologies, Logical Design Of The User Interface I- Abstract User Interface, Logical Design Of The User Interface II- Flow Of Interaction, Usability Testing And Quality Assurance, Web Presence And Visibility.

### Text Book:

1. Henry Chan, Raymond Lee, Tharam Dillon, & Elizabeth Chang, E-Commerce – Fundamentals and Applications, Wiley.

### Reference Books:

1. Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, AlessandroVernet, Professional Web 2.0 Programming, Wiely.
2. Michael P. Papazoglou, Pieter M.A. Ribbers, e-Business, Wiely.
3. Brian P. Hogan, HTML5 and CSS3, Shroff Publishers.
4. Sandeep panda, AngularJS – Novice to Ninja, Shroff Publishers.

### Practical List ofE-Commerce & Web Designing

1. Write a program in HTML to illustrate the use of Formatting tags => BOLD, ITALIC, UNDERLINE, SUPERScript, SUBSCRIPT, AND STRIKETHROUGH.
2. Write a paragraph centrally aligned and change the color of text to BLUE and Background to YELLOW. The size of the font should be 6.
3. Write a program in HTML to illustrate the below given formats.
  - a) The page should contain a paragraph which is centrally aligned.
  - b) FIRST line of the paragraph should be BOLD and ITALIC.
  - c) STRIKEOUT the Second Line.
  - d) Underline and change the color to RED, of the third line.
  - e) Change the font size of the fourth Line to 5.
  - f) Change the color of the text to GREEN.
  - g) Two horizontal lines below the paragraph.
4. Write a program in HTML to link two files.
  - a) The name of the first file is LINK1.HTML and that of second file is LINK2.HTML.
  - b) LINK2.HTML should contain a Back link also.
5. 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.

6. 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.
- Table should contain BORDER.
  - Background color of the Table should be GREEN.
  - Color of the Text should be BLUE.
  - Text should be centrally aligned in the cell.
7. 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.
8. 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

9. 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	

10. Write a program in HTML to divide the screen horizontally into two sections.
11. Write a program in HTML to divide the screen vertically into two sections.
12. Write a program in HTML to divide the Screen into 4 sections.
13. Write a program in HTML to demonstrate the usage of Marquee text with the below given Specifications.  
 Marquee text is INTERNATIONAL COLLEGE.  
 Color of text is BLUE.  
 Background color is YELLOW.  
 Size of Text is 7.  
 Direction is LEFT to RIGHT.
14. Write a program in HTML to demonstrate the use of the Marquee Text with the below given Specifications.
- Marquee Text is INTERNATIONAL COLLEGE.
  - Text color is BLUE.
  - Repeat the Marquee Text five Times.
  - Make use of SCROLLAMOUNT.

- e) Make use of SCROLLDELAY.
15. Write a program in HTML to demonstrate the usage of Image file with the below
- given specification.
  - Background color of page is GREEN.
  - The size of Image is 400 x 400 pixels.
  - The Image should contain a border.
  - Alternate text is "IMAGE NOT FOUND".
  - Image should appear on the centre of the page.
16. Write a program in HTML to Demonstrate the usage of Image file with the below given specifications.
- Background color is RED.
  - The size of Image is 300 x 300 pixels.
  - The image should contain a BORDER.
  - Alternate Text is "IMAGE is NOT FOUND".
  - Vertical space should be 100 pixels.
  - Horizontal space should be 350 pixels.
17. Write a program in Java Script which should prompt the user to enter the result of Question-"What is the result of 10+10?". The user will be given a chance to answer the question. If the answer is correct then the program should raise a message-"Congratulations". If the answer is wrong then the program should again ask the same question. If the answer is correct then the message should be -"Cleared in the second round" else another message should be generated specifying -"Sorry, try next time" and the program should exit. Note – Make use of If. Else.
18. Write a program in Java Script which should prompt the user to enter the result of question -"What is the Result of 10 +10? At the most the user will get 5 chances to answer the question. If the user gives the correct answer during the attempts then the program should exit the loop by raising a message-"Congratulations ". Otherwise, whenever the answer is wrong the program should alert the user that the answer is wrong. Even during the 5<sup>th</sup> attempt, if the answer is wrong then it should raise another alert message also specifying- "Sorry- Try Next Time". (Use Loop, Prompt and Alert).
19. Write a program in Java Script which prompt the user to enter the Result of Question- "What is the Result of 10+10?".  
The program should repeat the question in two cases-
- If the user is wrong.
  - And he wants to continue.
- The program should exit the loop in two cases-
- If the answer is correct.
  - If the answer is wrong but the user doesn't want to continue.
  - (Use odd Looping, Prompt, Alert and Confirm Dialog Boxes).
20. Write a program in Java Script which raises a Message:"  
"Welcome To Our Website" as soon as the Site is loaded. It should also display a message: -"Thank You " when the user switch over from the page.
21. Write a program in Java Script to check the username. If the user name is correct, the program should give an alert message:- "Welcome" along with user name else the program should alert the user specifying that the user name is wrong. Use DOM and onchange event.
22. Write a suitable program in Java Script which displays a message depending on the radio button being clicked using DOM and onclick event.



23. Write a program in Java Script to count the number of elements in a forms elements array. Check the number of elements returned against the number of form elements described between < Form> and </Form> tag in HTML page that is running in the browser. Recognize that number of elements in the array match the number of elements described between <FORM> and </FORM> tag in HTML page exactly.
24. Write a program in Java Script to check whether the form is filled or not. If one of the elements is not filled then display an alert message to fill the particular element using DOM and BUTTON.
25. Write a program in Java Script to check whether the form is completely filled or not. If one of the elements is not filled then display an alert message to fill the particular element using DOM and onsubmit event.

# MCM Part-II

## Semester - III

### Paper - I: Advance Database Management Systems (3T1)

#### UNIT – I

**Introduction to Database Management System(DBMS)** – Introduction, Why a Database, Characteristic of Data in a Database, Database Management System, Why DBMS, Types of Database Management System, Object-Oriented Model, Object-Relational Model, Deductive/Inference Model, Compression Between the various Database Model. **Introduction to Relational Database Management System(RDBMS)**- Introduction , RDBMS Terminologies, The Relational Data Structure, Relational Data Integrity, Relational Data Manipulations, Codd's Rule. **Database Architecture and Data Modeling** – Introduction, Conceptual, Physical and Logical Database Model, External or Logical Level. **Entity-Relationship Modeling**- Introduction, E-R Model, Components of an E-R Model, E-R Modeling Symbols. **Data Normalization**- Introduction, First Normal Form(1NF), Second Normal Form(2NF), Third Normal Form(3NF), Boyce-Codd Normal Form(BCNF), Fourth Normal Form(4NF), Fifth Normal Form(1NF), Domain-Key Normal Form(DKNF), Renormalizations. **Relational Algebra and Relational Calculus**- Relational Algebra, Relational Calculus.

#### UNIT – II

**Introduction to Structured Query Language(SQL)** – Introduction, History of SQL, Characteristic SQL, Advantages of SQL, SQL in Action, SQL Data Types and Literals, Types of SQL Commands, SQL Operators, Arithmetic Operators, Comparison Operators, Logical Operators, Set Operators, Operators Precedence. **Tables, View and Index** – Tables, View , Index. **Nulls** – Introduction, Nulls in Action, When not to Use Nulls, Effect of Nulls, Null Indicators, Null and Comparison Operator, Testing of Nulls, Tests of true, False and Unknown, BETWEEN, LIKE and IN Condition, ALL and ANY Condition, EXISTS Condition, ORDERED BY Clause. **Query And Subqueries** - Query ,Subqueries. **Aggregate Function** – Introduction, General Rule, COUNT() and COUNT(\*), SUM(), AVG(), MAX() and MIN(). **Insert, Update and Delete Operation** – Introduction, Insert Statement, Bulk Insert of Data, Update Statement, Delete Statement **Cursors** – Introduction, Cursor Operation, Cursor Positions, Cursor Coding Guideline. **Join And Union** - Join, Union.

#### UNIT – III

**Programming with SQL**- Introduction, Query Processing, Embedded SQL, Dynamic SQL. **Query-By-Example(QBE)** – Introduction, Select Query in QBE, Make-Table Query, DELETE Query, UPDATE Query, APPEND Query, QBE and SQL. **QUEL**- Introduction, Data Definition in QUEL, Data Retrieval in QUEL, Data UPDATE Operation in QUEL. **Triggers** – Introduction, What is Trigger?, Types of Triggers, Triggers Syntax, Combining Triggers Types, Setting Inserted Value, Disabling and Enabling Triggers, Replacing Triggers, Dropping Triggers, Advantages and Limitations of Triggers. **Introduction**- PL/SQL Blocks, PL/SQL Architecture, SQL Support, PL/SQL Variables, PL/SQL Data Types, PL/SQL Precompilers, Conditional And Sequential Control Statements, Control Statements, Cursors, Iterative Control Statements, PL/SQL Exceptions, PL/SQL Blocks, PL/SQL Triggers, Types Of Triggers, Procedures And Packages.

