Total No. of Questions : 12]

SEAT No. :

P1221

[Total No. of Pages : 4

[4266]-203
F.Y. M.C.A. (Under Faculty of Engg.)
OPERATIONS RESEARCH
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Figures to the right indicates full marks.***
3) ***Use of electronic non - programmable pocket calculator is allowed.***
4) ***Assume suitable data, if necessary.***
5) ***All questions are compulsory.***

SECTION - I

Q1) a) Solve the following LPP by SIMPLEX Method. **[9]**

Minimize $Z = X_1 - 3X_2 + 2X_3$

Subject to

$$3X_1 - X_2 + 3X_3 \leq 7$$
$$-2X_1 + 4X_2 \leq 12$$
$$-4X_1 + 3X_2 + 5X_3 \leq 10$$
$$X_1; X_2; \text{ and } X_3 \geq 0$$

b) Define feasible solution and optimal solution in L.P. model. **[3]**

OR

Q2) a) A company manufactures two types of products p_1 & p_2. Each product uses lathe and milling machine. The processing time per unit of 'p_1' on the lathe is 5 hours and on the milling machine is 4 hours. The processing time per unit of 'p_2' on the lathe is 10 hours and on the milling machine is 4 hours. The maximum number of hours available per week on the lathe and the milling machine are 60 hours and 40 hours respectively. Also the profit per unit of selling 'p_1' and 'p_2' are Rs. 6000 and Rs. 8000 respectively. Formulate a linear programing model to determine the production volume of each of the products such that total profit is maximized. **[7]**

b) Explain dual of LPP with the help of suitable example. **[5]**

Q3) a) Solve the following cast minimizing assignment problem. Find also the minimum cost. **[6]**

	I	II	III	IV	V
A	11	10	18	5	9
B	14	13	12	19	6
C	5	3	4	2	4
D	15	18	17	9	12
E	10	11	19	6	14

P.T.O.

b) Write a short note on 'Hungerian' Method. **[6]**

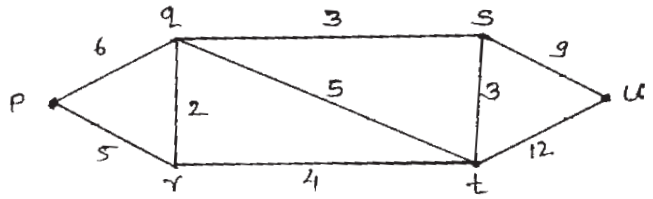
OR

Q4) a) For the following transportation problem find IBFS by VAM and find its optimum solution. **[7]**

Sources	A	B	C	D	Supply
X	21	32	32	12	7
Y	72	32	42	62	9
Z	42	10	72	22	18
Demand	5	8	7	14	34

b) Write a short note on Transshipment model. **[5]**

Q5) a) For the given network determine the shortest route from vertex 'p' to vertex 'u' using Dijkstra's algorithm. **[7]**



b) Explain the steps of 'Kruskal's algorithm. **[4]**

OR

Q6) a) From the information given below construct a network diagram. Determine a critical path & the expected completion time of the project. Also calculate the variance of this project length. **[7]**

Name	Activity	Predecessor		t_o	t_m	t_p
		Name	Activity			
A	1-2	-	-	6	9	12
B	2-3	A	1-2	6	8	10
C	2-4	A	1-2	3	7	11
D	3-5	B	2-3	12	16	20
E	4-6	C	2-4	6	11	22
F	5-7	D	3-5	12	15	24
G	6-7	E	4-6	5	7	15
H	7-8	F,G	5-7,6-7	4	8	12

b) Compare PERT and CPM. **[4]**

SECTION - II

Q7) a) The following are the data from the predicasts basebook on computer services employment (in thousands):

Year	1	2	3	4	5	6	7	8	9	10	11	12	13
Employ	271	304	337	365	416	476	542	589	631	676	740	775	792

Find the time series linear regression equation and the forecast for next year's computer services employment. **[7]**

b) Explain any one method to solve Goal programming problem. **[5]**

OR

Q8) a) Use branch and bound techniques to solve the following integer programming problem : **[7]**

Maximize $Z = 7x_1 + 9x_2$

Subject to $-x_1 + 3x_2 \leq 6$

$7x_1 + x_2 \leq 35$

$x_1 \geq 0, x_2 \leq 7$

x_1, x_2 are integers

b) Explain any two forecasting techniques in brief. **[5]**

Q9) a) Following is the pay off table : **[8]**

	Sales of nature		
Strategy	N_1	N_2	N_3
	Inflation	Recession	No change
A	2000	1200	1500
B	3000	800	1000
C	2500	1000	1800

Which strategy should be choosen on the basis of

i) Pessimistic

ii) Optimistic

iii) Equally likely (Laplace)

iv) Regret criterion

b) What is EMV? Explain steps for calculating EMV. **[4]**

OR

Q10) a) The manager of a flower shop purchases the flowers on the previous day & deliver them to the customers on the next day on 8 a.m. The daily demand for roses is as follows :

Dozens of roses	7	8	9	10
Probability	0.1	0.2	0.4	0.3

The manager purchases roses for Rs. 10 per dozen and sales them for Rs. 30. All consold roses are donated. How many dozens of roses should manager order each evening to maximize the profit? What is the optimum expected profit. **[7]**

b) What are the types of decision making environment? What are the steps of decision making process? **[5]**

Q11) a) Generate 3 – random numbers based on multiplicative congruencial method using b = 9, c = 5, m = 12 and seed = 11. **[6]**

b) Write a note on 'Monte - Carlo simulation'. **[5]**

OR

Q12) a) What is simulation? Give illustrations where simulation will help in decision making. **[5]**

b) In the first year M.C.A. class of a certain engineering college, the first lecture starts at 9 a.m. Following is the probability distribution regarding number of students who are late comers for the first lecture each day. **[6]**

No. of. students coming late	05	10	15	20	25
Probability	0.35	0.30	0.20	0.10	0.05

Using the following sequence of random numbers, simulate the pattern for next 12 days and find average number of students coming late per day.

Random : 95 23 12 65 95 61 86 02 92 45 44 48

♦♦♦♦

Total No. of Questions : 12]

SEAT No. :

P1222

[Total No. of Pages : 2

[4266] - 205
First Year M.C.A. (Engineering Faculty)
MANAGEMENT INFORMATION SYSTEMS
(2008 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Figures to right indicate full marks.***
3) ***From section-I, answer Q. 1 or Q. 2, Q. 3 or Q. 4, Q. 5 or Q. 6.***
4) ***From section-II, answer Q. 7 or Q. 8, Q. 9 or Q. 10, Q. 11 or Q. 12.***
5) ***Neat diagrams must be drawn wherever necessary.***
6) ***Make suitable assumptions wherever appropriate and relevant.***

SECTION - I

Q1) a) Explain types of Information System. **[6]**

b) What is corporate planning? Explain the essentiality of strategic planning. **[6]**

OR

Q2) a) What are major components of information system? **[6]**

b) Define MIS. Explain its role and impact on any organization. **[6]**

Q3) a) Describe the role of Management Information System (MIS) in banking sector. **[7]**

b) Explain the concept of Enterprise Application Integration. **[5]**

OR

Q4) a) Explain the various applications of Management Information System (MIS) in service sector. **[6]**

b) What is change management? What steps should be taken to overcome end user resistance. **[6]**

Q5) a) What are the steps in Business Process Re-Engineering? Explain. **[6]**

b) Explain Value Stream model of organization. **[5]**

OR

Q6) a) What is Enterprise Resource Planning? What are benefits and challenges of ERP. **[6]**

b) What is BPO? Which factors decide the success of Business Process Outsourcing (BPO) industry? **[5]**

P.T.O.

SECTION - II

Q7) a) What is CRM? Explain three phases of CRM. **[6]**

b) Explain B2B, B2C and C2C types of e-commerce. **[6]**

OR

Q8) a) What is SCM? Explain role of SCM and benefits. **[6]**

b) Write note on Electronic payment Process. **[6]**

Q9) a) Explain with neat diagram various components and interconnects of an expert systems. **[6]**

b) What is Dataware house? Explain the architecture of Dataware housing. **[6]**

OR

Q10) a) Explain Data mining for Decision Support System (DSS). What do you understand by Executive Information System. **[6]**

b) Write note on Artificial Intelligence Systems. **[6]**

Q11) a) Explain fault tolerant systems. What do you understand by contingency management? **[6]**

b) What is the need of Information Security? Elaborate on software piracy. **[5]**

OR

Q12) a) Write short note on : **[6]**

i) Hacking.

ii) Cyber Theft.

b) List the challenges involved in global management of information technology. **[5]**

Total No. of Questions : 12]

SEAT No. :

[Total No. of Pages :2

P1223

[4266] - 501

T.Y. M.C.A. (Engineering Faculty)

PRINCIPLES & PRACTICES FOR IT PROJECT MANAGEMENT

(Semester - V) (2008 Pattern)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Write a short note on business ethics and social responsibilities. **[6]**

b) Write a short note on staffing and direction. **[5]**

OR

Q2) a) Discuss the importance of management and elaborate the process of management. **[6]**

b) Write a short note on tools and technique of strategic management. **[5]**

Q3) a) Explain the application of IT in customer relationship and health care with proper examples. **[6]**

b) Explain Product Design and Development. **[6]**

OR

Q4) a) Explain the importance and application of IT in logistics with suitable examples. **[6]**

b) Explain product Design Life Cycle. **[6]**

P.T.O.

Q5) Write a short note on : **[12]**

a) Gantt Charts

b) Work Breakdown Structure.

