Total No. of Questions : 6] **[Total No. of Pages : 4**

P1259

[3966]-14

First Year M.C.A. (Engineering Faculty)

PROBABILITY AND STATISTICS

(Sem. - I) (2005 Course) (115004)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain the terms with example: **[6]**

i) Sample space.

ii) Mutually Exclusive Events.

iii) Conditional probability.

b) A box contains 10 articles out of which 3 are defective. If a random sample of 5 articles is drawn without replacement, calculate the probabilities that the sample contains **[6]**

i) only one defective.

ii) at least one defective.

c) If 4 Americans, 3 Frenchmen and 3 Englishmen are to be seated in a row, how many seating arrangements are possible when people of the same nationality must seat together. **[5]**

OR

a) State and prove Bayes' theorem. **[6]**

b) A bag 'A' contains 2 white and 3 red balls and a bag 'B' contains 4 white and 5 red balls. One ball is drawn at random from one of the bags and is found to be red. Find the probability that it was drawn from bag 'B'. **[6]**

c) The letters of the word COMPUTER are arranged at random. Find probability that vowels occupy even places. **[5]**

P.T.O.

Q2) a) Write probability Mass Function (p.m.f.) for the following distribution and write real life situation where this distribution is applied. **[6]**

i) Binomial Distribution.

ii) Geometric Distribution.

iii) Poission Distribution.

b) A coin is tossed six times. What is the probability of obtaining at least four heads? **[6]**

c) A bag contains 20 balls of which 15 are of red colour and 5 of black colour. A random sample of 5 balls is taken. Find the probability that the sample contains 2 black balls. **[5]**

OR

a) Write a short note on Poission distribution. **[6]**

b) Suppose that a manufactured product has 2 defects per unit of product inspected. Using Poission distribution, calculate the probabilities of finding a product without any defect, 3 defects and 4 defects. **[6]**

c) A community consists of 50% Hindus, 30% Muslims and 20% Sikhs. If a sample of six individuals is selected at random, what is the probability that two are Hindus, three are Muslims and one is a Sikh? **[5]**

Q3) a) Define normal distribution. State the important properties of normal distribution. **[5]**

b) Given the joint density function **[6]**

$$f(x,y)=\begin{cases}\dfrac{x(1+3y^2)}{4}, & 0<x<2, \quad 0<y<1\\ 0, & \text{otherwise}\end{cases}$$

Find:

i) Marginal densities $g(x)$, $h(y)$.

ii) $f(x \mid y)$.

iii) $P\left(\frac{1}{4}<X<\frac{1}{2} \mid Y=\frac{1}{3}\right)$.

c) Suppose that the duration of a phone call in minutes is an exponential random variable with mean 10. If someone arrives just before you at a telephone booth, find the probability that you will have to wait: **[5]**

i) More than 10 minutes.

ii) Between 10 to 20 minutes.

OR

a) Define an exponential distribution with mean θ. Find its distribution function. Also state lack of memory property of an exponential distribution. **[5]**

b) The intelligence quotient (I.Q.) of adults is known to be normally distributed with mean 100 and standard deviation 16. Calculate the probability that a randomly selected adult has I.Q. lying between 90 to 110. **[6]**

c) Three balls are drawn at random without replacement from a box containing 2 white, 3 red and 4 black balls. If X denotes the number of white balls drawn and Y denotes the number of red balls drawn, find the joint probability distribution of (X, Y). **[5]**

SECTION - II

Q4) a) Explain the following terms: **[6]**

i) Sampling with and without replacement.

ii) Random sample and sample statistic.

iii) Sample mean and sample variance.

b) Find the sample mean and sample variance for the given random sample 4, 8, 7, 6, 2, 9. **[6]**

c) i) State central limit theorem. **[2]**

ii) Prove that $\overline{X}$ is an unbiased estimator for μ. **[3]**

OR

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

b) Obtain 95% confidence interval for the mean of a random variable with variance known. **[6]**

c) Observations on a random variable X are recorded as 406, 395, 400, 450, 390, 410, 415, 401, 408. Find **[5]**

i) Sample mean.

ii) Sample median.

iii) Sample Range.

Q5) a) Explain the following terms: **[6]**

i) Null Hypothesis.

ii) Critical Region.

iii) Level of significance.

b) The manufacturer of a certain foreign car claims that it averages 30 miles per gallon of motor spirit. To test this claim 7 cars were randomly selected and driven under ideal conditions. These cars averaged 28 miles per gallon with a standard deviation 7.6 miles. Should we accept the manufacturer's claim? Use 1% level of significance. **[6]**

c) Define χ^2 (chi - square) and discuss its uses in testing of hypothesis. **[5]**

OR

a) What are Type I and Type II error? Why Type II error is more significant than Type I error? **[6]**

b) A machinist is expected to make engine parts with axle diameter of 1.75 cm. A random sample of 10 parts shows a mean diameter of 1.85 cm, with a SD of 0.1 cm. On the basis of this sample, would you say that the work of the machinist is inferior? **[6]**

c) Write a short note on student - t distribution. **[5]**

Q6) a) What is the purpose of SQC (Statistical Quality Control)? What is its meaning and what are the various types of measures? **[6]**

b) Ten pieces of cloth out of different rolls of equal length contained the following number of defects:

1, 3, 5, 0, 6, 0, 9, 4, 4, 3

Draw a control chart for the number of defects and state whether the process is in a state of statistical control. **[6]**

c) Write a short note on R - chart. **[4]**

OR

a) Write advantages and limitations of SQC. **[6]**

b) 15 tape recorders were examined for SQC test. The number of defects in each tape - recorder is recorded below. Draw the appropriate control chart and comment on the state of control. **[6]**

Unit no. (i):	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No. of defects (c):	2	4	3	1	1	2	5	3	6	7	3	1	4	2	1

c) Write a short note on P - chart. **[4]**

Total No. of Questions : 6] **[Total No. of Pages : 4**

P1260

[3966]-23

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

OPERATIONS RESEARCH

(115011) (2005 Pattern) (Old Course) (Sem. - II)

Time : 3 Hours] ***[Max. Marks :100***

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 electronic pocket calculator is allowed.***
4) ***Assume suitable data, if necessary.***
5) ***All questions are compulsory.***

SECTION - I

Q1) a) Solve the following LPP using simplex method. **[10]**

Minimize $Z = 2x_1 + 3x_2$

Subject to

$$x_1 + x_2 \geq 5$$
$$x_1 + 2x_2 \geq 6$$
$$x_1 , x_2 \geq 0$$

b) Give the general structure of LP model. What are the advantages and limitations of LP model. **[8]**

OR

a) Solve the following LPP by big M method in simplex. **[10]**

Minimize $Z = 2x + 3y$

Subject to

$$x + y \geq 5$$
$$x + 2y \geq 6$$
$$x, \ y \geq 0$$

b) What is feasible solution and optical solution? Discuss the properties of the LP model. **[8]**

P.T.O.

Q2) a) Write the steps to solve assignment problem for maximization. Solve the following assignment problem for maximization. **[8]**

	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

b) Explain Degeneracy in transportation problem with suitable example. **[8]**

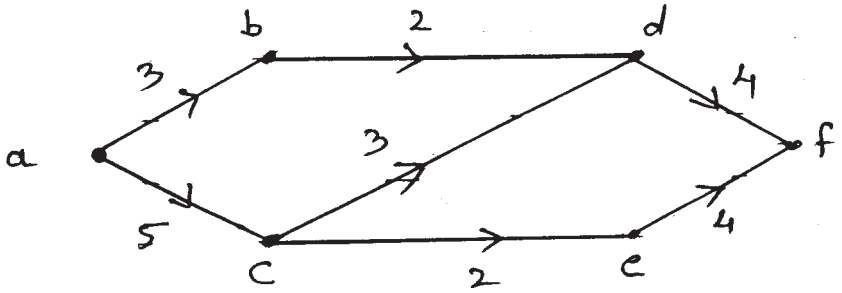
OR

a) Find the IBFS by VAM of the following transportation problem and solve it for optimum transportation cost. **[8]**

	D_1	D_2	D_3	D_4	D_5	Availibility
Q_1	3	4	6	8	8	20
Q_2	2	10	1	5	30	30
Q_3	7	11	20	40	15	15
Q_4	2	1	9	14	13	13
Demand	40	6	8	18	5	

b) What is balancing of transportation model? Explain in detail. **[8]**

Q3) a) Capacity of each edge is given. Find maximum flow from 'a' to 'd' in the network. What is the value of maximum flow? **[8]**



b) Explain the following terms: **[8]**

i) Optimistic time.

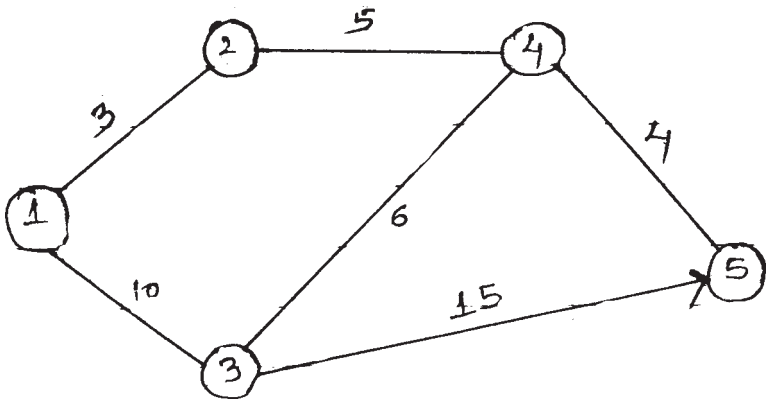
ii) Pessimistic time.

iii) Most likely time regarding an activity.

iv) PERT.

OR

a) Use Floyd's Algorithm to determine the shortest route from node 5 to node 1. **[16]**



SECTION - II

Q4) a) Solve the following integer programming problem using branch and bound technique. **[10]**

Maximize $Z = 7x_1 + 9x_2$

Subject to

$$-x_1 + 3x_2 \leq 6$$
$$7x_1 + x_2 \leq 35$$
$$x_1 \geq 0$$
$$x_2 \leq 7$$
$$x_1, x_2 \text{ integers}$$

b) Explain Forecasting models. Explain one of the forecasting techniques in detail. **[8]**

OR

a) Explain with example: **[8]**

i) Exponential smoothing.

ii) Regression.

b) Consider the following time series: **[10]**

Period	1	2	3	4	5	6	7	8	9	10
Set A	10	12	9	10	11	20	19	23	20	21
Set B	15	13	15	16	16	14	16	15	17	16

i) Compute 3 & 5 period moving average for time series A & B and find the respective forecasts for the 11^{th} period.

ii) Which one of the above averaging period prove the most accurate forecasts for each time series.