## UNIT – IV

**Data Ware House and Data Marts** – Introduction, Data in the Data Ware House, Data Ware House, Design Issues, OLTP vs. Data Ware House, Configuration of Data Ware House Process, Data Ware House Components, Structure of Data Ware House, Data Ware House Life Cycle, Data Ware House Environment, Data Architecture Data Ware House Operation, How much Data?, Data Integration and Transformation Process. **Data Mining** - Introduction, What is Data Mining?, Evaluation of Data Mining, Data Mining Verification vs. Discovery, Tasks Solve by Data Mining, Advantages of Data Mining. **On-Line Transaction Processing(OLTP)** - Introduction, Designing Criteria OLTP Features, Practical Application of OLTP, Future trends in OLTP. **On-Line Analytical Processing(OLAP)** – Introduction, OPAP and OPAP, OLAP and Data Ware Housing, Use of OLAP, Benefits of OLAP, Evaluation of OLAP, OLAP Concept and Characteristic, Cood’s OPLAP Product Evaluation Rules, Different Style of OLAP.

### Text Book:

1. Alexis Leon, Mathews Leon, Database Management System, LeaoVikas.

### Reference Books:

1. RiniChakrabarti, ShilbhadraDasgupta&Subhash K. Shinde, Advance Database Management System, Dreamtech Press.
2. Abraham Silberschatz, Henry F. Korth, S. Sudarshan, Database System Concepts, McGraw-Hill.
3. G. K. Gupta, Database System Concepts, McGraw-Hill.
4. Dr. P. S. Deshpande, SQL & PL/SQL for Oracle 11g, Dreamtech Press.
5. Ivan Bayross, SQL, PL/SQL, BPB Publications.

### Practical List ofSQL & PL/SQL

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

<u>Field Name</u>	<u>Datatype</u>	<u>Size</u>
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**”:

<u>Field Name</u>	<u>Datatype</u>	<u>Size</u>	<u>Constraint</u>
Roll	number	5	primary key
Name	varchar2	30	first letter must start with ‘A’
Address	varchar2	30	not null
City	varchar2	30	
DOB	date		
Phone	number	11	unique key
Class	varchar2	10	All upper letter
Marks	number	(10, 2)	Not null can’t be 0

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 tablespace datauser 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.
11. Write an algorithm, draw a flowchart and develop a PL/SQL program to check given number is odd or even.
12. Write an algorithm, draw a flowchart and develop a PL/SQL program to check number is reverse or not.
13. Write an algorithm, draw a flowchart and develop a PL/SQL program to check number is palindrome or not.
14. Write an algorithm, draw a flowchart and develop a PL/SQL program to find the number is Armstrong or not.
15. Write an algorithm, draw a flowchart and develop a PL/SQL program to find the addition of all the number in the given range.
16. Write an algorithm, draw a flowchart and develop a PL/SQL program to find the number is prime or not.
17. Write an algorithm, draw a flowchart and develop a PL/SQL program to calculate factorial of a given number.
18. Write an algorithm, draw a flowchart and develop a PL/SQL program to generate Fibonacci series.
19. Write an algorithm, draw a flowchart and develop a PL/SQL program to insert a new element in a given position in the array.

20. Write an algorithm, draw a flowchart and develop a PL/SQL program to delete the duplicate element from the array.
21. Write an algorithm, draw a flowchart and develop a PL/SQL program to sort the data in ascending order.
22. Write an algorithm, draw a flowchart and develop a PL/SQL program to find reverse of a string.
23. Write an algorithm, draw a flowchart and develop a PL/SQL program to find palindrome of a string.
24. Write an algorithm, draw a flowchart and develop a PL/SQL program to calculate number of char, spaces, words from given string.
25. Write an algorithm, draw a flowchart and develop a PL/SQL program to find largest and smallest element of given array using function concept.
26. Write an algorithm, draw a flowchart and develop a PL/SQL program to print ASCII table.
27. Write an algorithm, draw a flowchart and develop a PL/SQL program to change sale\_price of product\_master table where pro\_no is 'C001' and insert records with date on which price was changed last in new\_master table whose fields are prod\_no, date, sale\_price.
28. Write an algorithm, draw a flowchart and develop a PL/SQL program to accept the employee whose job is programmer and update the salary of the employee. Display how many rows are affected.
29. Write an algorithm, draw a flowchart and develop a PL/SQL program to display the name, dept, name and salary of first 10 employees getting the highest salary using explicit cursor.
30. Write an algorithm, draw a flowchart and develop a PL/SQL program to check whether emp\_no of employees exists or not using procedure.

## **Paper - II: Principles & Techniques of Management (3T2)**

### **UNIT – I**

Concepts And Nature of Management, Evolution of Management Thought, Management Process, Social Responsibilities of A Business, Coordination,

### **UNIT – II**

Nature and Process Of Planning, Methods And Types Of Plans, Forecasting And Decision Making, Management Information System, Organizing Functions.

### **UNIT – III**

Departmentation And Organization Structure, Nature And Scope Of Staffing, Training And Development, Performance Appraisal And Problem.

### **UNIT – IV**

Direction and Supervision, SUPERVISION, Motivation and Moral, MOTIVATION, MORAL, Leadership, Communication, Techniques of managerial control.

**Text Book:**

1. R.S.N. Pillai & S. Kala, Principles & Practice of Management, S. Chand.

**Reference Books:**

1. Chandra Bose, Principles of Management & Administration, PHI.
2. P C Tripathy & P N Reddy, Principles of Management, McGraw-Hill.
3. V.P. Michel, Principles of Management.
4. Mohan, Developing of Communication Skills.
5. Philip Kotlar, Marketing Management.
6. C. B. Memoria, Personnel Management.
7. Asha Kaul, Business Communication, PHI.

**Paper - III: Elective**  
**Elective – I: PHP & My-SQL (3T3)**

**UNIT - I**

**Introducing PHP-** Why PHP and MySQL?, What Is PHP?, What Is MySQL?. **Server-Side Scripting Overview-** Static HTML, Client-Side Technologies, What Is Server-Side Scripting Good For? **Learning PHP Syntax and Variables-** PHP Is Forgiving, HTML Is Not PHP, PHP's Syntax Is C-Like, Comments, Variables, Types in PHP: Don't Worry, Be Happy, Type Summary, The Simple Types, Output. **Learning PHP Control Structures and Functions-** Boolean Expressions, Branching, Looping, Alternate Control Syntaxes, Terminating Execution, Using Functions, Function Documentation, Defining Your Own Functions, Functions and Variable Scope, Function Scope. **Passing Information with PHP-** HTTP Is Stateless, GET Arguments, A Better Use for GET-Style URLs, POST Arguments, Formatting Form Variables, PHP Superglobal Arrays. **Learning PHP String Handling-** Strings in PHP, String Functions. **Learning Arrays-** The Uses of Arrays, What Are PHP Arrays?, Creating Arrays, Retrieving Values, Multidimensional Arrays, Inspecting Arrays, Deleting from Arrays, Iteration. **Learning PHP Number Handling-** Numerical Types, Mathematical Operators, Simple Mathematical Functions, Randomness. **PHP Gotchas-** Installation-Related Problems, Rendering Problems, Failures to Load Page, Parse Errors, Missing Includes, Unbound Variables, Function Problems, Math Problems.

**UNIT - II**

**Introducing Databases and MySQL-** What Is a Database?, Why a Database?, PHP-Supported Databases. **Installing MySQL-** Obtaining MySQL, Installing MySQL on Linux, Installing MySQL on Microsoft Windows. **Learning Structured Query Language (SQL)-** Relational Databases and SQL, SQL Standards, The Workhorses of SQL, Database Design, Privileges and Security. **Learning Database Administration and Design-** Basic MySQL Client Commands, MySQL User Administration, Backups, Replication, Recovery. **Integrating PHP and MySQL-** Connecting to MySQL, Making MySQL Queries, Fetching Data Sets, Getting Data about Data, Multiple Connections, Building in Error Checking, Creating MySQL Databases with PHP, MySQL Functions. **Performing Database Queries-** HTML Tables and Database Tables, Complex Mappings, Creating the Sample Tables. **Integrating Web Forms and Databases-** HTML Forms, Basic Form Submission to a Database, Self-Submission, Editing Data with an HTML Form. **Improving Database Efficiency-** Connections — Reduce, Reuse, Recycle, Indexing and Table Design, Making the Database Work for You. **MySQL Gotchas-** No Connection,

Problems with Privileges, Unescaped Quotes, Broken SQL Statements, Too Little Data, Too Much Data, Specific SQL Functions, Debugging and Sanity Checking.