OR

Q6) a) Explain in detail Risk Management Process in Project Management. **[6]**

b) Explain requirement analysis in brief. **[6]**

SECTION - II

Q7) a) Explain the Project Network Diagram (PND) with suitable examples. **[6]**

b) State the advantages of PND over Gantt Charts. **[5]**

OR

Q8) a) Explain the change control system in IT project management. **[6]**

b) List down the ways to cope with the project delays. **[5]**

Q9) Write short notes on : **[12]**

a) Stress Management

b) Formal Technical Review

OR

Q10) a) Write a short note of Conflict Management and Strategies for resolving destructive management. **[6]**

b) What is Groups? What are the different types of groups? **[6]**

Q11) Write a short note on : **[12]**

a) Intellectual Property

b) CMM

OR

Q12) a) What is mean patent and copyright? **[6]**

b) Explain technology management and supply chain management in brief. **[6]**

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Total No. of Questions : 12]

SEAT No. :

P634

[Total No. of Pages : 3

[4266]-101

F.Y. M.C.A. (Engineering Faculty)

PROBLEM SOLVING AND PROGRAMMING IN C

(2008 Pattern) (Semester - I)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***
6) ***Steps of Hand running must be shown wherever output of the program is asked.***

SECTION - I

Q1) a) What is Flow charts? Why use flow charts? Explain with example basic notations of flowchart. **[6]**

b) Write an algorithm to compute 1/n!, for a given n. **[6]**

OR

Q2) a) Write an algorithm to reverse the digits of an Integer number. **[6]**

b) Explain: Complexity of Algorithm with example. **[6]**

Q3) a) Write down different operators & their precedence & associatively with each other. **[6]**

b) Write a program to check whether a number is Amstrong number or not. A number is Amstrong number if sum of cubes of individual digits of a number is equal to the number itself. **[6]**

OR

Q4) a) Explain types of recursion. Write a program to perform Fibonacci number using recursion. **[6]**

P.T.O.

b) Consider the following statement in C

```
switch (choice)
{
      Case 'R' : printf("Red");
      Case 'Y' : printf("Yellow");
      Case 'W' : printf("White");
          default : printf("Error");
      break;
}
```

State and Explain what would be the output if choice = Y. **[3]**

c) Consider the statement in C

```
float num=4.7;
if(num= =4.7)
      printf("True");
else
      printf("False");
```

State and Explain what would be the output. **[3]**

Q5) a) Write a C program to find the length of string & reverse that string using user-defined functions (do not use library functions). **[8]**

b) What is an array? Explain different type of array with example. **[3]**

OR

Q6) a) List out any five String library function used in C with Basic Syntax and example. **[5]**

b) Write a program for counting number of characters and number of words in a given string. **[6]**

SECTION - II

Q7) a) Write a short note on Pointer. **[4]**

b) Write a C function (using pointer parameter) that reverse the elements of given array. **[7]**

OR

Q8) a) Explain any two library functions for dynamic memory allocation with examples. **[4]**

b) Write a C program to sort given array of string using pointer notation. **[7]**

Q9) a) What is structure? Explain self referential structure & its application. **[4]**

b) Write a C program to accept details 10 items (item_no, item_name, quantity, rate) and display item_no, item_name, quanty, rate and amount(quantity*rate) **[8]**

OR

Q10) a) Write down difference between structure & union with example. **[6]**

b) Write a program to perform addition of two command line argument & write steps to run a program. **[6]**

Q11) a) Write a program to read the contents of text file & copy them into another text file in lower case. **[7]**

b) Explain redirection with example. **[5]**

OR

Q12) a) Explain the use of following functions in C with proper syntax and example. **[6]**

i) fgetc()
ii) fputc()

b) Write a C program to replace all vowels in a given file with '*'. **[6]**

Total No. of Questions : 12]

SEAT No. :

P635

[Total No. of Pages : 4

[4266]-102
F.Y. M.C.A. (Engineering Faculty)
DISCRETE MATHEMATICS
(2008 Pattern) (Semester - I)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section - I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section - II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Assume suitable data, if necessary.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Show that $2^n \times 2^n - 1$ is divisible by 3, $n \geq 1$, by mathematical induction. **[4]**

b) Among the first 800 positive integers : **[5]**

i) Determine the integers which are divisible by 6, 3, and 4.

ii) Determine the integers which are exactly divisible by one of them.

c) For $A = \{a, \Phi\}$ determine the following sets : **[3]**

i) $A \cap P(A)$ ii) $\{\Phi\} - A$

iii) $A - \Phi$ iv) $A \cup P(A)$

OR

Q2) a) Show that $1^2 + 3^2 + 5^2 + ... + (2n - 1)^2 = n\,(2n\text{-}1)\,(2n + 1)/3$, $n \geq 1$ by mathematical induction. **[4]**

b) A survey of 550 television watchers produced the following information: **[5]**

285 watch football games, 195 watch hockey games, 115 watch baseball, 45 watch football and baseball games, 70 watch football and hockey games, 50 watch hockey and baseball, 100 do not watch any of the three games.

i) How many people in the survey watch all three games?

ii) How many people watch exactly one of the three games?

c) Prove the following using Venn diagram. **[3]**

$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

P.T.O.

Q3) a) Show the implications without constructing truth table. **[6]**

i) $(P \rightarrow Q) \rightarrow Q \Rightarrow (PVQ)$

ii) $(Q \rightarrow (P \wedge \neg P)) \rightarrow (R \rightarrow (P \wedge \neg P) \Rightarrow (R \rightarrow Q)$

b) Obtain principle disjunctive normal Form of the following **[6]**

i) $P \rightarrow ((P \rightarrow Q) \wedge \neg ((\neg QV \neg P))$

ii) $P \rightarrow (P \wedge (Q \rightarrow P))$

OR

Q4) a) Demonstrate that RVS follows logically from the premises CVD, $(CVD) \rightarrow \neg H$, $\neg H \rightarrow (A \wedge \neg B)$, and $(A \wedge \neg B) \rightarrow (RVS)$. **[6]**

b) Test validity of the following argument by method of direct proof. "The project will complete if Prasanna does field work fast. Either Prasanna does the field work fast or he reads a book. Prasanna does not read a book. Hence the project will be incomplete". **[6]**

Q5) a) In how many ways can 23 different books be given to 5 students so that 2 of the students will have 4 books each and the other 3 will have 5 books each? **[5]**

b) In how many ways can 10 boys and 5 girls stand so that so two girls are next to each other if they are standing. **[6]**

i) Along a straight line.

ii) Around a circle.

OR

Q6) a) How many 3 digit numbers can be formed by using the 6 numbers 2, 3, 4, 5, 6 and 8 if (i) repetition now allowed. (ii) Number must contain the digit 5 and repetitions are allowed. **[6]**

b) How many ways can 5 days be chosen from each of the 12 months of an ordinary year of 365 days? **[5]**

SECTION - II

Q7) a) Given a relation R = {(a, a), (a, c), (b, a), (b, b), (c, b), (c, c), (d, d), (d, c)}on A = {a, b, c, d}. Find the transitive closure of R by Warshall's algorithm. **[6]**

b) Prove that the relation R on the set of integers defined as xRy if and only if $3x + 4y$ is divisible by 7, $x, y \in Z$. Show that R is an equivalence relation. **[6]**

OR

Q8) a) Function f, g, h are defined on a set X = {1, 2, 3} as f = {(1, 2), (2,3), (3, 1)} g = {(1, 2), (2, 1), (3, 3)}, h = {(1, 1), (2, 2), (3, 1)} find f *o* g, g *o* f, f *o* g *o* h, f *o* h *o* g. **[5]**

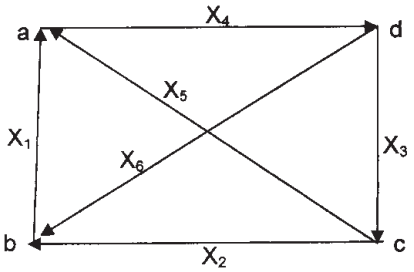
b) If f:R→R is defined by $f(x) = 2x + 3$; then show that f is bijection and hence find f^{1}. **[4]**

c) Let A be a given finite set and P(A) its power set. Let "subset" be the inclusion relation on the elements of P(A). Draw the Hasse diagram of <P(A), "Subset"> for A = {a, b, c, d}. **[3]**

Q9) a) Define the following terms : **[6]**

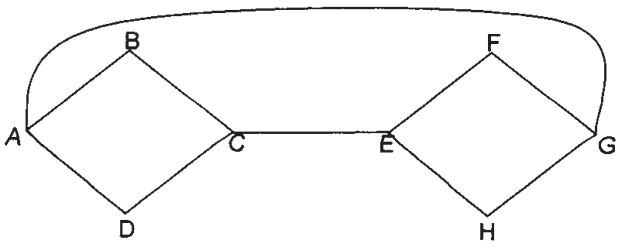
i) Regular graph & bipartite graph.
ii) Isomorphic graphs.
iii) Paths and Reachability of graph.
iv) Full binary tree.
v) Height of tree.
vi) Eulerian Path & Circuit.

b) Consider the following graph and find out incidence matrix and Adjacency matrix of a graph. **[6]**

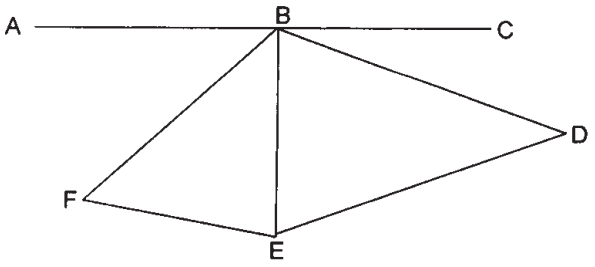


OR

Q10) a) Use Fleury's algorithm to construct an Euler circuit for the graph in figure. **[6]**



b) Consider the following graph G, Determine all the cut points of G. **[6]**



Q11) a) For the following set of weights, construct an optimal binary prefix code. For each weight in the set give corresponding code word: **[6]**

i) 8, 9, 10, 11, 13, 15, 22

ii) 5, 7, 8, 15, 35, 40

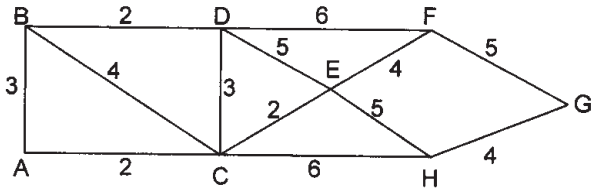
b) Draw the unique binary tree when inorder and preoder traversal of tree is given as follows : **[5]**

preorder : * + *a* – *b c* / *d e* - + *f g h*

postorder : *a b c* - + *d e* - *f g* + *h* - / *

OR

Q12) a) Determine the minimum spanning tree of weighted graph G using Kruskal's algorithm. **[5]**



b) Draw all full binary trees with 15 nodes. **[3]**

c) How will you differentiate between a general tree and a binary tree. **[3]**

Total No. of Questions : 12]