Q5) a) The research department of Hindustan Lever has recommanded the marketing department to launch the shampoo of three different types.The marketing manager has to decide one of the types of shampoo to be launched under the following estimated pay - offs for various levels of sales. **[8]**

Types of Shampoo	Estimated Levels of Sales (Units)		
	Rs. 15,000	Rs. 10,000	Rs. 5,000
Egg Shampoo	30	10	10
Clinic Shampoo	40	15	5
Delux Shampoo	55	20	3

What will be the marketing managers decision?

i) Maximin ii) Minimax

iii) Maximax iv) Laplace

b) What are the types of decision making environment? Explain any one in detail. **[8]**

OR

a) Explain Four criterion to analyze the decision making under uncertainty. **[8]**

b) Explain decision making under certainty using AHP. **[8]**

Q6) a) List **[8]**

i) Merits. ii) Demerits.

iii) Applications. iv) Types of simulation.

b) Write short note on: **[8]**

i) Monte carlo simulation.

ii) Psedo - random numbers.

OR

a) What conditions must be satisfied by the observations of the simulation experiment? Discuss each of them. **[8]**

b) Generate 7 random numbers based on multiplicative congruential method using

b = 17, c = 111, m = 103, seed = 7. **[8]**

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

P1262

[3966]-25

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

MANAGEMENT INFORMATION SYSTEMS

(Sem. II) (2005 Pattern) (115013)

Time : 3 Hours] ***[Max. Marks :100***

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 books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Describe briefly the major resources of an information system model. **[10]**

b) Explain the characteristics of information system report. **[8]**

OR

Q2) a) Discuss the Principles of Management proposed by Henri Fayol. **[10]**

b) State the advantages and disadvantages of a Line Organization. **[8]**

Q3) a) What is Financial Management? State different types of reports used in a Financial Management System. **[8]**

b) Explain the applications of MIS in Hospital Management. **[8]**

OR

Q4) a) List challenges involved in implementing Information System. Explain the Change Management Process. **[8]**

b) Explain the importance of Management Information System in Service Industry. **[8]**

Q5) a) Explain steps in ERP implementation. State the advantages of ERP. **[8]**

b) Discuss briefly various types of ERP architecture. **[8]**

OR

Q6) a) Explain Value Stream model of organization. **[8]**

b) What is a call center? Discuss various issues to be considered for establishing a call center. **[8]**

P.T.O.

SECTION - II

Q7) a) Explain different phases of Customer Relationship Management. **[9]**

b) What do you understand by Supply Chain Management? State the benefits and challenges of Supply Chain Management. **[9]**

OR

Q8) a) Explain B2B, B2C and C2C category of E - Commerce. **[9]**

b) Write short notes on: **[9]**

i) Benefits of E - Commerce.

ii) EFT.

Q9) a) Explain 'What - if' analysis and 'Sensitivity' analysis in decision making process. **[8]**

b) Differentiate between MIS and DSS. **[4]**

c) Write a short note on 'Types of decisions'. **[4]**

OR

Q10)a) With the help of a diagram, explain Conceptual Data Architecture. **[8]**

b) Write short notes on: **[8]**

i) Artificial Intelligent System.

ii) Knowledge Based Expert System.

Q11)a) Explain in brief following computer crimes: **[8]**

i) Hacking. ii) Software Piracy.

b) Explain various security measures to be adopted by Internet Users. **[8]**

OR

Q12)a) Write short notes on: **[8]**

i) Disaster Recovery. ii) Biometric Security.

b) Explain cultural and political challenges in global management of IT. **[8]**

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1262

[3966]-31

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

OPERATING SYSTEMS

(2005 Course) (Sem. - III) (215001)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

1) ***Answer any 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) Define an assembler, explain the working of an assembler. What is a single pass and a 2 - pass assembler. **[8]**

b) Give any two important features of MASM. **[2]**

c) Explain the components of system software in detail. **[8]**

OR

Q2) a) What are the fundamentals of language processing, with respect to phases and passes of a language processor? **[4]**

b) Explain the Macro definition and call with a suitable example. **[6]**

c) Explain the design specification of an assembler, with respect to the data structures used. **[8]**

Q3) a) Explain the design of a linker with respect to relocation & linking requirements in segmented addressing. **[8]**

b) Explain an absolute loader with its advantages and disadvantages. **[4]**

c) Explain the following: **[4]**

i) Cross compiler. ii) Optimizing compiler.

OR

Q4) a) Explain with a suitable diagram the various phases of compilation process. **[8]**

b) Explain the relocating loader with its advantages and disadvantages. **[4]**

c) Explain the working of a Relocating loader in detail. **[4]**

P.T.O.