### UNIT - III

**Introducing Object-Oriented PHP-** What Is Object-Oriented Programming?, Basic PHP Constructs for OOP, Advanced OOP Features, Introspection Functions, Extended Example: HTML Forms, Gotchas and Troubleshooting, OOP Style in PHP. **Advanced Array Functions-** Transformations of Arrays, Stacks and Queues, Translating between Variables and Arrays, Sorting, Printing Functions for Visualizing Arrays. **Examining Regular Expressions-** Tokenizing and Parsing Functions, Why Regular Expressions?, Perl-Compatible Regular Expressions, Example: A simple link-scraper, Advanced String Functions. **Working with the File system-** Understanding PHP File Permissions, File Reading and Writing Functions, File system and Directory Functions, Network Functions, Date and Time Functions, Calendar Conversion Functions. **Working with Cookies and Sessions-** What's a Session?, Home-grown Alternatives, How Sessions Work in PHP, Sample Session Code, Session Functions, Configuration Issues, Cookies, Sending HTTP Headers, Gotchas and Troubleshooting. **Handling Exceptions with PHP-** Error Handling in PHP, Other Methods of Error Handling, Logging and Debugging. **Debugging PHP Programs-** General Troubleshooting Strategies, A Menagerie of Bugs, Using Web Server Logs, PHP Error Reporting and Logging, Error-Reporting Functions. **Learning PHP Style-** The Uses of Style, Readability, Maintainability, Robustness, Efficiency and Conciseness, HTML Mode or PHP Mode?, Separating Code from Design.

### UNIT - IV

**Sending E-Mail with PHP-** Sending E-Mail with PHP, Sending Mail from a Form, **Integrating PHP and Java-** PHP for Java programmers, Integrating PHP and Java. **Integrating PHP and JavaScript-** Outputting JavaScript with PHP, PHP as a Backup for JavaScript, Static versus Dynamic JavaScript. **Integrating PHP and XML-** What Is XML?, Working with XML, Documents and DTDs, SAX versus DOM, DOM, SAX, SimpleXML API, A Sample XML Application, Gotchas and Troubleshooting. **Creating and Consuming Web Services with PHP-** The End of Programming as We Know It, REST, XML-RPC, SOAP, .NET, Current Issues with Web Services, Project: A REST Client. **Creating Graphics with PHP-** Your Options, HTML Graphics, Creating images using gd, Gotchas and Troubleshooting.

#### Text Book:

1. Steve Suehring, Tim Converse & Joyce Park, PHP and MySQL, Wiley.

#### Reference Books:

1. Joel Murach & Ray Harris, murach's PHP and MySQL, Shroff Publishers.
2. Timothy Boronczyk, Elizabeth Naramore, Jason Gerner, Yann Le Scouarnec, Jeremy Stolz, Michael K. Glass, Beginning PHP6, Apache, MySQL Web Development, Wiley.
3. Jason Gilmore, Beginning PHP and MySQL.
4. Teach Yourself MySQL in 21 days – Techmedia.



## Practical List of PHP & My-SQL

1. Write an algorithm, draw a flowchart and Write a PHP script to get the PHP version and configuration information.
2. Write an algorithm, draw a flowchart and Write a PHP script to print the Fibonacci series up to the entered range.
3. Write an algorithm, draw a flowchart and Write a PHP script to change the color of first character of a word.
4. Write an algorithm, draw a flowchart and Write a PHP script to test whether a number is greater than 30, 20 or 10 using ternary operator.
5. Write an algorithm, draw a flowchart and Write a PHP script to calculate the factorial of a number (non-negative integer) using functions.
6. Write an algorithm, draw a flowchart and Write a PHP script to insert a new item in an array on any position.
7. Write an algorithm, draw a flowchart and Write a PHP script to sort an array of positive integers using the Sort function `asort()` and `ksort()`.
8. Write an algorithm, draw a flowchart and Write a PHP script to
  - a) Transform a string all uppercase letters.
  - b) Transform a string all lowercase letters.
  - c) Make a string's first character uppercase.
  - d) Make a string's first character of all the words uppercase.
9. Write an algorithm, draw a flowchart and Write a PHP script to display all the numbers between 200 and 250 that are divisible by 4.
10. Write an algorithm, draw a flowchart and Write a PHP class which displays an introductory message like "Hello All, Good Morning ", where "Morning" is an argument value of the method within the class.
11. Write an algorithm, draw a flowchart and Write a PHP Calculator class which will accept two values as arguments, then add them, subtract them, multiply them together, or divide them on request.
12. Write an algorithm, draw a flowchart and Write a PHP script to convert a date from yyyy-mm - dd to dd – mm-yyyy.
13. Write an algorithm, draw a flowchart and Write a PHP script to remove the whitespaces from a string.
14. Write an algorithm, draw a flowchart and Write a PHP function that checks if a string is all lower case.
15. Write an algorithm, draw a flowchart and Write a PHP script to check whether a entered string is palindrome or not.
16. Write an algorithm, draw a flowchart and Write a PHP script to print Fibonacci series using recursion.
17. 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.

18. Write an algorithm, draw a flowchart and Write a PHP script to replace the first 'the' of the following string with 'That' –  
Sample: 'the quick brown fox jumps over the lazy dog.'  
Expected Result: That quick brown fox jumps over the lazy dog.
19. Write an algorithm, draw a flowchart and Write a PHP script to check that emailid is valid or not.
20. 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.
21. Write a SQL statement to create simple table countries including columns country\_id, country\_name and region\_id.
22. 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.
23. 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.
24. Write a SQL statement to insert a record with your own value into the table countries against each columns region\_id.
25. Write a SQL statement to rename the table countries to country\_new.
26. Write an algorithm, draw a flowchart and Write a PHP script to which will receive the data captured by the HTML form, display the name of the form and also display the message Data Entered Successfully on the HTML form page after performing the validations.
27. Write an algorithm, draw a flowchart and Write a PHP script to creating, retrieving and deleting data from the cookie using POST Method.
28. Write an algorithm, draw a flowchart and Write a PHP script to create, retrieve and deleting the session data.
29. Write an algorithm, draw a flowchart and Write a PHP script to navigate the HTML Page with the use of JavaScript and PHP.
30. Write an algorithm, draw a flowchart and Write a PHP script to create login form with the fields' username and password with validation.
31. Write an algorithm, draw a flowchart and Write a PHP script to send e-mail from a form.
32. Write an algorithm, draw a flowchart and Write a PHP script to demonstrate the use of REST.
33. Write an algorithm, draw a flowchart and Write a PHP script to demonstrate the use of SOAP.
34. Create a table in MySQL named Programmer having the fields' id, sex, age, Language, OS, and Country with constraint, insert up to 20 values and write a PHP Script to generate a Bar Graph according to specific column the user selected.

35. Write an algorithm, draw a flowchart and Write a PHP script to create a registration form having two buttons Submit and Reset with validations. The form data should be submitted in MySQL databasewith coding to integrate the MySQL with PHP.

**Paper - III: Elective  
Elective – II: VB. Net (3T3)**

**UNIT - I**

**Visual Basic .NET and the .NET Framework:** The Common Language Runtime, Understanding Assemblies, The .NET Security Model. **The Visual Basic .NET Development Environment:** Working with the Visual Studio IDE, Creating a Visual Basic .NET Solution. **The Elements of Visual Basic .NET:** Visual Basic .NET: The Foundation, Getting Started, Classes, Types, and Objects. **Visual Basic .NET Operators. Software Design, Conditional Structures, and Control Flow:** Control Flow, Conditional Statements, Loops, Pausing, Resuming, and Exiting Iteration.

**UNIT - II**

**Methods:** What is Method, Method Data, Method Access Characteristics, Properties, Introduction to Exception Handling, Design and Construction of Method. **Classes:** Class characteristics, Inheritance. **Exception Handling and Classes:** Structured Exception Handling, Exception Statements, Creating your own Exception Class. **Collections, Arrays, and Other Data Structures:** Stacks, Queues, Arrays, Jagged Arrays, Programming against Arrays, Array Exceptions.

**UNIT – III**

**Advanced Interface Patterns: Adapter, Delegates, and Events:** Adapters and Wrappers, Delegates, sorting Data with Delegates, Multicast Delegates. **Data Processing and I/O :** Data Processing, Working with Strings, Members of the String Class, Classic Visual Basic String Functions, String Formatting, Building Strings with String builder. Files and Directories, Streams.

**UNIT – IV**

**Interfacing with the End User:** Windows Form, Introduction to Threading, MDI Application, Components and Controls, Menus and Toolbars, Response to User Input, Collecting User Input, Presentation and Informational Controls, Drag and Drop. **Getting Ready to Release:** The System. Diagnostics Namespace, Enabling Debugging, Runtime Configuration Files, Working with the Debug Class, Tracing and Trace Class, Debugging with Visual Studio .NET, The Visual Studio .NET Compiler.

**Text Book:**

1. Jeffry R. Shapiro, The Complete Reference, Visual Basic .NET McGraw- Hill.

**Reference Books:**

1. Thearon Willis, Jonathan Crossland, Richard Blair, Beginning CB.Net 2003, Dreamtech Press, Wiley.
2. Francesco Balena, Programming Microsoft Visual Basic.net, Microsoft Press.
3. Jeffrey Kent, Visual basic.Net – A Beginner’s Guide, McGraw- Hill.