SEAT No. : ____

P636

[Total No. of Pages : 3

[4266]-103

F.Y. M.C.A. (Engineering Faculty)

FOUNDATION OF INFORMATION TECHNOLOGY

(2008 Pattern) (Semester - I)

Time :3 Hours] ***[Max. Marks :70***

Instructions to the candidates :

1) ***Answer 3 questions from Section I and 3 questions from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Construct logic circuit diagram for following expression using AND/ OR/NOT gates. **[4]**

$$(A + B)\cdot(\overline{A} + C)\cdot(A + B)$$

b) Find decimal equivalent of following : **[4]**

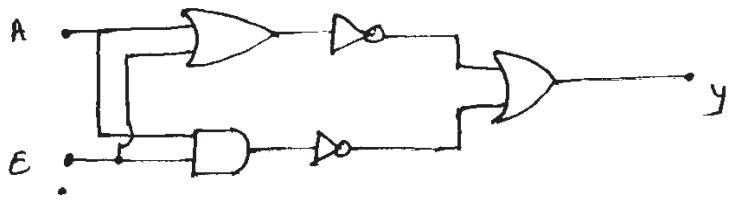
i) $(111.01)_2$

ii) $(247.65)_8$

c) How many types of storage are normally there in the storage unit of a computer system? Justify the need for each storage type. **[4]**

OR

Q2) a) Find the Boolean expression for the output of the logic circuit given below. **[4]**



b) What are the five basic operations performed by any computer system. **[4]**

c) What is the client server architecture? **[4]**

P.T.O.

Q3) a) Compare **[8]**

i) RISC & CISC.
ii) Sequential & Direct access memory.

b) Which computer based applications would prefer use of touch screen and why? **[4]**

OR

Q4) a) Explain the printing mechanism of Dot Matrix printers. **[4]**

b) List out the main limitations of magnetic tapes as a secondary storage device. **[4]**

c) What is disk formatting? Why is it needed? **[4]**

Q5) a) What are advantages and limitations of high level language over machine & assembly language. **[4]**

b) List characteristics of good language. **[3]**

c) What is object oriented programming? What are key features of object oriented language? **[4]**

OR

Q6) a) Define following terms : **[8]**

i) Software.
ii) System Software.
iii) Application Software.
iv) System Programmer.

b) Compare: Interpreter and compiler. **[3]**

SECTION - II

Q7) a) What are the main functions of an operating system. **[4]**

b) What is a process in a computer system? What is the main objective of the Process Management module of an operating system. **[4]**

c) Define the following terms : **[4]**

i) throughput.
ii) turnaround time.
iii) response time.
iv) multiprogramming.

OR

Q8) a) Define following terms : **[6]**

i) Multitasking.
ii) Multiprogramming.
iii) Multiprocessing.

b) What is a spreadsheet package? List out some of its typical uses. **[4]**

c) What is batch processing? **[2]**

Q9) a) How are records stored in an indexed sequential file? How are they retrieved and processed? **[4]**

b) Write a short note on multimedia application. **[4]**

c) Differentiate between syntax error & logical error. **[4]**

OR

Q10) a) What type of operation normally carried out in system change over process? **[4]**

b) What is data redundancy? Explain with example. **[4]**

c) What is a multimedia computer system? What are it's typical characteristics **[4]**

Q11) a) Explain the three modes of transmitting data from one point to other. **[4]**

b) What do you understand by modulation and demodulation? What are modems? **[4]**

c) Compare packet switching & circuit switching. **[3]**

OR

Q12) a) Explain with block diagram synchronous & asynchronous transmission. **[6]**

b) Define following terms : **[3]**

i) WAN
ii) WWW
iii) HTTP

c) Explain the difference between downloading and uploading of information. **[2]**

Total No. of Questions : 6]

SEAT No. :

P637

[Total No. of Pages : 4

[4266]-104
F.Y. M.C.A. (Engineering Faculty)
PROBABILITY AND STATISTICS
(2008 Pattern) (Semester - I)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Figures to the right indicate full marks.***
3) ***Use of probability table, electronic pocket calculator is allowed.***
4) ***Assume suitable data, if necessary.***
5) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Two marbles are drawn in succession from a box containing 10 orange, 20 red, 25 blue and 30 yellow marbles, with replacement being made after each drawing. Find the probability that i) both are red ii) first is blue and second is yellow iii) neither is orange. **[6]**

b) A company produces items using three different machines A, B and C. Production of these machines is 25%, 35% and 40% respectively of the total production. It is found from experience that 3%, 4% and 5% of machines A, B and C respectively are defective. On general inspection of entire production one item is selected at random and found to be defective. Find the probability that it is produced by machine B. **[6]**

OR

a) In a random arrangement of the letters of the word STATISTICS, find the probability that all the vowels come together. **[6]**

b) State and prove Baye's theorem. **[6]**

Q2) a) Define with example : **[6]**

i) Sample Space.
ii) Events.
iii) Conditional Probability

P.T.O.

b) Verify whether the function $p(x)$ defined by **[6]**

$$p(x)=\begin{cases}3/4(1/4)^x & \text{for } x=0,1,2,3\\ 0 & \text{otherwise}\end{cases}$$

is p.m.f. of a discrete random variable X.

OR

a) A continuous random variable has probability density function **[6]**

$$f(x)=\begin{cases}K(2x-x^2), & 0<x<2\\ 0 & \text{otherwise}\end{cases}$$

Find

i) k

ii) $p(x \geq 1)$

b) Explain the terms : **[6]**

i) Independent events.

ii) Mutually exclusive events.

iii) Marginal probability.

Q3) a) Obtain mean and variance of Binomial distribution. **[6]**

b) Let (X, Y) be a discrete bivariate random variable with the following p.m.f. **[5]**

Y / X	1	2	3
0	$3k$	$6k$	$9k$
1	$5k$	$8k$	$11k$
2	$7k$	$10k$	$13k$

Find k and marginal probability mass function for X and Y.

OR

a) A joint p.d.f. of bivariate random variables X and Y is given by : **[6]**

$$f(x,y)=\begin{cases}k(6-x-y) & \text{for } 0<x<2,\ 2<y<4\\ 0 & \text{otherwise}\end{cases}$$

Find :

i) k

ii) $p(x<1, y<3)$

b) Explain the following probability distributions with suitable examples. **[5]**

i) Binomial Distribution.

ii) Poisson Distribution.

SECTION - II

Q4) a) What is point estimator and point estimate? What properties of estimator make it a good estimator? **[6]**

b) A population consists of the five numbers 2, 3, 6, 8 and 11. Consider all possible samples of size 2 that can be drawn with replacement from this population. **[6]**

Find :

i) mean and standard deviation of the population.
ii) mean of the distribution of means.

OR

a) Explain the following terms : **[6]**

i) Population.
ii) Random Sampling.
iii) Sample Statistics.

b) Explain significance testing? How does it differ from hypothesis testing? **[6]**

Q5) a) The length of life of certain battery is approximately normally distributed with mean 300 days and standard deviation 50 days. If a random sample of 20 batteries has a life of 285 days. Test the null hypothesis that $\mu = 300$ days against the alternate hypothesis $\mu \neq 300$ days at 5% level of significance. **[6]**

b) Explain the following terms : **[6]**

i) Null hypothesis and research hypothesis.
ii) Type I and Type II errors.
iii) Critical region for the test.

OR

a) Write a short note on student's t-distribution. **[6]**

b) A survey of 320 families with 5 children revealed the following distribution. **[6]**

No. of boys :	0	1	2	3	4	5
No. of girls :	5	4	3	2	1	0
No. of families :	12	40	88	110	56	14

Is this result consistent with the hypothesis that male and female births are equally probable for 5% level of significance? (Use χ^2 Test of goodness of fit χ^2)

($\chi^2_{0.05} = 11.07$)

Q6) a) Explain Statistical Quality Control (SQC) with its advantages and limitations. **[5]**

b) Given below are the values of sample mean X and sample range R for 10 samples, each of size 5. Draw the appropriate mean and range charts & comment on the state of control of the process. **[6]**

Sample No. :	1	2	3	4	5	6	7	8	9	10
Mean :	43	49	37	44	45	37	51	46	43	47
Range :	5	6	5	7	7	4	8	6	4	6

OR

a) Write note on mean chart. **[5]**

b) Explain the χ^2 test as a test of goodness of fit. Write the steps. **[6]**

Total No. of Questions : 12]

SEAT No. :

P638

[Total No. of Pages : 2

[4266]-105
F.Y. M.C.A. (Engineering Faculty)
MANAGEMENT SCIENCE
(2008 Pattern) (Semester - I)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Answer 3 questions (question No.1 or 2, 3 or 4, 5 or 6, 7 or 8, 9 or 10, 11 or 12) from each section.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is the contribution of F.W. Taylor to the management science. **[6]**

b) Explain the concept of Management, Administration and Organisation in brief. **[6]**

OR

Q2) a) Explain the advantages the industry will have by applying M.B.O. **[6]**

b) Define management. Explain different functions of management. **[6]**

Q3) a) What are the salient features of Law of Contracts. **[6]**

b) Explain the concept of Enterprise Resource Planning. **[6]**

OR

Q4) a) Explain the concept of needs. Classify the different needs. **[6]**

b) Explain the concept of E-Commerce. **[6]**

Q5) a) Explain proprietorship in brief with its merits and demerits. **[6]**

b) Explain the Project Organisation in brief. **[5]**

OR

Q6) a) Explain the types of companies and difference between them. **[6]**

b) Draw a diagram and explain line, staff and function organization. **[5]**

P.T.O.