Q5) a) Explain the following: **[4]**

i) Real time operating systems. ii) Time sharing operating systems.

b) What is a system call? What are the differences between system calls and system commands. Name any 3 system calls. **[6]**

c) Define scheduling. Explain the performance parameters of scheduling criteria. **[6]**

OR

Q6) a) What is a process? What is a process control block (PCB)? Explain in detail. **[6]**

b) Name and explain one pre - emptive scheduling algorithm and any one non - preemptive scheduling algorithm. **[6]**

c) Name and explain in brief any 4 functions of an operating system. **[4]**

SECTION - II

Q7) a) Explain the concept of Virtual Memory. What is paging, name and explain any two page replacement algorithms. **[6]**

b) What is contiguous and non - contiguous memory allocation. Give examples. **[4]**

c) Explain the following concepts:- **[8]**

i) Fixed partitioned allocation.

ii) Variable partitioned allocation.

iii) Internal fragmentation.

iv) External fragmentation.

OR

Q8) a) Explain the concept of segmentation. What is paged segmentation? What are different types of segments, can there be shared segments. **[6]**

b) Differentiate between paging and segmentation. **[4]**

c) What is the technique of overlays in Virtual Memory. Explain datastructures for the VM handler in detail. **[8]**

Q9) a) Explain the I/O management module of the OS that has been structured into following layers:- **[8]**

i) Physical Input Output Control System (PIOCS).

ii) Logical Input Output Control System (LIOCS).

iii) File System (FS).

b) Explain any three I/O buffering schemes [draw neat diagrams]. **[6]**

c) Name any 2 file allocation methods. **[2]**

OR

Q10)a) What is a file? What are the different file operations, explain. **[6]**

b) Explain the following file organizations:- **[4]**

i) The sequential file.

ii) The direct file organization.

c) Explain the terms enlisted below:- **[6]**

i) Seek time.

ii) Access time.

iii) Transfer time.

Q11)a) What are the components of linux system? Explain. **[6]**

b) What is a thread? What is the concept of Multithreading? Explain Kernel level and user level threads. **[4]**

c) Draw the basic structure of Linux file system and explain. **[6]**

OR

Q12)a) Draw the process state transition diagram for the Linux process and explain. **[6]**

b) Compare threads and processes. **[4]**

c) Explain the following system calls. **[6]**

i) open.

ii) read.

iii) lseek

iv) write.

v) fork.

vi) exec.

Total No. of Questions : 6] **[Total No. of Pages : 4**

P1263

[3966]-33

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

FINANCIAL ACCOUNTING

(2005 Course) (Sem. - III) (Theory) (215003)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

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

SECTION - I

Q1) a) Prakash Ltd. has issued 5,000 12% Debentures of Rs. 100 each on 01-04-2009. The issue price was fixed at Rs. 102/-, floating charges being 5%. The tax applicable to the company is 40%. The debentures are redeemable after 7 years at Rs. 105 each. What is the cost of Debentures to the company. **[10]**

b) Yash Ltd. issued Rs. 10,00,000/- 12% preference shares of Rs. 100 each at 5% premium. The floatation cost was 4%. The preference shares will be redeemed at a premium of 10% after 9 years. The marginal rate of tax to the company as applicable is 40%. Compute the cost of preference shares to the company. **[10]**

OR

XYZ Ltd. issues Rs. 20,00,000/- 12% Debentures of Rs. 100 each. The debentures are redeemable after the expiry of 7 years. The company is in 35% tax bracket.

Required:

a) Calculate the cost of debt after tax, if debentures are issued at
   i) Par.
   ii) 10% Discount.
   iii) 10% Premium.

b) If brokerage is paid at 2%, what will be the cost of debentures, if issue is at par? **[20]**

P.T.O.

Q2) Explain the graphical presentation of 'Cost - volume - profit' Relationships (with Diagrams), for mechanics of break even charts. **[15]**

OR

a) Explain the limitations of Ratio analysis. **[10]**

b) What are the factors causing Idle Time? **[5]**

Q3) Explain the concept & need of working capital management. What are the factors affecting it? **[15]**

OR

Kohinoor Ltd. sells goods on a gross profit of 25%. Depreciation is considered in cost of production. The following are the annual figures given:

Sr. No.	Particulars	Rs.
1)	Sales (Two months credit)	36,00,000
2)	Material consumed (one month's credit)	9,00,000
3)	Wages paid (one month lag in payment)	7,20,000
4)	Administrative Expenses (one month lag in payment)	2,40,000
5)	Sales Promotion expenses (paid quarterly in advance)	1,20,000
6)	Cash manufacturing expenses (one month lag in payment)	9,60,000

The company keeps one month's stock each of raw materials and finished goods. It also keeps Rs. 80,000/- in cash. You are required to estimate the working capital requirements of the company on cash basis assuming 10% safety margin. **[15]**

SECTION - II

Q4) Explain the different techniques for evaluation of capital expenditure proposal. **[15]**

OR

What is capital budgeting process? Explain the limitations of it. **[15]**

Q5) The following figures are extracted from the books of Mr. Vikrant, you are required to prepare a Trading and Profit and Loss account for the year ended 31st March 2010 and a Balance Sheet as on that date after giving effect to the necessary adjustments.