## Practical List of VB. Net

1. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate the sum of all digits of a number.
2. Write an algorithm, draw a flowchart and develop a VB.NET console application to implement the sine series.
3. Write an algorithm, draw a flowchart and develop a VB.NET console application to remove all duplicate elements from an 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 Armstrong or not.
7. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate the decimal number from binary number.
8. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate the first 50 prime and unprimed numbers.
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 binary 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 and remove duplicate element.
13. Write an algorithm, draw a flowchart and develop a VB.NET console application to create jagged array and arrange data in ascending order.
14. Write an algorithm, draw a flowchart and develop a VB.NET console application to calculate day of the week from a date without using any in build function.
15. Write an algorithm, draw a flowchart and develop a VB.NET console application to demonstrate exception handling.

16. Write an algorithm, draw a flowchart and develop a VB.NET windows application to check the user id and password is valid or not.
17. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create a scientific calculator.
18. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create text editor.
19. Write an algorithm, draw a flowchart and develop a VB.NET windows application to generate stopwatch.
20. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create a start menu using status bar.
21. Write an algorithm, draw a flowchart and develop a VB.NET windows application to load the images & run Executable files using the file control.
22. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create trial version DLL.
23. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create a menu and perform any operation.
24. 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.
25. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create popup menu.
26. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create your own delegates.
27. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create data bound control for retrieving the data from database.
28. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create crystal report.
29. Write an algorithm, draw a flowchart and develop a VB.NET windows application to create different dialog box and perform any operation.
30. Write an algorithm, draw a flowchart and develop a VB.NET windows application to enter an e-mail ID into a textbox and check the e-mail ID is valid or not.

**Paper - III: Elective**  
**Elective – III: C#. Net(3T3)**

**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 Language 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. **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

**UNIT - II**

**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, The System.Array Class, ArrayList Class. **Manipulating Strings** – Introduction, Creating String, String Methods, Inserting String, Comparing String, Finding String, Mutable String Arrays of String, Regular Expressions. **Structures and Enumerations** – Introduction, Structures, Structs with Methods, Nested Structs, Difference between Classes and Structs, Enumerations, Enumerator Base Type, Enumerator type Conversion.

**UNIT - III**

**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. **Interface: Multiple Inheritance** – 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.

#### UNIT - IV

**Delegates and Events** – Introduction, Delegates, Delegates Declaration, Delegates Methods, Delegates Instantiation, Using Delegates, Multicast Delegates, Events.  
**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.  
**Multithreading in C#** - Introduction, Understanding the System.Threading Namespace, Creating and Starting a Thread, Scheduling a Thread, Synchronizing Threads, Threading Pooling.  
**Window Form and Web-based Application Development on .NET** – Introduction, Creating Window Form, Customizing a Form, Understanding Microsoft Visual Studio 2005, Creating and Running a SimpleWinApp Windows Application, Overview of Design Patterns, Creating and Running a SimpleWinApp2 Windows Application, Web-based Application Errors.

#### Text Book:

1. E. Balagurusamy, Programming in C#, McGraw-Hill.

#### Reference Books:

1. Rod Stephens, C# 5.0 – Programmer’s Reference, Wrox A 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 year is a leap year or not.
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, To check the given number is Armstrong or not, To calculate the sum of all the digits of a number.
4. Write an algorithm, draw a flowchart and develop a C#.Net console application to print the Following Pattern:

```
      1
     2 2
    3 3 3
   4 4 4 4
```

5. Write an algorithm, draw a flowchart and develop a C#.Net console application to display the following pattern-  
Computer

Compute  
Comput  
Compu  
Comp  
Com  
Co  
C

6. Write an algorithm, draw a flowchart and develop a C#.Net console application to print the Pascal Triangle.
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 second largest 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 separate character, digit and special symbols from an alpha numeric string and display them in ascending order sorting.
11. 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.
12. Write an algorithm, draw a flowchart and develop a C#.Net console application to withdraw, deposit & transfer money to the account using method overloading.
13. Write an algorithm, draw a flowchart and develop a C#.Net console application to overload unary operator '-' and perform subtraction operation.
14. 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.
15. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of constructor overloading.
16. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of hierarchical inheritance.
17. Write an algorithm, draw a flowchart and develop a C#.Net console application to implement the concept of interface.
18. Write an algorithm, draw a flowchart and develop a C#.Net console application to combine two delegates.
19. Write an algorithm, draw a flowchart and develop a C#.Net console application to display the priority of the thread.
20. Write an algorithm, draw a flowchart and develop a C#.Net console application to convert feet to inches using Delegates.
21. Write an algorithm, draw a flowchart and develop a C#.Net console application to copy the contents from one file to another file.



22. Develop a C#.Net windows application to design and develop a simple calculator.
23. Develop a C#.Net windows application to design and develop a simple Notepad.
24. Develop a C#.Net windows application to develop a Birthday Reminder programme.
25. Develop a C#.Net windows application to develop a Database Connectivity with all controls.

### **Paper - IV: Compulsory Foundation Research Methodology(3T4)**

#### **UNIT – I**

##### **Research process, Problem and Hypothesis:**

**About Research** - Introduction, Application of research, Definitions of research, Characteristics/Features of a good research, Types of research, Research Methods and Methodology, Research/Scientific Methods/Discovery, Research approaches, Application of research in management (Research applications in marketing management, Production management, Financial management, Human resource management, Current status of research in India), Limitations of research. **Research Process** - Defining and Formulating the Research Problem, Extensive Literature Survey, Development of the Working Hypothesis, Preparing the Research Designs, Determining the Sample Designs, Collecting the Data (Data Collection), Execution of the Project, Analysis of the Data, Hypothesis Testing and Verification, Generalization, Interpretation and drawing conclusions, Preparation of the report or writing the thesis. **Research Problem** - What is Research Problem?, Components of a research problem, Selection of a research problem, Technique involve in defining a research problem, Sources of problem, Research Proposal or Synopsis, Preparing synopsis for the research, Preparing research Plan. **Hypothesis** - Sources of hypothesis, Origin of hypothesis, Characteristics of a good hypothesis.

#### **UNIT – II**

##### **Research Design and Sampling Design:**

**About Research Design** - Introduction, Definition, Components of a research designs, Concepts related to research designs, Types of research designs. **Sampling Design** – Definition of sampling?, Features of the sampling technique, Essentials of an ideal sample, Types of sampling, Selecting/Calculating the sample size, Determination of sample size  $n$  When estimating the population mean, Some basic technologies of sampling, Common sampling distribution, Sampling theory.

#### **UNIT – III**

##### **Data Collection, Preparation of Questionnaire and Schedule:**

**About Data Collection** – Introduction, Primary data, Secondary data, Collection of primary data, Sources of secondary data, Creating a mechanism for gathering secondary data. **Questionnaire and Schedule** – Merits, Demerits, Formulation of Questionnaire, Various Method/ Technique for getting the Response, Construction of Questionnaire, Schedule, Types of Schedules, Difference between Questionnaire and Schedules, Types of Questions, Case Study Method.

## UNIT – IV

### **Analysis of Data, Hypothesis Testing, Role of SPSS and Excel:**

**Analysis of Data** -Introduction, Processing of data, Diagrammatic presentation in research, Scaling. **Role of Statistics** -Relational Statistics, Inferential Statistics(Inductive Statistics), Measures of Central Tendency, Types of central tendency or Average, Standard Deviation, Skewers, Correlation , Z-Test, t-Test or t-Distribution. **Research Hypothesis** – Introduction of Research hypothesis, The Rationale for Hypothesis Testing, A General Procedure for Hypothesis Testing, Steps Involved in Hypothesis Testing, Procedure for Testing Hypothesis, Two-Sides and One-Sided Tests. **Role of SPSS** – Introduction, The Variables view, Statistical Types in SPSS, The SPSS Interface, Running procedures from the Menus, SPSS output files.**Role of MS Excel** - Excel and Research, The Excel spreadsheet, The Spreadsheet - The Container, Parts of the Spreadsheet, Create a new File, Save a new file, Open an existing file, Close a file, Navigating the spreadsheet, A simple spreadsheet, Simple formulas, Insert row and columns, Sorting, Chart wizard, Using Excel to determine a confidence interval, Using Excel for t-test of hypothesis, The t-test for Dependent(and Matched-Pair) Samples, Using Excel for ANOVA, Using Excel for Correlation, Using Excel for Linear Regression, Using Excel for Chi-Square Tests.

### **Text Book:**

1. MukulGupta ,Deepa Gupta, Research Methodology, PHI.

### **Reference Books:**

1. Dr. C. R. Kothari, Research Methodology, New Age International (P Ltd) Publishers.
2. Dr. J. Y. Khan, Research Methodology, A. T. H. Publishing Corporation.
3. Dr. PrasantSarangi, Research Methodology, Taxmann's.
4. Briony J Oates, Researching Information Systems and Computing, SAGE Publications.
5. Uma Sekaran& Roger Bougie, Research Methods for Business, Wiley.
6. Dr. Vijay Upagade& Dr. ArvindShende, Research Methodology, S. Chand.