SECTION - II

Q7) a) What is Manpower planning? Explain importance of manpower planning. **[6]**

b) Write a short note on Communication in Organization. **[6]**

OR

Q8) a) Explain Mc Gregors Theory X and Theory Y. **[6]**

b) Describe Job evaluation and performance appraisal. **[6]**

Q9) a) Mention any four important provision about health as per the Factories Act, 1948. What are the penalties for not fulfilling these. **[6]**

b) Recently at Manesar factory of Maruti Suzuki Ltd, a mob of angry workers attacked their HR manager. How this could have been avoided? **[6]**

OR

Q10) a) How major causes of accident can be minimized? **[6]**

b) What is noise pollution? How it is controlled? **[6]**

Q11) a) Write a short note on ISO 9000 standard. **[5]**

b) What is the purpose of patent? Explain in brief the procedure to get patent. **[6]**

OR

Q12) a) Describe TQM in brief. **[5]**

b) What are the objectives of Quality Control? **[6]**

Total No. of Questions : 12]

SEAT No. :

P639

[Total No. of Pages : 3

[4266]-201

F.Y. M.C.A. (Engineering Faculty)

OBJECT ORIENTED PROGRAMMING

(2008 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.***
2) ***Answers to the two sections must be written in separate answer books.***
3) ***Assume suitable data, if necessary.***
4) ***Draw sketches wherever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Compare Procedural Programming and Object Oriented Programming. **[6]**

b) Explain the following terms : **[6]**

i) Class and Object
ii) Message passing
iii) Generic programming.

OR

Q2) Explain the following terms : **[12]**

a) Data encapsulation
b) Data abstraction
c) Polymorphism

Q3) a) State whether the following statement is an error or a warning: 'Functions containing for are not expanded inline'. Explain the situation with an example when this statement is generated. State the reason. **[4]**