Particulars	Amount (Rs.)
Mr. Vikrant's Capital	2,28,800
Mr. Vikrant's Drawings	13,200
Sales	4,81,000
Wages	39,800
Sundry Creditors	44,000
Stock (01-04-2009)	34,800
Postage & Telegram	1,540
Factory Lighting	2,500
Provision for D/D	1,100
Loan to Anand @ 10% p.a. (balance on 01-04-2009)	40,000
Interest on Loan to Anand	1,000
Loose Tools	21,500
Gas & Fuel	5,600
Bad Debts	4,000
Cash on Hand	95,000
Plant & Machinery	99,000
Freehold Property	79,000
Purchases	2,35,000
Bills Payable	11,000
Cash at Bank	36,560
Sundry Debtors	29,600
Discounts (Dr.)	650
Office Furniture	9,000
Office Expenses	2,750
Return Outwards	2,200
Freight	2,500
Salaries	13,200
Office Rent	3,900

Adjustments:

a) Stock on 31st March, 2009 was valued at Rs. 1,72,900/-

b) Depreciate:

   i) Plant & Machinery by 20%

   ii) Freehold Property by 10%

   iii) Furniture by 15%

c) Loose Tools were valued at Rs. 19,000/- on 31-08-2008

d) Of the Sundry Debtors Rs. 1,900/- are bad and should be written off.

e) Maintain a provision of 5% on Sundry Debtors for doubtful debts. **[20]**

OR

a) Journalise the following transactions in the Books of Radha for the month of June.

i) Radha started business with a capital of Rs. 25,000/-

ii) She purchased goods from Shyam on credit Rs. 4,500/-

iii) She paid cash to Shyam Rs. 4,350/- & received discount of Rs. 150/-

iv) She sold goods to Mohan Rs. 5,000/-

v) She received cash from Mohan Rs. 6,500/-

vi) She further purchased goods from Shyam Rs. 3,500/-

vii) She further sold goods to Mohan Rs. 1,500/- **[14]**

b) Explain any four Accounting Concepts. **[6]**

Q6) a) What are the advantages of computers in Accounting? **[15]**

OR

With reference to Tally 9 package: Explain the terms - (any 5) **[15]**

a) Purchase Voucher.

b) Sales Voucher.

c) Debit Voucher.

d) Credit Voucher.

e) Payment Voucher.

f) Contra Voucher.

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

P1264

[3966]-35

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

PRINCIPLES OF MULTIMEDIA

(Sem. - III) (2005 Course) (215005)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

1) ***Answer any 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) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is a hypertext? Explain this with a diagram. Also describe three major elements of hypertext. **[10]**

b) Explain the working and principle of Quick Time. **[8]**

OR

Q2) a) What is Authoring? Explain features of any two authoring tool used in Multimedia. **[10]**

b) Explain the features of MM Databases. List any two MM Databases. **[8]**

Q3) a) Explain BMP file format in detail. **[8]**

b) With the help of diagram explain the different operations involved in processing of image. **[8]**

OR

Q4) a) What is image enhancement? How it is achieved by point processing? Justify? **[8]**

b) Explain JPEG - DCT compression technique. **[8]**

Q5) a) What are different audio devices used in multimedia systems? Explain any four. **[8]**

b) With a diagram show how MIDI instruments can be interfaced with a PC. In relation to MIDI distinguish between channel messages and system messages giving examples. **[8]**

OR

P.T.O.

Q6) a) Compare VOC and WAV file formats. **[8]**

b) Explain the compression methodology used in the MPEG - IV. **[8]**

SECTION - II

Q7) a) Name different techniques used for the text compression. Explain with suitable example arithmetic coding applied to text data. **[8]**

b) Explain various DVD formats. **[8]**

OR

Q8) a) Explain the various Video broadcast Standards. **[8]**

b) Briefly state the Huffman coding algorithm. Show how you would use Huffman coding to encode the following set of tokens:
"AAABDCEFBBAADCDF" **[8]**

Q9) a) What is virtual reality? Explain any two virtual reality devices. **[8]**

b) Explain the features of VRML 2.0 using examples. Write pseudo code for virtual Garden. **[10]**

OR

Q10)a) What are the various features of VRML? Explain the use of EVENTS and ROUTS with proper examples. **[8]**

b) Give four class specifiers available in VRML. Write pseudo code for coffee house. **[10]**

Q11)a) What is 3D animation? How it is used in development of web based applications. **[8]**

b) Discuss impact and use of:- **[8]**

i) Interpolation. ii) Parameter Curve editing.

iii) Inverse kinematics. iv) Motion Paths.

in the development of animations.

OR

Q12)a) Explain different techniques of animation along with the example. **[8]**

b) Discuss the issues in development of animations on the web. Compare client - pull and server - push animation. **[8]**

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

P1265

[3966]-41

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

SOFTWARE ENGINEERING - I

(Sem. - IV) (2005 Course) (215009)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

1) ***Answer any 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) Define Software. Explain following software myths: **[9]**

i) Customer Myths. ii) Management myths.

b) Compare and contrast. **[8]**

i) Prototyping model. ii) Concurrent development model.

OR

Q2) a) What are framework and umbrella activities? What is the importance of umbrella activities? **[8]**

b) What formal techniques are available for assessing the software process. **[9]**

Q3) a) What are the elements of system engineering hierarchy? With neat diagrams compare Business process engineering and product engineering. **[9]**

b) Define Computer based system. Explain the various system element of computer based systems. **[8]**

OR

Q4) a) What is the importance of planning practices in product development? Whether planning should be iterative? **[9]**

b) Specify key principles followed by software developers during the deployment of software. **[8]**

P.T.O.