# MCM Part-II

## Semester - IV

### Paper - I: ASP.Net (4T1)

#### UNIT – I

**An introduction to ASP.NET programming:** An introduction to web applications, An introduction to ASP.NET development. **How to develop a one-page web application:** How to work with ASP.NET web sites, How to use Visual Studio to build a web form, How to add validation controls to a form, How to add C# code to a form, How to test a web application. **How to use HTML5 and CSS3 with ASP.NET applications:** The Future Value application with CSS formatting, The HTML and CSS skills that you need. **How to develop a multi-page web application:** How to work with multi-page web sites, How to use session state. **How to test and debug ASP.NET applications:** How to test an ASP.NET web site, How to use the debugger, How to use the trace feature.

#### UNIT –II

**How to use the standard server controls:** How to use the common server controls, How to use the button controls, How to use the list controls. **How to use the validation controls:** Introduction to the validation controls, How to use the validators, Validation techniques. **How to work with state, cookies, and URL encoding:** How to use view state, How to use session state, How to use application state and caching, How to use cookies and URL encoding. **How to use master pages:** How to create master pages , How to create and develop content pages, How to customize content pages. **How to use themes:** An introduction to themes, How to work with themes and skins. **How to use site navigation and ASP.NET routing:** How to use the navigation controls, How to use ASP.NET routing, How to use the navigation controls with ASP.NET routing.

#### UNIT – III

**An introduction to database programming:** An introduction to relational databases, An introduction to ADO.NET 4.5, How to use the DataList control, How to use data binding, How to customize the GridView control, How to use the DetailsViewcontrol , How to use the FormView control. **How to use object data sources with ADO.NET:** An introduction to object data sources, How to create a data access class, A Category Maintenance application. **How to secure a web site:** An introduction to SSL, How to use a secure connection. **How to authenticate and authorize users:** An introduction to authentication, How to set up authentication and authorization, How to use the login controls. **How to use email, custom error pages, and back-button control:** How to send email, How to use custom error handling, How to handle the back-button problem.

#### UNIT – IV

**How to configure and deploy ASP.NET applications:** How to use the Web Site Administration Tool, An introduction to deployment, How to use one-click deployment, How to create and use a Setup program. **How to use ASP.NET Ajax:** An introduction to Ajax, An introduction to ASP.NET Ajax, How to use the ASP.NET Ajax server controls, An application that uses ASP.NET Ajax. **How to create and use WCF and Web API services:** An introduction to web services, How to create a WCF service, How to create

a web site that consumes a WCF service, How to create a Web API service, How to create a web site that consumes a Web API service. **An introduction to ASP.NET MVC:** An introduction to MVC, An introduction to ASP.NET MVC, How to work with views, How to work with controls and postbacks.

**Text Book:**

1. Mary Delamater & Anne Boehm, murach's ASP.Net Web Programming with C#, Shroff Publishers.

**Reference Books:**

1. ASP.Net Black Book, Kogent Learning Solutions Inc, Dreamtech Press.
2. Jason Gaylord, Christian Wenz, PranavRastogi, Todd Miranda, Scott Hanselman, Professional ASP.Net in C# & VB, Wrox A Wiley Brand.
3. ASP.Net with C#, Kogent Learning Solutions Inc, Dreamtech Press.

**Practical List of ASP.NET**

1. Create a page in ASP.NET using VB.NET or C# to display the following Web Controls:
  1. A button with text "click me". The button control must be in the center of the form.
  2. A label with a text hello
  3. A checkbox. The form name must be Web Controls.
2. Create a page in ASP.NET using VB.NET or C# that displays a button in green color and it should change into yellow when the mouse moves over it.
3. Create a page in ASP.NET using VB.NET or C# containing the following controls:
  1. A ListBox
  2. A Button
  3. An Image
  4. A Label

The listbox is used to list items available in a store. When the user clicks on an item in the listbox, its image is displayed in the image control. When the user clicks the button, the cost of the selected item is displayed in the control.
4. Create a page in ASP.NET using VB.NET or C# that take a student name from the user, add that name in list-box control. And delete the chosen name from the list-box.
5. Create a page in ASP.NET using VB.NET or C# for book sales. Enter the quantity, title and price of the book. Calculate the extended price, discount (15%) and after discount, the actual price of the book. Show the summery of book sales. (Like total no of books, total discount given, total discounted amount and average discount.) You will need command buttons- calculate, clear sale.
6. Create a page in ASP.NET using VB.NET or C# using HTML Server controls that take user name, address, and city, state and country name from the user and display it.
7. Create a page in ASP.NET using VB.NET or C# using HTML Server controls that convert given currency into another selected currency. For that you need a drop-down-list.
8. Create a page in ASP.NET using VB.NET or C# to get a user input such as the boiling point of water and test it to the appropriate value using Compare Validator.

9. Create a page in ASP.NET using VB.NET or C# that uses a textbox for a user input name and validate it for RequiredField Validation.
10. Create a page in ASP.NET using VB.NET or C# that gets user input such as the user name, mode of payment, appropriate credit card. After the user enters the appropriate values the Validation button must validates the values entered.
11. Create a page in ASP.NET using VB.NET or C# to declare one TextBox control, one Button control, one Label control, and one RegularExpressionValidator control in an .aspx file. The submit() function checks if the page is valid. If it is valid, it returns "The page is valid!" in the Label control. If it is not valid, it returns "The page is not valid!" in the Label control. If validation fails, the text "The zip code must be 5 numeric digits!" will be displayed in the RegularExpressionValidator control.
12. Create a page in ASP.NET using VB.NET or C# to the database with ADO.NET for Inserting Data.
13. Create a page in ASP.NET using VB.NET or C# to the database with ADO.NET for Updating Data.
14. Create a page in ASP.NET using VB.NET or C# to the database with ADO.NET for Deleting Data.
15. Create a page in ASP.NET using VB.NET or C# to the database with ADO.NET for Search Data.
16. Create a page in ASP.NET using VB.NET or C# that contains a list of following technologies:
  - ASP.NET, ADO.NET, C#.
  - It also contains a textbox in which the user has to enter a name and a textarea in which the user has to enter his comments. When the Submit is clicked, the output should display the name entered in the textbox and the user-selection from the listbox. All the above should be displayed with the tracing for the page being enabled.
17. Create a page in ASP.NET using VB.NET or C# that generates the "IndexOutOfRangeException" exception when a button is clicked. Instead of displaying the above exception, it redirects the user to a custom error page. All the above should be done with the trace for the page being enabled.
18. Create a page in ASP.NET using VB.NET or C# to create a simple Web Service that converts the temperature from Fahrenheit to Celsius, and vice versa create a simple Web Service that converts the temperature from Fahrenheit to Celsius, and vice versa. Also write an ASP program to consume this web service.
19. Create a page in ASP.NET using VB.NET or C# to create a proxy.
20. Create a page in ASP.NET using VB.NET or C# that has a form taking the user" s name as input. Store this name in a permanent cookie & whenever the page is opened again, then value of the name field should be attached with the cookie" s content.
21. Create a page in ASP.NET using VB.NET or C# to create a Session dictionary using object tag. In session-on start add keys for Time, UserAgent, RemoteIP& add appropriate values. Create a simple page to display the values.
22. Create a page in ASP.NET using VB.NET or C# to implement Session tracking using user authentication.

23. Create a page in ASP.NET using VB.NET or C# to delete all cookies of your web site that has created on the client's computer.
24. Create a page in ASP.NET using VB.NET or C# to run video.
25. Create a page in ASP.NET using VB.NET or C# for Dynamic images uploading by the user using FileUpload control and setting the profile image by the user in a website.

**Paper - II: Elective**  
**Elective – I: Advance Java (4T2)**

**UNIT - I**

**Introducing Swing** – JFC, The MVC Architecture, Applet, Window Panes, Important Classes of the javax.swing Package, Setting the Look and Feel of Components, An Applet with Swing Components. **Working with JDBC** - Introducing JDBC, Exploring JDBC Drivers, Exploring the Features of JDBC, Describing JDBC APIs, Exploring Major Classes and Interfaces, Exploring JDBC Processes with the java.sql Package, Working with Transactions. **Network Programming** -Networking Basics, Network Programming in Java Using the java.net Package, Establishing the two-way Communication between Server and Client, Retrieving a file at server, Learning the DatagramSocket and DatagramPacket Classes, Understanding the Content and Protocol Handlers.

**UNIT - II**

**RMI, Naming Service, Serialization, and Internationalization** - RMI Architecture, RMI Registry, Dynamic Code Loading in RMI, RMI API, Creating a Distributed Application, using RMI, Naming Services, Directory and Naming Services, Overview of JNDI, Object Serialization, Internationalization, Java and Internationalization, Internationalizing Web Applications. **Introducing the Java EE Platform** - Enterprise Application Concepts, Introducing the Java EE 6 Platform, HTTP Protocol, Exploring Web Application, Introducing Web and Application Servers. **Working with Servlets** - Exploring the Features of Java Servlet, Exploring New Features in Servlet 3.0, Exploring the Servlet API, Explaining the Servlet Life Cycle, Understanding Servlet Configuration, Creating a Sample Servlet, Creating a Servlet by using Annotation, Working with ServletConfig and ServletContext Objects, Working with the HttpServletRequest and HttpServletResponse Interfaces, Exploring Request Delegation and Request Scope, Describing a Session, Introducing Session Tracking, Exploring the Session Tracking Mechanisms, Using the Java Servlet API for Session Tracking.