b) What are default arguments? **[2]**

c) Write a program in C++ to generate the following output. **[6]**

```
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

P.T.O.

OR

Q4) a) Explain inline functions with an example. **[6]**

b) Explain the use of 'new' and 'delete' operators with an example. **[6]**

Q5) a) What are Static data members and Static member functions? Write a program in C++ to illustrate use of static data member and static member function. **[8]**

b) What is the scope resolution operator? Give at least two uses of scope resolution operator with examples? **[3]**

OR

Q6) a) Write a program in C++ to design a class 'Branch' of a particular bank. Include following data members: Branch Name, Branch Number. **[6]**

Include following member functions:

i) To assign initial values using default constructor.

ii) To display name and number of a particular branch.

Use array of objects for implementation.

b) Explain various access specifiers with an example. **[5]**

SECTION - II

Q7) a) What is Operator Overloading? Explain its need. **[4]**

b) Create a class length containing data members meters and centimeters. Write a friend function compare( ) to compare two class objects and return the difference in centimeters. **[8]**

OR

Q8) a) Design a class string and overload the following operators: **[8]**

i) Operator + to concatenate two strings.

ii) Operator = = to check equality of two strings.

b) State the rules for operator overloading. **[4]**

Q9) a) What is multiple inheritance? Explain with the help of an example. **[6]**

b) What is virtual function? Explain with the help of an example. **[6]**

OR

Q10) a) Explain the execution of constructor in single inheritance. **[6]**

b) Explain the following terms : **[6]**

i) Pure virtual function

ii) Early and late binding

iii) Container classes

Q11) a) Explain any three I/O manipulators with examples. **[6]**

b) Write a program in C++ which reads a text file and prints every alternative character from the file. **[5]**

OR

Q12) a) Explain any three file modes. **[6]**

b) Write a function to accept the personal information of user like Name and age. Throw an exception "Not applicable" if the age of the user is less than 20 and greater than 60. **[5]**

Total No. of Questions : 12]

SEAT No. :

P640

[Total No. of Pages : 2

[4266]-202
F.Y. M.C.A. (Engineering Faculty)
DATA STRUCTURES & FILES
(2008 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer 3 questions from Section I and 3 questions from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the row major & the column major matrix representation with an example. **[5]**

b) Write a 'C' function to perform fast transpose on a given sparse matrix. Compute the time complexity. **[7]**

OR

Q2) a) Write a 'C' function to multiply two polynomials in a single variable. Compute the time complexity. **[7]**

b) Explain sparse matrix in brief with example. Give the structure declaration of a sparse matrix. **[5]**

Q3) a) Write a 'C' function to delete a node from a doubly linked list and insert the node at the end of the list. **[8]**

b) Give the ADT of singly linked list. **[4]**

OR

Q4) a) Write a 'C' Pseudocode to delete an element from a circular singly linked list. **[6]**

b) Write a 'C' function to reverse a singly linked list. **[6]**

P.T.O.

Q5) a) Convert the following infix expression to postfix using stacks. Show the contents of stack at each step. **[8]**

i) A + (B * C) – (D / E $ F) * G) * H

ii) (A + B $ D) / (E – F) + G

b) Compare stacks and queues. **[3]**

OR

Q6) a) Write a 'C' Pseudocode to find the sum of elements in circular queue. **[5]**

b) Give an ADT for stack. Write short note on the array representation and linked representation of stacks. **[6]**

SECTION - II

Q7) a) Write a 'C' function to create a Binary Search Tree. **[6]**

b) Explain the graph traversal methods with example. **[6]**

OR

Q8) a) Write a 'C' Pseudocode to find the indegree, outdegree of a given graph. Print the connected components of the graph. **[8]**

b) Define binary tree. Explain with example the representation of binary tree using array and linked list. **[4]**

Q9) a) Compare the search methods by the time complexity. **[6]**

b) Write a 'C' function for quicksort. **[6]**

OR

Q10) a) Write a 'C' Pseudocode for bubble sort. Compute the time complexity for best & worst case. **[8]**

b) Write a 'C' function for binary search (non-recursive) **[4]**

Q11) a) Define hashing. State the characteristics of hashing. **[5]**

b) Write a function to delete a record from sequential file. **[6]**

OR

Q12) a) Explain the primitive operations on a direct access file. Write C implementation of any 2. **[7]**

b) Explain linear probing. **[4]**

Total No. of Questions : 12] **SEAT No. :**

P641 **[Total No. of Pages : 2**

[4266]-204
F.Y. M.C.A. (Engineering Faculty)
MICROPROCESSOR APPLICATIONS
(2008 Pattern) (Semester - II)

Time :3 Hours] ***[Max. Marks :70***

Instructions to the candidates :

1) ***Answer 3 questions from Section I and 3 questions from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Draw the programmer model of the Intel 8085 microprocessor neatly labeling the registers? **[8]**

b) Explain briefly about the decoders. **[4]**

OR

Q2) a) Interface 8 K byte EPROM & 8 K byte RAM with 8085 microprocessor. Draw system block diagram along with memory map & address decoding logic? **[10]**

b) What is use of ALE signal in 8085? **[2]**

Q3) a) Draw & Explain Timing Diagram of MOV C, A instruction. **[8]**

b) Explain: **[4]**
   i) EQU &
   ii) DB directives.

OR

Q4) a) Explain stack of 8085 MPU & how it is accessed in different situation? Also explain stack related instructions along with suitable diagram? **[10]**

b) Explain the use of RET instruction? **[2]**

Q5) Draw & explain with neat block diagram the 8255 PPI & modes of 8255 PPI. **[11]**

P.T.O.

OR

Q6) a) What are different technique use of data transfer between 8085 MPU and I/O. **[8]**

b) Explain IN & OUT instructions. **[3]**

SECTION - II

Q7) a) What is the difference between hardware and software interrupts? Explain with suitable example how 8085 MPU will handle two simultaneous interrupt requests received on it's interrupt inputs RST 7.5 and RST 6.5? **[10]**

b) Explain: TRAP. **[2]**

OR

Q8) a) List out the modes of 8253 timer/counter. **[6]**

b) Find out the control word for 8253; where mode 3, counter 0, BCD counter, 16-bit count is used. **[6]**

Q9) What are the signals used in 8086 MPU for minimum mode & maximum mode. Also, explain the difference between minimum and maximum mode. **[12]**

OR

Q10) What are the main features of 8086 microprocessor? Give the comparison between 8085 and 8086 microprocessor. **[12]**

Q11) a) Explain any four services supported by INT 21H. **[8]**

b) Enlist files used for booting of a computer system. **[3]**

OR

Q12) a) Explain : **[8]**

i) STC
ii) STI
iii) CLD
iv) INTO.

b) Explain : **[3]**

i) MASM &
ii) LINK commands.

Total No. of Questions : 12]

SEAT No. :

P642

[Total No. of Pages : 3

[4266]-301
S.Y. M.C.A. (Engineering Faculty)
OPERATING SYSTEMS
(2008 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section II.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Assume suitable data, if necessary.***
4) ***Draw sketches wherever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Describe in brief: phase and pass. **[4]**

b) Write an algorithm or flowchart for pass I of a two pass assembler. **[8]**

OR

Q2) a) Explain fundamentals of language processing with necessary diagrams. **[6]**

b) Explain different ways of specifying parameters to a macro with examples. **[6]**

Q3) a) What is an overlay structure? Explain with an example. How does it help during loading? **[6]**

b) Explain lexical and syntax analysis phases of a compiler with examples. **[6]**

OR

Q4) a) Compare compile-and-go loader with an absolute loader scheme. **[6]**

b) Explain relocating loader. **[6]**

Q5) a) Consider the following set of processes, with the length of the CPU burst given in milliseconds. **[6]**

P.T.O.

Process	Arrival Time	Burst Time
P1	0.0	7
P2	2.0	4
P3	4.0	1
P4	5.0	4

i) Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms :
SJF (Non-Preemptive) and SJF (Preemptive)

ii) Calculate the turnaround time and waiting time of each process for both the scheduling algorithms given in part (i)?

iii) Which of the two algorithms is more efficient?

b) Draw and explain process state diagram. **[5]**

OR

Q6) a) Explain any four functions of an operating system in detail. **[6]**

b) Define the following terms : **[5]**

i) Batch processing system.
ii) Multiprogramming system.
iii) Multitasking system.
iv) Time-sharing system.
v) Real-time system.

SECTION - II

Q7) a) Consider page reference string as 5, 4, 3, 2, 1, 4, 3, 5, 4, 3, 2, 1, 5. Number of page frames is four. Show the page replacement and calculate number of page faults for the following page replacement algorithms. **[8]**

i) FIFO.
ii) Optimal Page Replacement.

b) Explain address allocation in virtual memory. **[4]**

OR

Q8) a) Write short notes on : **[8]**

i) Demand Paging and Pure Demand Paging.
ii) Internal and External Fragmentation.

b) Compare and contrast contiguous and non-contiguous memory allocation. **[4]**

Q9) a) Explain tree structured and acyclic graph directory. **[6]**

b) Explain the concept of file protection. What are the different access rights given to a file? **[6]**

OR

Q10) a) Consider a disk system with 100 cylinders. The request to access the cylinders occurs in the sequence: 4, 34, 10, 7, 19, 73, 2, 15, 6, 20. Assume head is at cylinder 50. What is the total distance the disk arm moves to satisfy all the pending requests for the following disk scheduling algorithms. **[9]**

i) FCFS
ii) SSTF
iii) C-SCAN

b) Define the following terms with respect to disk scheduling. **[3]**

i) Seek time.
ii) Rotational latency.
iii) Disk bandwidth.

Q11) a) List process management system calls and explain any two. **[6]**

b) Explain the user, kernel and hardware interface of Linux operating system. **[5]**

OR

Q12) a) Describe various process scheduling algorithms in Linux. **[6]**

b) Explain salient features of Linux operating system. **[5]**

Total No. of Questions : 12]

SEAT No. :

P643

[Total No. of Pages : 3

[4266]-302
S.Y. M.C.A. (Engineering Faculty)
DATABASES: CONCEPTS & SYSTEMS
(2008 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Section I :- Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6***
2) ***Section II :- Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12***
3) ***Answers to the two sections should be written in separate answer books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is DBMS? Explain advantages of DBMS over file processing system. **[6]**

b) What is DBA? Describe functions of DBA. **[6]**

OR

Q2) a) Explain different components of DBMS. **[6]**

b) Compare Relational Data model vs Hierarchical data model **[6]**

Q3) a) A swim meet director needs to assign swimmers to events and keep track of those of different age groups belonging to swim clubs. A swimmer can belong to only one club at a time and is always attached to clubs. A swimmer must be entered in at least one event. Each swimmer is in exactly one age group. An event must have at least two but there is no upper limit to the number of swimmers who can enter the event. Write appropriate attributes of all entities and draw Entity relationship diagram.**[7]**

b) Construct relational tables using the E-R diagram drawn for the Q3(a).**[4]**

OR

Q4) a) MYSHOP INTERNATIONAL accepts customer order from website www.myshop.com for various luxury goods. The invoice is generated and e-mailed to customer. The goods are delivered to customer three logistics agent located at customer's city. The logistics agent also receives

P.T.O.

a copy or Invoice by e-mail. The logistics agent collects the payment of Invoice while delivering goods and sends it to Myshop International. Customer may reject entire delivery or part of it. Such rejection is indicated by logistics agent to company. Company may charge customer for such rejection. Draw Entity Relationship Diagram. **[7]**

b) Explain how the GROUP BY clause works. What is difference between the WHERE and HAVING clauses? **[4]**

Q5) a) Write a short note on Database View? Explain with suitable examples. **[6]**

b) Explain different keys used in relational model and Domain Constraints with examples. **[6]**

OR

Q6) Write Short Note on : **[12]**

a) Strong entity set and Weak entity Set.

b) Codd's Rules.

c) Mapping Constraints.

SECTION - II

Q7) a) Consider the following relations. It defines a schema of the database application for Owner Property details. It manages the customers who are borrowing the property from the owner. Assumption is that no customer is there who borrows more than one property at a time. And **[8]**

CUSTOMER (Cust_No, Cust_Name, City) BRANCH (B_No, Br_Name, City)
SAVINGS (Ac_No, Cust_ID, Br_No, Amt) BORROW(Loan_No,Cust_ID, Br_No, Amt)

Write a SQL queries for following questions.

1. Give the name of borrowers having loan amount greater than amount of pramod.
2. List total loans and deposits branch wise.