Q5) a) What do you mean by requirement negotiation and validation? List requirement validation checklist. **[8]**

b) What is requirements management? Explain requirements traceability table. **[8]**

OR

Q6) a) Explain Swimlane Diagrams. How are they different from activity diagram? **[8]**

b) What is data modeling. Explain the elements of data modeling with an example. **[8]**

SECTION - II

Q7) a) With neat diagram, explain how Analysis Model is translated into Design model. **[8]**

b) Explain modularity, Refinement and Refactoring in Software design process. **[9]**

OR

Q8) a) Explain the following architectural styles with merits/demerits: **[8]**

i) Call and return Architecture. ii) Data - flow architecture.

b) Define Architectural Design. Explain "First level factoring and second level factoring" in Architectural Designs. **[9]**

Q9) a) What is fault - Based testing? What is meant by testing surface structure and Deep structure? **[9]**

b) Compare : **[8]**

i) White Box testing and Black Box testing.

ii) Verification and Validation.

OR

Q10)a) What is debugging? What characteristics of bugs make debugging so difficult. **[9]**

b) State the relationship between Equivalence partitioning and Boundary Value analysis. **[8]**

Q11)a) With reference to Class oriented metrics, explain the following: **[8]**

i) Depth of the inheritance tree (DIT).

ii) Coupling between Object classes.

b) Explain Halsteads metrics for source code measurement. **[8]**

OR

Q12)a) Explain the metrics for testing. What is the importance of testing Metrics? **[8]**

b) Explain the key quality attributes of ISO 9126 Quality Factors. **[8]**

Total No. of Questions : 12] [Total No. of Pages : 3

P1308

[3966]-202

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

DATA STRUCTURES & FILES

(2008 Course) (Sem. - II) (510910)

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 2-D arrays in detail with row and column major implementations and address calculations in both cases. Use the following data for address calculation: Consider the integer array int AA [30] [40] declared in 'C'. Base address is 600, find the address of element AA [15] [20]. **[7]**

b) Write a pseudo 'C' code to multiply two polynomial. Write the complexity of your code. **[5]**

OR

Q2) a) What is Sparse Matrix? Write an algorithm for fast transpose using sparse matrix. **[6]**

b) What is ADT? Write an ADT for the following: **[6]**

i) Array. ii) Rational Number.

Q3) a) Represent the addition of following polynomial using circular linked list (clearly show the node structure)

i) $P(X) = 2X^8 - 5X^7 - 3X^2 + 4$ & $Q(X) = 4X^8 + 5X^6 + 3X^5 - 5X^2 + 10X$.

ii) $P(X) = 4X^2 + 5X + 20$ & $Q(X) = 3X^3 + 10X + 30$. **[5]**

b) Write algorithm and the Pseudo C code to delete a node from the circular linked list. **[7]**

OR

Q4) a) Write the steps in Pseudo C code to insert an item into singly linked list (Give the pictorial representation) **[5]**

b) Write an algorithm for insertion & deletion of an element from doubly linked list with graphical representation. **[7]**

P.T.O.

Q5) a) Convert the following infix expression into postfix.

i) A + (B ∗ C – (D / E↑F) ∗ G) ∗H.

ii) (A + B ↑ D) / (E – F) + G. **[3]**

b) Give an ADT for STACK. Write a programme for stack using array in C. **[8]**

OR

Q6) a) Write an algorithm and Pseudo C code for Tower of Hanoi using recursion. **[6]**

b) What is Queue? Describe the algorithm for operations performed on Queue? **[5]**

SECTION - II

Q7) a) Construct a binary search tree from following numbers:

14, 10, 17, 12, 11, 20, 18, 25, 8, 22, 23, 30, 7, 13 **[6]**

b) Write a recursive Pseudo C function for the inorder, preorder & postorder traversal of binary tree. **[6]**

OR

Q8) a) Define the following: **[4]**

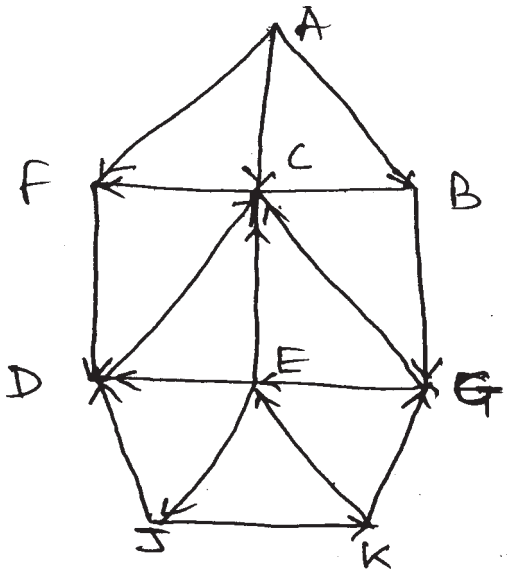
i) Complete Graph.

ii) Connected Graph.

iii) Multigraph.

iv) Loop.

b) Define graph? With respect to graph in figure construct the following. **[8]**



1. Adjacency Matrix
2. Adjacency list.
3. Breadth first search.
4. Depth first search.

(Consider starting point 'A')

Q9) a) Write a Pseudo 'C' code for Insertion sort & calculate its complexity. **[5]**

b) Write a recursive algorithm for merge sort & explain the procedure using following example:

66, 33, 40, 22, 55, 88, 60, 11, 80, 20, 50, 44, 77, 30 **[6]**

OR

Q10)a) Explain index sequential search with example. **[5]**

b) Compare linear & Binary search methods. **[3]**

c) Describe the following with respect to sorting: **[3]**

i) Sort order. ii) Sort stability.