**UNIT - III**

**Introducing Event Handling and Filters** - Introducing Events, Introducing Event Handling, Working with the Types of Servlet Events, Introducing Filters, Exploring Filter API, Configuring a Filter, Creating a Web Application Using Filters, Using Initializing Parameter in Filters, Manipulating Responses, Discussing Issues in Using Threads with Filters. **Working with JavaServer Pages (JSP)** - Introducing JSP Technology, Exploring New Features of JSP 2.1, Listing Advantages of JSP over Java Servlet, Exploring the Architecture of a JSP Page, Describing the Life Cycle of a JSP Page, Working with JSP Basic Tags and Implicit Objects, Working with Action Tags in JSP, Exploring the JSP Unified EL, Using Functions with EL.

**UNIT - IV**

**JSP Tag Extensions and Standard Tag Library** - Exploring the Elements of Tag Extensions, Exploring the Tag Extension API, Working with Classic Tag Handlers, Working with Simple Tag Handlers, Working with JSP Fragments, Working with Tag Files, Introducing JSTL, Working with the Core Tag Library, Working with the XML Tag Library, Working with the Internationalization Tag Library, Working with the SQL Tag Library, Working with the Functions Tag Library. **Introducing Hibernate** - Introducing Hibernate, Exploring the Architecture of Hibernate, Downloading Hibernate, Exploring HQL, Understanding Hibernate O/R Mapping, Working with Hibernate, Implementing O/R Mapping with Hibernate.

**Text Book:**

1. Prof. M. T. Savaliya, Advance java Technology, Dreamtech Press.

**Reference Books:**

1. Dr. Ashwin Mehta, Sarika Shah, Advance Java for Students, Shroff Publishers.
2. Patrick Naughton & Herbert Schildt, The Complete Reference: Java 2, McGraw-Hill.
3. Joseph Weber, Using Java 2 Platform, Prentice Hall of India.
4. Uttam K. Roy, Advance Java Programming, Oxford University.
5. Kanika Lakhani, Advance Java Programming, Katson Books.

**Practical List of Advance Java**

1. Write a Java program to develop an applet that draws a circle. The dimension of the applet should be 500 x 300 pixels. The circle should be centered in the applet and have a radius of 100 pixels. Display your name centered in a circle.( using drawOval() method).
2. Write a Java program to draw ten red circles in a vertical column in the center of the applet.
3. Write a Java program to develop calculator using Swing and also add image on Button.
4. Write a Java program to find the IP address or computer name of local machine.
5. Write a Java program with class GreetingClient is a client program that connects to a server by using a socket and sends a greeting, and then waits for a response.
6. Write a Java program that implements a simple client/server application. The client sends data to a server the server receives the data, uses it to produce a result and then sends the result back to the client. The client displays the result on the console. For ex the data send from the client is a numbers and the result produce by the server is the addition of that number.
7. Write a Java program to create an application that displays a frame with a menu bar. When a user selects any menu or menu item, display that selection on a text area in the center of the frame.
8. Write RMI application where client supplies data to withdraw and server response with new account balance. Provide your custom security policy for this application.

9. Write a Java program to develop database application that allows user to Insert, Update, Delete values in a Table and manages appropriate exception handling when wrong values are entered.
10. Write a Java program to present a set of choice for user to select a product and display the price of product.
11. Write a Java program to show validation of user using servlet.
12. Write a Java program to develop a simple servlet question answer application.
13. Write a Java program to pass any URL string and display all 4 elements of URL string.
14. Write a Java program to trap all the events of mouse listener interface.
15. Write a Java program to show validation of user using JSP.
16. Write a Java program to display message on browser using JSP.
17. Write a Java program to connect with the google.com and retrieve the html code of default web page.
18. Write a Java program to present a set of choices for a user to select stationary products and display the price of product after selection from the list.
19. Write a Java program to demonstrate typical editable table, describing employee details for a software company.
20. Write a Java program to trap all the events of key listener interface.
21. Write a Java program of calling one servlet by another servlet.
22. Write a Java program to develop a simple servlet calculator application.
23. Write a Java program to set scope of beans.
24. Write a Java program to create a JSP application that accepts registration details from the student and stores the details into the database table.
25. Write a Java program to develop a JSP application that authenticate user login as per the registration details. If login success then forward user to the index page otherwise show login failure message.
26. Write a Java program using split pane to demonstrate a screen divided into two parts contains a name of planets and another display the image of planet. When user selects the planet name from the left screen appropriate image of display in right screen.
27. Write a Java program to develop a web application to add items in the inventory using JSP.
28. Write a Java program to create a web form which processes servlet and demonstrates use of cookies and sessions.
29. Write a Java program to develop a simple JSP program for user login form with static and dynamic database.



30. Write a Java program to develop a JSP program to display the grade of a student by accepting the marks of five subjects.

**Paper - II: Elective**  
**Elective – II: Android Programming (4T2)**

**UNIT - I**

**Getting an Overview of Android Introducing Android** -Listing the Version History of Android Platform, Discussing Android APIs, Describing the Android Architecture Application Framework, Exploring the Features of Android, Discussing about Android Applications, The Application Components, The Manifest File, The Command-Line Tools, Developing and Executing the First Android Application, Using Eclipse IDE to Create an Application, Running Your Application, Exploring the Application, Using Command-Line Tools. **Using Activities, Fragments and Intents in Android** -Working with Activities, Creating an Activity, Starting an Activity, Managing the Lifecycle of an Activity, Applying Themes and Styles to an Activity, Displaying a Dialog in the Activity, Hiding the Title of the Activity, Using Intents, Exploring Intent Objects, Exploring Intent Resolution, Exploring Intent Filters, Resolving Intent Filter Collision, Linking the Activities Using Intent, Fragments, Fragment Implementation, Finding Fragments, Adding, Removing, and Replacing Fragments, Finding Activity Using Fragment, Using the Intent Object to Invoke Built-in Application. **Working with the User Interface Using Views and ViewGroups** -Working with View Groups, The LinearLayout Layout, The RelativeLayout Layout, The ScrollView Layout, The TableLayout Layout, The FrameLayout Layout, The TabLayout Using the Action Bar, Working with Views, Using the TextView, Using the EditText View, Using the Button View, Using the RadioButton View, Using the CheckBox View, Using the ImageButton View, Using the ToggleButton View, Using the RatingBar View, Binding Data with the AdapterView Class, Using the ListView Class, Spinner, Using the Gallery View, Designing the AutoTextCompleteView, Implementing Screen Orientation, Anchoring the Views of the Current Activity, Customizing the Size and Position of the Views, Designing the Views Programmatically, Handling UI Events, Handling User Interaction with Activities, Handling User Interaction with the Views, Specialized Fragments, ListFragment, DialogFragment, PreferenceFragment, Creating Menus The Options Menu The Context Menu The SubMenus.

**UNIT - II**

**Handling Pictures and Menus with Views** -Working with Image Views, Displaying Images in the Gallery View, Displaying Images in the Grid View, Using the ImageSwitcher View, Designing Context Menu for Image View, Using the AnalogClock and DigitalClock Views, Embedding Web Browser in an Activity, Notifying the User Creating the Toast Notification, Creating the Status Bar Notification, Creating the Dialog Notification. **Storing the Data Persistently** -Introducing the Data Storage Options, Using Preferences, Using the Internal Storage Exploring the Methods Used for Internal Storage, Developing an Application to Save User Data Persistently in File, Using the External Storage Exploring the Methods Used for External Storage, Developing Application to Save File in SD Card, Using the SQLite Database Creating the Database Helper Class, Creating the Layout and Main Activity Class, Creating the Layout and Activity for the Insert Operation, Creating the Layout and Activity to Search a Record, Creating the Activity Class to Fetch All Records, Creating the Layout and Activity for the Update Operation, Creating the Layout and Activity for the Delete Operation, Executing the Database Operations, Working with Content Providers, Exploring the android.provider Package, Creating User-Defined Content Provider, Consuming User-Defined Content Provider. **Emailing and Networking in Android** -Building an Application to Send Email, Networking in Android, Getting an Overview of Networking Fundamentals, Checking Network Availability, Accessing Web Services Using HTTP

Post, Accessing Web Services Using the GET Method, Working with Binary Data and Text Files, Consuming JSON Services, Sockets Programming.