3. Delete depositors of Kurla branch and who are living in city Mumbai.
4. List out name of the customers having living city Mumbai and branch city Nagpur.

b) Write a short note on cursor types. **[4]**

OR

Q8) a) Write a PL/SQL block with explicit cursor to get the employee count for each department along with department number and name. Insert the values into another EMP_DEPT if the employee count is more than four.
EMP (EmpNo, EName, Job, Sal, DeptNo, Mgr)
DEPT (DeptNo, DName, Loc) **[8]**

b) Write a short note on Database View with example. **[4]**

Q9) a) What is Lossy and Lossless decomposition? Explain with example. **[4]**

b) Explain difference between 3NF and BCNF with example. **[4]**

c) Write a short note on Nested Queries. **[3]**

OR

Q10) a) What is a transaction? Explain ACID properties with example. **[7]**

b) Explain conflict & view serialisability with example. **[4]**

Q11) a) Explain time stamp based protocol with example. **[8]**

b) Write a note on Thomas's Write Rule. **[4]**

OR

Q12) a) Explain Deadlock. Discuss with example deadlock prevention scheme with example. **[8]**

b) Write different factors which determines the cost of Rolling back transaction. **[4]**

Total No. of Questions : 12]

SEAT No. :

P644

[Total No. of Pages : 3

[4266]-303

S.Y. M.C.A. (Engineering Faculty)

FINANCIAL ACCOUNTING AND MANAGEMENT

(2008 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***All questions are compulsory.***

SECTION - I

Unit - I

Q1) a) Explain the principles and the conventions in accounting. **[6]**

b) What are different functions of a finance officer? What is the significance of balance sheet? **[6]**

OR

Q2) Write short notes on any THREE : **[12]**

a) Profit and Loss account.

b) Cost Accounting and Financial Accounting.

c) Subsidiary Books.

d) Accounting Principles.

Unit - II

Q3) a) The given data is as follows : **[8]**

i) Selling Price = Rs. 20/- per unit.
ii) Variable cost = Rs. 14/- per unit.
iii) Fixed selling cost = Rs. 63,000/- per annum.
iv) Factory overhead = Rs.1,35,000/- per annum.

Find out the following :

i) No. of units to be sold to earn profit of Rs. 3,20,000/- per year
ii) Breakeven point expressed in amount.

b) Explain the various financial ratios? **[4]**

P.T.O.

OR

Q4) a) From the following information relating to XYZ Pvt. Ltd., calculate the break-even point and the turnover required to earn a profit of Rs. 1,20,000/- **[8]**

Fixed overhead Rs. 84,000/-.
Variable overhead Rs. 8 per unit.
Selling price Rs. 20/- per unit.
If the company is earning a profit of Rs. 1,20,000/- what is the margin of safety available to it?

b) Explain followings : **[4]**

i) Limitations of Ratio analysis.
ii) Marginal Costing.

Unit - III

Q5) a) PQR company has a sales level of Rs. 2,00,000/- with a 10% profit margin before interest taxes. To generate this sales volume, the company maintains fixed assets of Rs. 1,00,000/- and current assets of Rs. 50,000/-. Determine the total asset turnover for the company and compute the rate of return on total assets before taxes. **[6]**

b) Explain the importance of working capital. **[5]**

OR

Q6) a) Explain Sources and uses of working capital with suitable examples. **[6]**

b) Distinguish between current assets and fixed assets with example. **[5]**

SECTION - II

Unit - IV

Q7) a) What is capital budgeting? State the factors affecting capital budgeting. **[6]**

b) A firm whose cost of capital is considering two mutually exclusive proposals X and Y, the details of which are as follows : **[6]**

Year	Project X	Project Y
1	Rs. 1,50,000	Rs. 1,50,000
2	Rs. 10,000	Rs. 65,000
3	Rs. 25,000	Rs. 60,000
4	Rs. 55,000	Rs. 57,500
5	Rs. 75,000	Rs. 52,500

Calculate : Pay-back period for each project and advice which of the two projects is profitable.

OR

Q8) a) What are the steps involved in investment decisions making process using capital budgeting? **[6]**

b) ABC Company is considering two investments both of which cost Rs. 10,000/-. The cash flows are as follows :

Year	Project A	Project B
1	Rs. 6,000	Rs. 5,000
2	Rs. 4,000	Rs. 3,000
3	Rs. 3,000	Rs. 8,000

Based on the net present value method, assuming a cost of capital of 10%, which of the two projects should be chosen ? and why? **[6]**

Unit - V

Q9) a) Explain Cost of capital and its significance with suitable examples. **[6]**

b) A company has issued bonds with the face values of Rs. 5,000/- each. Rate of interest is 10%, tax for the company is 50% and the company has taxable income. What is the cost of debt capital? **[6]**

OR

Q10) a) Explain composite cost of capital with suitable example. **[6]**

b) A company's equity share of face value of Rs. 15/- is selling at Rs. 30/- in the market. The dividend per share declared this year is Rs. 2/- per share. The dividend is expected to grow in future years at the annual rate of 5%. What is the cost of equity? **[6]**

Unit - VI

Q11) a) What are the disadvantages of computerized accounting system? Explain in detail. **[5]**

b) Explain the process in Tally 9.0 for preparation financial statements. **[6]**

OR

Q12) a) Explain the role of computers and software in accounting and finance. **[5]**

b) Role of IT in finance and accounts system. **[6]**

✷ ✷ ✷

Total No. of Questions : 12]

SEAT No. :

P645

[Total No. of Pages : 2

[4266]-304

S.Y. M.C.A. (Engineering Faculty)

COMPUTER COMMUNICATIONS & NETWORKS

(2008 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer 3 questions from Section I and 3 questions from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What is Computer Communication? What are the basic characteristics of communication system? **[6]**

b) What are the different types of transmission modes? Explain with suitable diagram. **[6]**

OR

Q2) a) Explain in details HDLC protocol with suitable diagram. **[4]**

b) What is switching? Explain in details different switching techniques. **[8]**

Q3) a) What is Computer Networking? Differentiate between peer-to-peer network and Client-server network. **[5]**

b) Explain Stop-and-wait protocol with suitable diagram. **[6]**

OR

Q4) a) Explain the working of WDMA protocol. **[5]**

b) What is Open Systems Interconnection (OSI) reference model? Explain all OSI layers in detail. **[6]**

Q5) a) What is CSMA? Discuss in detail about CSMA/CD & CSMA/CA. **[6]**

b) Write a short note on : **[6]**

i) Wireless LAN
ii) Virtual LAN
iii) ATM

P.T.O.

OR

Q6) a) Explain in details Virtual Circuit and Datagram subnets. **[6]**

b) Describe Sliding window protocol with suitable diagram. **[6]**

SECTION - II

Q7) a) What do you mean by congestion? Explain Congestion Prevention Policies. **[6]**

b) What are different routing algorithms, explain in details any one routing algorithms. **[6]**

OR

Q8) a) What is IP address? Explain in details IPv6 and IPv4 protocol format. **[6]**

b) What are transport layer Services? Explain transport layer service primitives in details. **[6]**

Q9) a) Explain difference between TCP and UDP. **[5]**

b) What is Jitter Control with respect to congestion control? **[6]**

OR

Q10) a) What is Multicast Routing? Explain any two Multicast Routing in details. **[6]**

b) Explain in details Remote Procedure Call (RPC). **[5]**

Q11) a) What is DNS? Explain different types of DNS domain. **[6]**

b) Explain Email Architecture with protocol. **[6]**

OR

Q12) Write short note on : **[12]**

a) MIME

b) FTP

c) SMTP

d) HTTP

Total No. of Questions : 12]

SEAT No. :

P646

[Total No. of Pages : 2

[4266]-305
S.Y. M.C.A. (Engineering Faculty)
PRINCIPLES OF MULTIMEDIA
(2008 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, from Section -I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section - II.***
2) ***Answers to the two sections must be written on separate answer books.***
3) ***Assume suitable data, if necessary.***
4) ***Draw sketches wherever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What is multimedia? Explain Goals and Objectives of Multimedia. **[6]**

b) What do you mean by Multimedia Document Architecture? Explain in brief SGML. **[6]**

OR

Q2) a) What is Authoring? Explain features of any two authoring tools used in multimedia. **[6]**

b) What is Streaming Technology? How it is useful in Multimedia application development? List the protocols used in streaming. **[6]**

Q3) a) What are the various file formats used in multimedia images? Explain any two file formats with its difference. **[6]**

b) Explain how fractals are used for compression of an image for multimedia application? **[5]**

OR

Q4) a) What do you mean by Image Enhancement? Explain how image enhancement is done using Histogram Modelling. **[6]**

b) Explain the compression technique Run Length Encoding with suitable example. **[5]**

P.T.O.

Q5) a) Explain CD-DA technology, discuss the limitations and advantages of the same. **[6]**

b) State and explain any three audio file formats in brief. **[6]**

OR

Q6) a) Explain MIDI massage formats with different command names available. **[6]**

b) Explain the audio encoding for MPEG. **[6]**

SECTION - II

Q7) a) A document contains letters A through F with frequencies as indicated:
A: 0.25, B: 0.1, C: 0.2, D: 0.15, E: 0.26, F: 0.04
Use Huffman coding to derive a codeword set. **[6]**

b) Which are the different layers in MPEG? Define and explain I, B and P frames with reference to MPEG. **[6]**

OR

Q8) a) Explain LZW Compression technique with example. **[6]**

b) Compare different Television Broadcasting standards? **[6]**

Q9) a) Which are the types of nodes in VRML? Write a script for implementing dining table using VRML. **[6]**

b) Explain CCD and its use in multimedia application. **[5]**

OR

Q10) a) What is Virtual Reality? How the multimedia techniques are used to implement the virtual reality. **[6]**

b) Explain Head Mounted Display and its use in multimedia application. **[5]**

Q11) a) What is animation? Explain with respect to animation. **[6]**

i) Kinematics.
ii) Morphing.
iii) Onion Skinning.

b) What is rendering? Explain with respect to animation. **[6]**

i) Interpolation &
ii) Motion Paths

OR

Q12) a) What do you mean by animation on Web? Explain client pull animation by example. **[6]**

b) Explain different steps for development of 2D animation. **[6]**

Total No. of Questions : 12]

SEAT No. :

P647

[Total No. of Pages : 2

[4266]-401
S.Y. M.C.A. (Engineering Faculty)
SOFTWARE ENGINEERING
(2008 Pattern) (Semester - IV)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain software engineering layers. What is the role of modeling and construction in software process models? **[6]**

b) Compare Iterative development with Incremental delivery approach. **[6]**

OR

Q2) a) Explain all levels of CMMI. **[6]**

b) Explain the concept of process pattern with example. **[6]**

Q3) a) Business process engineering strives to define data and application architecture as well as technology architecture. Describe each of these terms with an example. **[6]**

b) Explain Hatley-Pirbhai Modeling with an example. **[6]**

OR

Q4) a) What is the importance of principles and practices in software engineering? Explain in detail coding principles and concepts. **[6]**

b) What are the factors considered while performing system modeling? **[6]**

Q5) a) What do you mean by requirement negotiation and validation? List requirement validation checklist? **[6]**

b) Describe the primary differences between the structured analysis and object oriented analysis. **[5]**

P.T.O.

Q6) a) What are the goals of Requirement Engineering? Justify why Requirement Engineering works as a bridge between Design and Construction? **[8]**

b) Draw the Swim Lane diagram for Railway Reservation System. **[3]**

SECTION - II

Q7) a) Explain user interface design and analysis process. **[6]**

b) What are the golden rules for interface design? Explain in detail. **[6]**

OR

Q8) a) Explain data design at component level with all the principles of data specification. Explain the following architectural styles with their merits/ demerits. **[8]**

i) Data Centered Architecture.
ii) Data Flow Architecture.

b) Explain with diagram how to perform design evaluation. **[4]**

Q9) a) What are the strategic issues in software testing? **[6]**

b) Explain condition testing & loop testing with reference to white box testing. **[6]**

OR

Q10) a) Explain the two ways to perform System testing. **[6]**

b) Explain Verification & validation with example. **[6]**

Q11) a) What are the attributes of effective software metric? Explain measure, measurement and metrics. **[5]**

b) What are the objectives of software maintenance? Explain in detail maintenance metric. **[6]**

OR

Q12) a) What is software quality? What are the factors affecting the software quality? How the software quality can be addressed? **[5]**

b) Explain the metric for source code. What are the factors affecting source code metrics investigation. **[6]**

Total No. of Questions : 12]

SEAT No. :

P648

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[4266]-402
S.Y. M.C.A. (Engineering Faculty)
WEB TECHNOLOGY
(2008 Pattern) (Semester - IV)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***From Section - I, answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6).***