Q11)a) What is meant by collision? Describe collision resolution techniques with example. **[8]**

b) Describe sequential File. **[4]**

OR

Q12)a) What is Hashing? What are the characteristics of good Hash Function? Write the different hashing functions. **[6]**

b) Describe Direct Access file and write C implementation for Insert and Delete operation of it. **[6]**

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

P1309

[3966]-204

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

MICROPROCESSOR APPLICATIONS

(2008 Pattern) (Sem. - II) (510912)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Assume suitable data wherever necessary.***
3) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Draw the functional block diagram of 8085. Explain in detail. **[8]**

b) Design the decoding logic to interface 32KB SRAM Memory with 8085. **[4]**

OR

Q2) a) Explain the function of each pin of 8085. **[8]**

b) What is multiplexing? Detail the concept with the use of latch in 8085-Memory interfacing. **[4]**

Q3) a) Draw the timing diagram for the instruction MVI A, 87H. **[7]**

b) Detail various addressing modes of 8085. **[5]**

OR

Q4) a) What is subroutine? How the control is transferred to subroutine? Explain the Execution of Return. Write a subroutine to add two 8 bit numbers. **[8]**

b) What is the significance of Wait state? Justify with example. **[4]**

Q5) a) Design an interface for 4x4 Keyboard display and 4 digit multiplexed 7-segment Common cathode LED display. **[7]**

b) Which are instructions for I/O in 8085? Explain with example. **[4]**

OR

Q6) a) Compare Memory mapped I/O and I/O mapped I/O. **[4]**

b) Draw and explain functional block diagram of 8255 PPI. **[7]**

P.T.O.

SECTION - II

Q7) a) Explain all the Vector Interrupts of 8085. **[8]**

b) Explain mode 1 of 8253. **[4]**

OR

Q8) a) What is ISR? Explain how is it executed with example. **[8]**

b) Give the importance of NMI. Compare it with hardware Interrupt. **[4]**

Q9) a) Explain programmer's model of 8086 with diagram. **[8]**

b) Explain how 20 bit physical address is generated in 8086. **[4]**

OR

Q10)a) Compare 8086 Maximum and Minimum modes. **[4]**

b) Explain segmentation with neat diagram. What are the advantages of it. **[8]**

Q11)a) Give various addressing modes of 8086 with example. **[6]**

b) Write an 8086 assembly language program to add 48-bit numbers. **[5]**

OR

Q12)a) Write an 8086 assembly language program to convert two digit decimal number into equivalent hexadecimal. **[7]**

b) List and explain the DOS Calls for displaying the character(s). **[4]**

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

P1310

[3966]-304

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

COMPUTER COMMUNICATIONS & NETWORKS

(Sem. - III) (2008 Pattern) (610904)

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

Instructions to the candidates:

1) ***Write answer in separate answer book.***
2) ***Assume suitable data if necessary.***
3) ***Figure on right indicate full makrs.***
4) ***Draw the diagram if necessary.***

SECTION - I

Q1) a) Explain Synchronous and asynchronous transmission with example. **[6]**

b) Explain Transmission Modes. **[6]**

OR

Q2) a) Explain any two guided media. **[6]**

b) Write difference between CDM. **[6]**

Q3) a) Explain Packet Switching. **[5]**

b) Explain and TCP/IP model. **[6]**

OR

Q4) a) Explain Sliding window protocol. **[6]**

b) Bridges What is Bridge? Explain different types of. **[5]**

Q5) a) Explain expose station and hidden station problem in WLAN. **[6]**

b) Explain Collusion - free protocol. **[6]**

OR

Q6) a) Explain Bluetooth architecture. **[6]**

b) Explain ATM architecture. **[6]**

P.T.O.

SECTION - II

Q7) a) Explain the congestion prevention policies. **[6]**

b) Explain IPv4 packet header. **[6]**

OR

Q8) a) Explain Multicast Routing. **[6]**

b) For a given class - B network, design 8 equal subnets having minimum 30 nodes in each subnetwork. **[6]**

Q9) a) Explain Flow Control in TCP. **[6]**

b) Write difference between TCP and UDP. **[5]**

OR

Q10) a) Draw and explain TCP header. **[6]**

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

Q11) a) Explain DNS. **[6]**

b) Draw and explain E-mail architecture. **[6]**

OR

Q12) a) Write difference between FTP and TFTP. **[6]**

b) Explain MIME. **[6]**

Total No. of Questions : 12] [Total No. of Pages : 4

P1311

[3966]-402

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

WEB TECHNOLOGY (610910)

(2008 Course) (Sem. - IV)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) State whether the following are True or False: **[2]**

i) "The port number of the Web server is a locally unique positive integer typically runs on any unused positive integer".