### **UNIT - III**

**Working with Location Services and Maps** - Working with Google Maps, Exploring Google Maps External Library, Creating an Application Using Google Maps Android API, Disabling the Zoom Control Button, Changing the Map Type, Displaying the Specific Location and Adding Markers, Handling Map Gestures Interaction, Getting the Current Location of a User, Working with Geocoding and Reverse Geocoding. **Working with Graphics and Animation** -Working with Graphics, Drawing Graphics to Canvas, Using the Drawable Object, Referencing an Image File, Defining Drawable in XML, Using the Shape Drawable Object, Working with the Nine Patch Drawable Graphics, Understanding the Concept of Hardware Acceleration, Working with Animations, The Property Animation, View Animation Drawable Animation. Audio, Video and Camera - Role of Media Playback Using Media Player Media Formats Supported by Media Player, Preparing Audio for Playback, Preparing Video for Playback, Creating Application to Play Audio and Video Using MediaPlayer, Recording and Playing Sound, Use of Media Store Audio Recording Application, Creating a Sound Pool Using Camera for Taking Pictures, Creating Video Recording Application.

### **UNIT - IV**

**Threads and Services** -Introducing Threads Worker Threads Using AsyncTask, Introducing Services Exploring Services Essentials, Understanding the Lifecycle of a Service, Exploring the Service Class, Introducing the Service Class, Creating a Bound Service. **Bluetooth, NFC and Wi-Fi** -Working with Bluetooth Exploring the Android Bluetooth APIs, Permissions Required to Access Bluetooth, Setting Up the Bluetooth for an Application, Identifying the Bluetooth-Enabled Devices, Querying the Paired Devices, Discovering Devices Creating an Application Using Bluetooth Functionality, Connecting the Devices Using Bluetooth for Data Transfer, Connecting as a Server Connecting as a Client Working with Bluetooth Low Energy, Working with NFC, Exploring the Basics of NFC, Developing an Application Using NFC, Working with Wi-Fi, Exploring the Wi-Fi APIs, Creating an Application Using Wi-Fi. **Telephony and SMS** -Handling Telephony Displaying Phone Information Application Receiving Phone Calls Application, Making Outgoing Phone Calls Application, Handling SMS Sending SMS Using SmsManager, Sending SMS Using Intent, Receiving SMS Using the BroadcastReceiver Object, Role of Default SMS Providers. Hardware Sensors - Introducing Sensors Exploring the Sensor Framework, Managing Various Sensor Configurations, Understanding the Sensor Coordinate System.

#### **Text Book:**

1. Rradeep Kothari, Android Application Development – Black Book, Dreamtech Press.

#### **Reference Books:**

1. Prasanna Kumar Dixit, Android, Vikas Publishing.
2. Dawn Griffiths & David Griffiths, Head First Android Development, Shroff Publishers.
3. Ed Burnette, Hello Android, Shroff Publishers.
4. Jerome DiMarzio, Android – A Programmer’s Guide, McGraw-Hill.
5. Dave MacLean, SatyaKomatineni, Grant Allen, Pro Android 5, Apress.
6. Reto Meier, Professional Android Application Development, Wiley.

## Practical List of Android Programming

1. Create "Hello World" android application. That will display "Hello World" in the middle of the screen in the red color with white background.
2. Write an android application to understand Activity, Intent. Create sample application with login module.(Check username and password) and on successful login, go to next screen. And on failing login, alert user using Toast.Also pass username to next screen.
3. Create an android application that will change color of the screen and change the font size of text view using xml.
4. Create login android application where you will have to validate EmailID(UserName). Till the username and password is not validated, login button should remain disabled.
5. Create and login android application as above. On successful login, open browser with any URL.
6. Create an android application that will pass some number to the next screen, and on the next screen that number of items should be display in the list.
7. Create an android application that will change color of the screen, based on selected options from the menu.
8. Create an android application that will display toast(Message) on specific interval of time.
9. Create a android background application that will open activity on specific time.
10. Create an android application that will have spinner with list of animation names. On selecting animation name, that animation should affect on the images displayed below.
11. Create an android UI such that, one screen have list of all the types of cars.and on selecting of any car name, next screen should show Car details like : name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.
12. Write an android application to read phonebook contacts using content providers and display in list.
13. Write an android application to read messages from the mobile and display it on the screen.
14. Create an android application to call specific entered number by user in the EditText.
15. Create an android application that will create database with table of User credential.
16. Create an android application to read file from asset folder and copy it in memory card.
17. Create an android application that will play a media file from the memory card.

18. Create an android application to make Insert,update, Delete and retrieve operation on the database.
19. Create an android application to read file from the sdcard and display that file content to the screen.
20. Create an android application to draw line on the screen as user drag his finger.
21. Create an android application to send message between two emulators.
22. Create an android application to take picture using native application.
23. Create an android application to pick up any image from the native application gallery and display it on the screen.
24. Create an android application to open any URL inside the application and clicking on any link from that URI should not open Native browser but that URL should open the same screen.
25. Create an android application that will create database with table of User credential.

**Paper - II: Elective  
Elective – III: Python (4T2)**

**UNIT - I**

**The Way of the Program** - The Python Programming Language, What Is a Program?, What Is Debugging?, Syntax Errors, Runtime Errors, Semantic Errors, Experimental Debugging, Formal and Natural Languages, The First Program. **Variables, Expressions, and Statements** - Values and Types, Variables, Variable Names and Keywords, Operators and Operands, Expressions and Statements, Interactive Mode and Script Mode, Order of Operations, String Operations, Comments. **Functions** - Function Calls, Type Conversion Functions, Math Functions, Composition, Adding New Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Stack Diagrams, Fruitful Functions and Void Functions, Why Functions?, Importing with from.

**UNIT - II**

**Conditionals and Recursion** - Modulus Operator, Boolean Expressions, Logical Operators, Conditional Execution, Alternative Execution, Chained Conditionals, Nested Conditionals, Recursion, Stack Diagrams for Recursive Functions, Infinite Recursion, Keyboard Input. **Fruitful Functions** - Return Values, Incremental Development, Composition, Boolean Functions, More Recursion, Leap of Faith, One More Example, Checking Types. **Iteration** - Multiple Assignment, Updating Variables, The while Statement, break, Square Roots, Algorithms, Debugging. **Strings** - A String Is a Sequence, len, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison.

**UNIT - III**

**Lists** - A List Is a Sequence, Lists Are Mutable, Traversing a List, List Operations, List Slices, List Methods, Map, Filter, and Reduce, Deleting Elements, Lists and Strings, Objects and Values, Aliasing, List Arguments. **Dictionaries** - Dictionary as a Set of

Counters, Looping and Dictionaries, Reverse Lookup, Dictionaries and Lists, Memos, Global Variables, Long Integers. **Tuples** - Tuples Are Immutable, Tuple Assignment, Tuples as Return Values, Variable-Length Argument Tuples, Lists and Tuples, Dictionaries and Tuples, Comparing Tuples, Sequences of Sequences.

#### **UNIT - IV**

**Files** – Persistence, Reading and Writing, Format Operator, Filenames and Paths, Catching Exceptions, Databases, Pickling, Pipes, Writing Modules. **Classes and Objects** - User-Defined Types, Attributes, Rectangles, Instances as Return Values, Objects Are Mutable, Copying. **Classes and Functions** – Time, Pure Functions, Modifiers, Prototyping versus Planning. **Classes and Methods** - Object-Oriented Features, Printing Objects, Another Example, A More Complicated Example, The init Method, The `__str__` Method, Operator Overloading, Type-Based Dispatch, Polymorphism, Debugging, Interface and Implementation. **Inheritance** - Card Objects, Class Attributes, Comparing Cards, Decks, Printing the Deck, Add, Remove, Shuffle, and Sort, Inheritance, Class Diagrams, Debugging, Data Encapsulation.

#### **Text Book:**

1. Allen B. Downey, Think Python, Shroff Publishers, O'Reilly.

#### **Reference Books:**

1. Charles Dierbach, Introduction to Computer Science using Python, Wiley.
2. Laura Cassell & Alan Gauld, Python Projects, Wrox A Wiley Brand.
3. 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 users 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  $\geq 80$   
Grade B: Percentage  $\geq 70$  and  $< 80$   
Grade C: Percentage  $\geq 60$  and  $< 70$   
Grade D: Percentage  $\geq 40$  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 find factorial of the given number.

8. Write a Python program to find sum of the following series for n terms:  $1 - 2/2! + 3/3! - \dots - n/n!$
9. Write a Python program to calculate the sum and product of two compatible matrices.
10. Write a Python program to calculate the transpose of a matrix.
11. Write a Python program to determine how many times a given letter occurs in a provided string using recursion.
12. Write a Python program to calculate Fibonacci series 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, cosine, polynomial and exponential 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  $t \geq 0$ .
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 - III: Elective Foundation**  
**Elective Foundation – I: Big Data&Hadoop (4T3)**

**UNIT - I**

**Types of Digital Data** -Classification of Digital Data.**Introduction to Big Data** - Characteristics of Data, Evolution of Big Data, Definition of Big Data, Challenges with Big Data, What is Big Data?, Other Characteristics of Data Which are not Definitional Traits of Big Data, Why Big Data?, Are We Just an Information Consumer or Do we also Produce Information?, Traditional Business Intelligence (BI) versus Big Data, A Typical

Data Warehouse Environment, A Typical Hadoop Environment, What is New Today?, What is changing in the Realms of Big Data?. **Big Data Analytics** -Where do we Begin?, What is Big Data Analytics?, What Big Data Analytics Isn't?, Why this Sudden Hype Around Big Data Analytics?, Classification of Analytics, Greatest Challenges that Prevent Businesses from Capitalizing on Big Data, Top Challenges Facing Big Data, Why is Big Data Analytics Important?, What Kind of Technologies are we looking Toward to Help Meet the Challenges Posed by Big Data?, Data Science, Data Scientist...Your New Best Friend!!!, Terminologies Used in Big Data Environments, Basically Available Soft State Eventual Consistency (BASE), Few Top Analytics Tools.