2) ***From Section - II, answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***
3) ***Answers to the two sections should be written in separate books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicate full marks.***
6) ***Make suitable assumptions wherever and relevant.***

SECTION - I

Q1) a) Explain in detail how a browser communicates with a web server. **[4]**

b) What is WWW? Explain 3-tier architecture for any modern web application. **[8]**

OR

Q2) a) Explain in details different types of web pages in web technology. **[6]**

b) What are the three approaches for e-commerce application development? **[6]**

Q3) a) Create a static HTML page that displays the nested List of various food menus using different list types. **[6]**

b) What is CSS? What are the various ways to apply a CSS to an HTML document with example? **[6]**

OR

Q4) a) Explain following CSS properties with example. **[6]**

i) Font
ii) Text
iii) List
iv) Border

b) How we link HTML documents? Explain in detail with suitable examples. **[6]**

P.T.O.

Q5) a) What is Scripting? What are different Scenarios to make web page Dynamic? **[6]**

b) Explain with example primitive data types of VBScript. **[5]**

OR

Q6) a) What is DHTML? How to create interactive web page using DHTML explain with example. **[6]**

b) Explain string and date object in VBscript with suitable example. **[5]**

SECTION - II

Q7) a) Explain Event handling in JavaScript with suitable example. **[6]**

b) Explain JavaScript FORM object in detail. **[6]**

OR

Q8) a) Explain JavaScript Array with examples. **[5]**

b) Write a JavaScript code which will display Patient Master form, having following fields Patient ID, Patient Name, address, city, contact number, Date of birth. Validate above fields with different criteria. **[7]**

Q9) a) What is JSP? Describe various stages of JSP life cycle. **[6]**

b) What is Ajax? Describe Ajax Web Application Model. How it is different from Traditional web application model? **[6]**

OR

Q10) Answer all questions below in context of AJAX. **[12]**

a) How does AJAX help to improve Web Pages.

b) What is the role of HTML in context of AJAX.

c) What is the role of CSS in context of AJAX.

d) What are the drawbacks of AJAX.

Q11) a) What is .Net Framework? Explain CLR functionality and working in .Net Framework. **[6]**

b) What is ASP? What are different objects in ASP? **[5]**

OR

Q12) a) What is validation? How many types of validation controls are provided by ASP.NET? **[6]**

b) Compare : **[5]**

i) ADO with ADO.NET

ii) ASP and ASP.NET

Total No. of Questions : 12]

SEAT No. :

P649

[Total No. of Pages : 2

[4266]-403

S.Y. M.C.A. (Engineering Faculty)

OBJECT ORIENTED ANALYSIS AND DESIGN

(2008 Pattern) (Theory) (Semester - IV)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Write Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section - I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section - II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the design view in 4 + 1 view architecture. **[4]**

b) What are the new features of UML 2.0. **[4]**

c) Write a short note on Rational Unified Process. **[4]**

OR

Q2) a) What is MDA? **[4]**

b) Explain architectural approaches of UML. **[4]**

c) What are the Object Oriented features? **[4]**

Q3) a) Explain the extensibility mechanisms in UML 2.0 with appropriate examples. **[6]**

b) How to use OCL? Explain with relative examples. **[6]**

OR

Q4) a) Explain benefits of using UML. **[6]**

b) Categorize UML diagrams as structural and behavioral diagrams. Explain the need of each diagram in brief. **[6]**

Q5) a) Draw the use case diagram for ATM. Make suitable assumptions. **[7]**

b) Explain following terms with examples: **[4]**

i) Interface.

ii) Template.

P.T.O.

OR

Q6) a) Draw the class diagram for Library Management System. Make suitable assumptions. **[7]**

b) Write a short note on CRC method. **[4]**

SECTION - II

Q7) a) Draw sequence diagram for tea/coffee vending machine. Make suitable assumptions. **[7]**

b) Compare communication diagram and sequence diagram. **[4]**

OR

Q8) a) Explain with example interaction overview diagram. **[6]**

b) Discuss concepts of signal and exception. **[5]**

Q9) a) Draw activity diagram for online examination. Consider that you are visiting to any website and appearing for free online test for different subjects or technologies available on that website. Assume necessary data. Write your assumptions clearly. **[7]**

b) What is timing diagram? Explain with example. **[5]**

OR

Q10) a) Draw state machine diagram for automatic teller machine. Assume necessary data. **[7]**

b) Explain fork and Join with example. **[5]**

Q11) a) Explain component diagram with suitable example. **[6]**

b) Explain applications of UML with suitable example. **[6]**

OR

Q12) a) Draw deployment diagram for web application – online registration for job portal. Suppose that you are registering to the job portal. After registration, you will receive mail from job portal if you are suitable to the criteria given by company. Assume necessary data. Write your assumptions clearly. **[6]**

b) What is the use of package diagram? Explain with example. **[6]**

Total No. of Questions : 12]

SEAT No. :

P650

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[4266]-404

S.Y. M.C.A. (Faculty of Engineering)

JAVA PROGRAMMING

(2008 Pattern) (Theory) (Semester - IV)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer 3 questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the concept of Interfaces in Java with example. **[6]**

b) Explain in brief different access specifiers used in Java. **[6]**

OR

Q2) a) Define an exception called "NoMatchException" that is thrown when a string is not equal of "India". Write a program that uses this exception. **[6]**

b) Write short notes on : **[6]**

i) Final variables and methods.

ii) Abstract classes.

Q3) a) What is the use of Adapter classes in Java? Explain with example. **[6]**

b) State any three layout managers for Java AWT. Show the layouts displayed by each of these layouts. **[6]**

OR

Q4) a) Write a GUI Java program which captures m and y coordinates of mouse and display it in a swing frame. **[6]**

b) What are different types of listeners available in event handling? Explain any one with example. **[6]**

P.T.O.

Q5) a) Write notes on : **[6]**

i) Param tag of an applet.
ii) HTML tags of an applet.

b) What are the methods called during initialization and termination of java applets? Describe each of these methods with diagram. **[5]**

OR

Q6) a) Write an applet to display a message "Hello World" which has font face Helvetica, size 20 and color of the font should be red. **[6]**

b) What is java applet? How java applets differ from java applications? **[5]**

SECTION - II

Q7) a) Write a java program to read a text from file and find out no of lines, words and characters in that file to display it on the screen. **[6]**

b) What are the reader and writer classes available in java? **[6]**

OR

Q8) a) What is the utilization of file class? Explain different constructors associated with file class. **[6]**

b) How object serialization is achieved with Objectstream class? Explain with example. **[6]**

Q9) a) Explain with example resultsetmetadata class. **[6]**

b) Write a java program to establish a database connectivity using JDBC and insert the details of Actor(Ano,AName,Movie) into the database and display the result in uppercase on the screen. **[6]**

OR

Q10) a) What are different types of JDBC drivers available for database connectivity? State advantages and disadvantages associated with them.**[6]**

b) Write a JAVA program to accept the details of Employee (Eno, Ename,Dept, Sal) from the user, store it into the database and display that details on the screen. **[6]**

Q11) a) What do you mean by Socket programming? Explain ServerSocket and its methods. **[6]**

b) What are the different types of network. Exceptions? **[5]**

OR

Q12) a) Write a Java program to set up server to receive packets from client and send packets to the client. **[6]**

b) Explain following classes with methods associated with it. **[5]**

i) Datagram Packet

ii) Proxy Server

Total No. of Questions : 12]

SEAT No. :

P651

[Total No. of Pages : 2

[4266]-405

S.Y. M.C.A. (Engineering Faculty)

HUMAN COMPUTER INTERFACE

(2008 Pattern) (Elective - I) (Semester - IV)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***From Section - I answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6)***
2) ***From Section - II answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***
3) ***Answers to the two sections should be written in separate books.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicate full marks.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What are different Human Factors that are to be considered while designing the user interface? Explain with the help of suitable examples. **[6]**

b) What is reasoning? Explain different type of reasoning with example. **[6]**

OR

Q2) a) Explain the goals of user interaction design. **[6]**

b) Explain the similarities and differences in human memory and computer memory? **[6]**

Q3) a) Explain concept of diversity. What strategy should be adopted for developing a website to teach mathematical tables to children across the world? **[6]**

b) Explain how GOMS and the Keystroke-Level Model support the interaction design process. **[6]**

OR

Q4) a) With help of Norman's Model of interaction explain the process of execution evaluation cycle. What is meant by gulf of execution and gulf of evaluation with respect to this model? **[6]**

b) Explain any three interaction styles with advantages and disadvantages. **[6]**

P.T.O.

Q5) a) State and explain THREE pillars of interface design process. **[6]**

b) How scenarios could be useful in building better user interface design? **[5]**

OR

Q6) a) Describe Logical User Centered Interactive Design Methodology (LUCID). **[6]**

b) Explain how navigation design helps in the design of website for Senior Citizen. **[5]**

SECTION - II

Q7) List different type of menus. Explain when and why to use a particular menu system with example. **[12]**

OR

Q8) a) What are the factors you would need to take into account when designing a screen layout for a database application? **[6]**

b) Explain different dialog design notations. **[6]**

Q9) a) Explain with example face – to – face communication and asynchronous interactions in CSCW. **[6]**

b) Compare and contrast online help with offline help. **[6]**

OR

Q10) a) Enumerate any four error messages encountered by you in GUI based Interactive system. What guideline can you suggest for presenting these error Messages in an effective style? **[6]**

b) Write a short note O-AI model for website design. **[6]**

Q11) a) What is Information Visualization? Explain visual information seeking rule. **[6]**

b) Explain how pointing devices are applicable in six types of interaction tasks. **[5]**

OR

Q12) a) Give benefits and problem of touch screen and voice recognition input. **[6]**

b) Discuss important design issues involved in designing a web page. **[5]**

Total No. of Questions : 6] **[Total No. of Pages : 2**

P651

[4266]-405

S.Y. M.C.A. (Engineering Faculty)

ORGANIZATIONAL BEHAVIOR

(2008 Pattern) (Theory) (Elective - I) (Semester - IV)

Time :3 Hours] ***[Max. Marks :70***

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) i) Define organizational behavior. How OB concepts are addressed in management functions, roles, and skills? **[5]**

ii) Explain primary and secondary motives with suitable example. **[6]**

OR

b) i) What are different levels of analysis in OB model? Are they related with each other? Justify. **[5]**

ii) What is the role of self efficiency in Goal setting. **[6]**

Q2) a) i) What are the implications of Theory X and Y for motivation practices? **[4]**

ii) Explain stress management in brief. **[8]**

OR

b) i) Explain the relationship of morale and productivity. **[5]**

ii) Explain Maslow's theory of hierarchy of needs. **[7]**

Q3) a) i) What is Conflict? How conflicts can be resolved? **[6]**

ii) Explain various ways of improving team effectiveness in an Organization. **[6]**

OR

b) i) Define the term Group Dynamics and discuss its importance. **[6]**

ii) Contrast self-managed and cross-functional teams. **[6]**

P.T.O.

SECTION - II

Q4) a) i) Critically analyze the span of control with respect to the width. **[6]**

ii) Define Leadership and explain importance of leadership to the organization. **[6]**

OR

b) Explain in detail Fiedler's contingency model and Path Goal theory. **[12]**

Q5) a) i) Explain the conflict process model. Also how conflicts can be minimized. **[7]**

ii) List the forces responsible for change. **[5]**

OR

b) i) How the change within an organization leads to the effective development of an organization. **[5]**

ii) Compare traditional Vs Modern view of conflict. **[7]**

Q6) a) Explain various aspects of Quality? What is Total Quality Management? What are the benefits of TOM? **[11]**

OR

b) i) Explain the Objectives and steps involved in Re-engineering. **[5]**