## **UNIT - II**

**The Big Data Technology Landscape** -NoSQL (Not Only SQL), Hadoop.**Introduction to Hadoop** -Introducing Hadoop, Why Hadoop?, Why not RDBMS?, RDBMS versus Hadoop, Distributed Computing Challenges, History of Hadoop, Hadoop Overview, Use Case of Hadoop, Hadoop Distributors, HDFS (Hadoop Distributed File System), Processing Data with Hadoop, Managing Resources and Applications with Hadoop YARN (Yet another Resource Negotiator), Interacting with Hadoop Ecosystem. **Introduction to MongoDB** -What is MongoDB?, Why MongoDB?, Terms Used in RDBMS and MongoDB, Data Types in MongoDB, MongoDB Query Language.

## **UNIT - III**

Introduction to Cassandra - Apache Cassandra - An Introduction, Features of Cassandra, CQL Data Types, CQLSH, Keyspaces, CRUD (Create, Read, Update and Delete) Operations, Collections, Using a Counter, Time to Live (TTL), Alter Commands, Import and Export, Querying System Tables, Practice Examples. Introduction to MAPREDUCE Programming – Introduction, Mapper, Reducer, Combiner, Partitioner, Searching, Sorting, Compression. Introduction to Hive - What is Hive?, Hive Architecture, Hive Data Types, Hive File Format, Hive Query Language (HQL), RCFile Implementation, SerDe, User-Defined Function (UDF).

## **UNIT - IV**

Introduction to Pig - What is Pig?, The Anatomy of Pig, Pig on Hadoop, Pig Philosophy, Use Case for Pig: ETL Processing, Pig Latin Overview, Data Types in Pig, Running Pig 10.9 Execution Modes of Pig, HDFS Commands, Relational Operators, Eval Function, Complex Data Types, Piggy Bank, User-Defined Functions (UDF), Parameter Substitution, Diagnostic Operator, Word Count Example using Pig, When to use Pig?, When not to use Pig?, Pig at Yahoo!, Pig versus Hive. Jasper Report using Jasper soft - Introduction to Jasper Reports, Connecting to MongoDBNoSQL Database, Connecting to Cassandra NoSQL Database. Introduction to Machine Learning - Introduction to Machine Learning, Machine Learning Algorithms.

### **Text Book:**

1. SeemaAcharya&SubhashiniChellappan, Big data and Analytics, Wiley.

### **Reference Books:**

1. RadhaShankarmani& M. Vijayalakshmi, Big data Analytics, Wiley.
2. Chuck Lam, Hadoop in Action, Dreamtech Press.
3. Philip Kromer& Russell Journey, Big Data for Chimps, Shroff Publishers, O'Reilly.
4. ChandrakantNaikodi, Managing Big Data, Vikas publishing.
5. Chriss Eaton, DirikDeroos, Tom Deutsch, George Lapis, Paul Zikopoulos, Understanding Big Data, McGraw-Hill.

**Paper - III: Elective Foundation**  
**Elective Foundation – II: Software Engineering (4T3)**

**UNIT - I**

**Introduction-** The software engineering discipline evolution and impact, Programs Vs. software product, Why study software engineering?, Emergence of software engineering, Notable changes in software development practices, Computer systems engineering. **Software Life Cycle-** Why use a life cycle model?, Classical waterfall model, Interactive waterfall model, Prototyping model, Evolutionary model, Spiral model, Comparison of different life cycle models. **Software Product Management-** Responsibilities of a software project manager, Project planning, Matrices for project size estimation, Project estimation techniques, Empirical project techniques, COCOMO- A heuristic estimation technique, Halstead's software science- An analytical technique, Staffing level estimation, Scheduling, Organization and team structures, Staffing, Risk management, Software configuration management, Miscellaneous plans.

**UNIT - II**

**Requirement Analysis and Specifications** - Requirement gathering and specifications, Software requirement specification, Formal system development techniques, Axiomatic specification, Algebraic specification, Executable specification and 4GLs. **Software Design-** What is a software design?, Cohesion and coupling, Neat arrangement, Software design approaches, Object oriented Vs. function oriented design. **Function Oriented Software Design-** Overview of SA/SD methodology, Structured analysis, Data flow diagrams (DFDs), Extending DFD techniques to real-time systems, Structured design, Detailed design, Design review.

**UNIT - III**

**Object Modeling Using UML** - Overview of object oriented concept, Unified modeling language (UML), UML diagrams, Use case models, Class diagrams, Interaction diagrams, Activity diagrams, State chart diagrams. **Object Oriented Software Development-** Design pattern, A generalized object oriented analysis and design process, Odd goodness criteria.

**UNIT - IV**

**Computer Aided Software Engineering-** Case and its scope, Case environment, Case support in software life cycle, Other characteristics of case tools, Towards second generation case tools, Architecture of a case environment. **Software Maintenance-** Characteristics of software maintenance, Software reverse engineering, Software maintenance process model, Estimation of maintenance cost. **Software Reuse-** What can be reused?, Why almost no reuse so far?, Basic issue in any reuse program, A reuse approach, Reuse at organization level.

**Text Book:**

1. Rajib Mall, Fundamentals of Software Engineering, PHI.

**Reference Books:**

1. Rajesh Narang, Software Engineering Principles & Practices, McGraw-Hill.
2. Roger Pressman, Software Engineering – A Practitioner Approach, McGraw-Hill.
3. Dr. Sajan Mathew, Software Engineering, S. Chand.
4. S. Thangasamy, Essentials of Software Engineering, Wiley-India.
5. Pankaj Jalote, Software Engineering – A Precise approach, Wiley.



**Paper - III: Elective Foundation**  
**Elective Foundation – III: Strategic Management (4T3)**

**UNIT - I**

**Strategic Management** - Introduction to strategic management, Strategic decision making, Strategic management process; Difference between Policy, Strategy and Tactics. Vision, Mission & goals, Preparation of Vision & Mission Statement; Organizational objectives, Hierarchy of objectives & strategies, setting of Objectives.

**UNIT - II**

**Internal & Resource Analysis** - SWOT analysis, Resource analysis- a) Organization capabilities & competitive advantage b) Value chain analysis; Concept of synergy – Core competency, Competitive analysis - Interpreting the five forces model, Competitors analysis. **External analysis** - Environment analysis a) Components of External environment b) Components of Internal environment c) Environmental scanning. Industry Analysis a) A Framework for industry analysis b) Michael Porter's Analysis c) Usefulness of industry analysis.

**UNIT - III**

**Strategy Formulation - Corporate Level Strategy:** A) Growth-Concentration, Horizontal, Vertical, B) Diversification- Concentric, conglomerate. C) Expansion through Cooperation; Merger, Acquisitions, Joint ventures & strategic alliances D) Stability - Pause/proceed with caution, No change, Profit strategies. E) Retrenchment – Turnaround, Captive Company Strategy, Selling out Bankruptcy, Liquidation. **Portfolio Approach & Analysis** - a) Portfolio analysis, advantages & disadvantages, b) BCG Matrix c) General Electric's Business Screen, d) Life cycle or Arthur D Little matrix, e) Balance scorecard. 7s Framework, Strategic Business Unit (SBUS), Merits & Demerits of SBU; Leadership, Power & organization culture.

**UNIT - IV**

**Business Level Strategy & Functional Level Strategy** - A) Business Level strategy- Competitive advantage, Low cost strategy, Differential strategy and Focus strategy, B) Functional level strategy - Operations strategy, Marketing strategy, Financial strategy, Human Resource strategy. Global strategy - Reasons for globalization, Global expansion strategy, International Portfolio Analysis; Market entry strategy, International strategy & competitive advantage.

**Strategic Implementation Strategic Evaluation, Control & Continuous:**

**Improvement** - Establishing strategic evaluation & control; The quality imperative: continuous Improvement to build customer value, Fundamentals of Six sigma approach for continuous improvement.

**Text Book:**

1. V. S. Ramaswami, S. Namaumari, Strategic Planning & Formulation of Corporate Strategy, Macmillan - Publication.

**Reference Books:**

1. Richard B Robinson, Strategic Management, McGraw-Hill.
2. Henry, Understanding Strategic Management, Oxford University Press.
3. R.M. Srivastava, Management Policy & Strategic Management, Himalaya Pub.
4. Chandrasekara, Anant Narayanan, Strategic Management, Oxford University Press.