ii) Write a short note on : **[6]**

1) Bench marking.
2) Learning Organization.

Total No. of Questions : 12]

SEAT No. :

P652

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[4266]-502

T.Y. M.C.A. (Engineering Faculty)

COMPUTER GRAPHICS

(2008 Pattern) (Theory) (Semester - V)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer 3 questions from Section - I and 3 questions from Section - II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Describe Besenham line drawing algorithm. State its advantages and disadvantages over DDA line drawing algorithm. **[6]**

b) List and explain any two antialiasing methods. **[6]**

OR

Q2) a) Write a short note on : **[6]**

i) Cathode-Ray tubes.
ii) Frame Buffers.

b) Using Brasenham's line drawing algorithm, find out which pixels would be turned on for the line with end points (6, 6) to (12, 10). **[6]**

Q3) a) A triangle is located at P(2, 3) Q(5, 5), R(4, 3). Work out the transformation matrix which would rotate the triangle by 45 degree counterclockwise about this point Q. Find the coordinate of the rotated triangle. **[6]**

b) Write a short note on Viewing transformation. **[6]**

OR

Q4) a) What is polygon? What are different types of polygons? How do you find whether given point is inside the polygon or not? **[6]**

b) What is homogeneous coordinates? Give homogeneous coordinates for scaling, rotation and translation. **[6]**

P.T.O.

Q5) a) What is the structure of a segment table and explain segment creation and deletion operation on segment. **[6]**

b) Write a short note on Liang-Bersky line clipping algorithm. **[5]**

OR

Q6) a) Apply cohen-sutherland algorithm to clip a line segment R1, R2 with R1 (70, 20), R2(100, 10) against a clipping window ABCD with A(50, 10), B(80, 10), C(80, 40), D(50, 40). **[6]**

b) Explain Sutherland-Hodgaman algorithm for polygon clipping with example. **[5]**

SECTION - II

Q7) a) Explain with example, 3D viewing transformation. **[6]**

b) Explain the concepts of parallel and perspective projections. **[6]**

OR

Q8) a) Explain midpoint subdivision algorithm for 3D clipping. **[6]**

b) Derive the matrix form for the geometric transformations in 3D graphics from the following operations. **[6]**

i) Translation.
ii) Scaling.
iii) Mirror Reflection.

Q9) a) List and explain any two color models. **[6]**

b) Explain Z-buffer algorithm. **[6]**

OR

Q10) a) Explain painter's algorithm for hidden surface removal. **[6]**

b) Describe diffuse illumination and point source illumination. **[6]**

i) Ray Tracing.
ii) Diffuse illumination.

Q11) a) Write short note on fractal lines and fractal surfaces. Give 2 applications of each. **[6]**

b) What are the properties of Bezier curve. **[5]**

OR

Q12) a) What is spline? Differentiate between interpolation spline and approximation spline. **[6]**

b) Discuss the following : **[5]**

i) Langrangian interpolation method.
ii) True curve generation.

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SEAT No. :

P653

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T.Y. M.C.A. (Engineering Faculty)

ADVANCED DATABASES

(2008 Pattern) (Semester - V)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, from Section - I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section - II.***
2) ***Answers to the two sections must be written on separate answer books.***
3) ***Assume suitable data if necessary.***
4) ***Draw sketches wherever necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) With suitable diagram explain the steps in query processing. **[6]**

b) Let relations r_1 (A, B, C) and r_2 (C, D, E) have the following properties. r_1 has 20000 tuples, r_2 has 45000 tuples, 25 tuples of r_1 fit on one block and 30 tuples of r_2 fit on one block. Estimate the number of block accesses required using nested loop join. **[6]**

OR

Q2) a) Why we need query optimization? Illustrate with suitable example. **[6]**

b) Write note on the following : **[6]**

i) Materialized Evaluation.

ii) Pipelined Evaluation.

Q3) a) Explain centralized and client server database architectures. **[6]**

b) Explain pipelined parallelism and independent parallelism with example. **[6]**

OR

Q4) a) Differentiate between speedup & scaleup. **[6]**

b) What are the homogeneous and heterogeneous distributed database systems? Explain the terms replication and fragmentation with example. **[6]**

P.T.O.

Q5) a) Explain object identity & pointers. **[5]**

b) A college maintains a database for students and teachers. A database schema is as given below. **[6]**

name: f_name, m_init, l_name
address: street_no, city, state, zipcode
person: name, address, date_of_birth
teacher: person, department, designation, date_of_joining, salary
student: person, course, date_of_admission, fees

Construct an SQL: 1999 schema definition for this database. Use inheritance where appropriate.

OR

Q6) a) Explain the need of complex data type with example. **[5]**

b) Write short note on persistent programming language. **[6]**

SECTION - II

Q7) a) Explain with a neat diagram, the 3 tier architecture of a data warehouse. **[6]**

b) Explain data preprocessing and the steps involved in it. **[6]**

OR

Q8) a) What are dimension and fact tables? Explain any two multidimensional model. **[6]**

b) Compare OLTP with OLAP. Explain the operations on CUBE. **[6]**

Q9) a) Define Clustering. What are the different types of clustering? Explain K-means clustering algorithm with suitable example. **[8]**

b) Explain text mining? **[4]**

OR

Q10) a) What is association in data mining? Explain Apriori algorithm with suitable example. **[8]**

b) Describe decision tree classification model. **[4]**

Q11) a) Explain the indexing of documents. **[5]**

b) Explain in short : **[6]**

i) homonyms
ii) relevance ranking.

OR

Q12) a) What are the evaluation criteria for assessing Web search engines and online databases? Discuss the similarities and differences. **[6]**

b) Explain the concept of Page Rank.P **[5]**

Total No. of Questions : 12]

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P654

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T.Y. M.C.A. (Engineering Faculty)

ENTERPRISE RESOURCE PLANNING

(2008 Pattern) (Semester - V)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer 3 questions from Section - I and 3 questions from Section - II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What is an Enterprise? Define ERP and explain benefits of ERP. **[6]**

b) Briefly explain tangible and non-tangible benefits that ERP can provide. **[6]**

OR

Q2) a) Explain usefulness of ERP in competitive strategy formulation. **[6]**

b) What do you understand by integrated and cross -enterprise systems? How can ERP help in achieving such systems? **[6]**

Q3) a) Why is resistance to change or lack of buy-in an ERP implementation challenge? **[6]**

b) How do ERP systems improve the agility of organizations? **[6]**

OR

Q4) Does the ERP implementation in an organization improves its overall performance across entire organization? Explain what changes in organization structure are necessary for ERP implementation. **[12]**

Q5) a) Compare any other available ERP product with SAP R/3. **[6]**

b) What are the major infrastructure requirements for implementation of ERP system for a bank providing financial services? **[5]**

OR

P.T.O.

Q6) a) '*Phase rollout of ERP application is a safer alternative to Big Bang Implementation.*' Justify the validity of the above statement in reference to ERP implementation on multiple sites in a larger corporation. **[6]**

b) Explain ERP architecture in detail. **[5]**

SECTION - II

Q7) a) Compare the implementation ERP system with Off the Shelf and In-house developed ERP packages. **[6]**

b) What are different design and customization issues which may be addressed during development of ERP solution? **[6]**

OR

Q8) a) Explain the importance of forming selection criteria for the ERP selection process? Explain the selection criteria for ERP software. **[6]**

b) What do you mean by In-house development? Discuss the problems occurred during In-house development. **[6]**

Q9) a) How does data warehousing improve the efficiency of ERP systems? **[6]**

b) What is e-Business? Explain the connection between ERP and e-business. **[6]**

OR

Q10) a) Explain the integration of ERP, Supply Chain and Customer Relationship applications. **[6]**

b) How does BPR help in the implantation of ERP systems? **[6]**

Q11) a) Explain the functions, sub systems and features of the HR module. **[6]**

b) Explain the functions of material management module of ERP. **[5]**

OR

Q12) What are the different functional modules of an ERP system? Explain any two modules. **[11]**

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P655

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T.Y. M.C.A. (Engineering Faculty)

SOFTWARE TESTING

(2008 Pattern) (Elective - II) (Semester - V)

Time :3 Hours] *[Max. Marks :70*

Instructions to the candidates :

1) ***Answer three questions from Section - I and three questions from Section - II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Give classification of software measures. **[6]**

b) Explain four principals of investigations. **[5]**

OR

Q2) a) Define : **[6]**

i) Measurement.
ii) Model.
iii) Attribute.

b) What is good data? How to store and extract data? **[5]**

Q3) a) Explain in detail morphology? **[6]**

b) Explain the different aspects of software measurement? **[6]**

OR

Q4) a) Explain the object oriented metrics. **[6]**

b) Explain Halstead' software science. **[6]**

Q5) a) Explain the terms errors, faults and failure **[6]**

b) Write note on defect repository. **[6]**

OR

Q6) a) What is test plan? What are components of test plan. **[6]**

b) Write note on origins of defect and defect classes. **[6]**

P.T.O.

SECTION - II

Q7) a) Explain test adequacy criteria. **[5]**

b) Define Static Testing. Explain the concepts in details- desk checking, code walkthrough, formal inspection. **[7]**

OR

Q8) a) Write note on Domain testing. **[6]**

b) What is state based or graph based Testing? **[6]**

Q9) a) What is Regression Testing? Explain in brief types of Regression Testing. **[6]**

b) Explain usability and accessibility testing. **[5]**

OR

Q10) a) What is System Testing? Explain functional testing versus non-functional testing in system testing. **[6]**

b) Explain software test automation. **[5]**

Q11) a) What is Fix Distribution? How can we distribute the Fixation of the problem? **[6]**

b) What is software maintenance? What are Challenges in problem reporting? **[6]**

OR

Q12) a) Explain overview of activities in problem resolution. **[6]**

b) Write note on Logistics and Tooling. **[6]**

Total No. of Questions : 12] **[Total No. of Pages : 2**

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T.Y. M.C.A. (Engineering Faculty)

NEURAL NETWORKS AND FUZZY LOGIC

(2008 Pattern) (Elective - II) (Semester - V)

Time :3 Hours] ***[Max. Marks :70***

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Discuss in brief auto-association and hetero-association process used for neural processing. **[6]**

b) Explain with neat diagram biological neural network. Compare its performance with Artificial Neural Network. **[6]**

OR

Q2) a) Describe McCulloch-Pitts neuron model in detail. **[6]**

b) Describe following learning rules **[6]**

i) Delta Learning rule.
ii) Winner-take-all Learning Rule.

Q3) a) Derive the convergence theorem for perceptron learning rule. **[6]**

b) Write a short note on : **[6]**

i) Lineraly Non-separable classification problem.
ii) Hebb's rule.

OR

Q4) a) Draw a block diagram of Recognition and classification system and explain the following terms in brief : **[6]**

i) Feature Extraction.
ii) Pattern Space.
iii) Decision Region.

b) With algorithmic steps discuss the Single Discrete Perceptron Training Algorithm. **[6]**

P.T.O.

Q5) a) Construct a feedforward 2-layer (3-layer counting input field) neural network. Use the backpropagation (BKP) algorithm to train the network. **[6]**

b) What are different expert system applications? **[5]**

OR

Q6) a) Explain Multilayer Feedforward network architecture. **[6]**

b) Explain Learning rate and momentum with back-propagation algorithm. **[5]**

SECTION - II

Q7) Differentiate fuzzy set from classical set and name the properties of classical (crisp) sets. **[12]**

OR

Q8) Explain the operation of fuzzy sets with a suitable example. **[12]**

Q9) a) What are fuzzy relations? Explain Binary Fuzzy Relation. **[6]**

b) Explain in brief TSK Fuzzy Rule based model. **[6]**

OR

Q10) a) Given any N-ary relation, how many different projections of the relation can be taken? **[6]**

b) Mention the need for the De-Fuzzification. Explain the types of De-Fuzzification. **[6]**

Q11) a) Write about conditional fuzzy proposition and unconditional fuzzy proposition. **[5]**

b) What are fuzzy implications? Explain with example. **[6]**

OR

Q12) a) Compare between probability theory and possibility theory. **[5]**

b) What is approximate reasoning? Define fuzzy implication and give examples of well known S-implications (based on the standard fuzzy complement). **[6]**