ii) "Among the HTTP methods used, some methods such as HEAD, OPTIONS and TRACE are used to change the state of the server".

b) Comment and explain: **[6]**

i) "Byte Serving is another concept introduced in HTTP/1.1 to improve the performance of HTTP".

ii) "MIME defines mechanism to use character encodings other than ASCII, and 8-bit binary content".

c) What are the three approaches for e-commerce application development? **[4]**

OR

Q2) a) Explain in details, stepwise execution of Dynamic Web Pages with suitable example and appropriate flow diagram. **[6]**

b) What is the "Fat client problem" in 2-tier architecture? Explain how it is solved in 3-tier architecture with an example. **[6]**

Q3) a) Create a HTML page that displays the following: **[8]**

- Define the frameset document **main.htm**.
- In the left frame, **left.htm** document is loaded which contains two links Google and Yahoo each of which when clicked, the respective link opens in the frame named right.

P.T.O.

b) What is the advantage of document - level style sheets over inline style sheets? What is the format of an external style sheet. **[3]**

OR

Q4) a) What are the advantages of CSS? Describe with examples how to use pseudo classes of the <a> element. **[6]**

b) What are the three ways color property values can be specified in CSS? **[5]**

Q5) a) Write the code to display the following form and add the VBScript to display the results as written when user enter no. of days that he has worked and wages per day and clicks on calculate button. (Total salary = No. of days * Wages / day). **[8]**

Current Date		Current Time	
No. of Days			
Wages / Day			
Total Salary			
	CLEAR		**CALCULATE**

b) Describe how a web server can be made dynamic. **[4]**

OR

Q6) a) What are the main differences between: **[6]**

i) Servlet and CGI.

ii) ASP and JSP.

iii) IF ... THEN ... ELSE and SELECT ... CASE statements in VBScript.

b) Explain the two kinds of procedures in VBScript with example. **[6]**

SECTION - II

Q7) a) Discuss all three approaches to addressing an HTML form element in JavaScript. Also state the disadvantages of first two approaches. **[6]**

b) What is Function Object in JavaScript? Demonstrate how to create function objects that uses **Function** Constructor and **new** Operator. **[6]**

OR

Q8) a) What is Object Literal in JavaScript? Explain how JavaScript Objects are different from C++/Java objects. **[6]**

b) Explain the three phases of event processing in the DOM2 event model. **[6]**

Q9) a) Every JSP page gets converted to a normal servlet behind the scene by the web container automatically. The block below shows a **date.jsp** file. Translate this date.jsp file into **date_jsp.java.** (JSP to servlet translation). **[5]**

```
<html>
    <head><title></title></head>
        <body>
            <%=new java.util.Date() %>
        </body>
</html>
```

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

OR

*Q10)*a) What is AJAX? Explain how AJAX technology works together to update a part of a page with new data from the server. **[8]**

b) Write a program in JSP to print addition and subtraction of a two variables using HTML tags? **[3]**

Q11)a) Explain any three key features provided by each of the following: **[6]**

i) HTML Server Controls.

ii) Web controls.

b) How many types of validation controls are provided by ASP.NET? **[6]**

OR

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

a) W3C event Propagation Model.

b) XMLHttpRequest Object in AJAX.

c) Basic web control classes.

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

P1312

[3966]-501

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

PRINCIPLES AND PRACTICES FOR IT PROJECT MANAGEMENT

(New 2008 Course) (710901) (Sem. - V)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Neat diagram must be drawn wherever is necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

SECTION - I

Q1) What are the different roles played by managers? Also explain the importance of management. **[11]**

OR

What is strategic management? Explain the techniques used for strategic management. **[11]**

Q2) How can information technology be applied in finance and accounting? Justify your answer by giving suitable examples. **[12]**

OR

How information technology can be applied in healthcare, agriculture and service sector's management? Justify your answer by giving suitable examples. **[12]**

Q3) Write a note on requirement analysis for any IT project. Illustrate by giving an example. **[12]**

OR

Explain how WBS - Work Breakdown structure is created? What is the role of stakeholders in creation of WBS? **[12]**

P.T.O.

SECTION - II

Q4) How a project manager will be able to cope up with the project delays? Explain its various solutions by considering one scenario on your own. **[12]**

OR

Write a note on: **[12]**

(a) Project Network Diagram.

(b) Managing team issues.

Q5) What are the strategies for resolving destructive conflicts? Explain in detail. **[11]**

OR

How a project manager should lead a team? Explain which qualities and skills are required to lead the team. **[11]**

Q6) Define Project Quality Standards. List all quality standards you know. Explain any 2 in detail. **[12]**

OR

Explain the concepts of knowledge management, change management, and technology management. **[12]**

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

P1313

[3966]-24

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

MICROPROCESSOR APPLICATIONS

(2005 Pattern) (Sem. - II) (115012)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Assume suitable data, if necessary.***
3) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Explain various pin functions of 8085. **[10]**

b) What is multiplexing? Detail the concept with the use of latch in 8085 - Memory interfacing with diagram. **[8]**

OR

Q2) a) Explain the functional block diagram of 8085. **[10]**

b) Design the decoding logic to interface 8KB SRAM with 8085. Give the detail memory map. **[8]**

Q3) a) Detail various addressing modes of 8085. **[8]**

b) Draw the timing diagram for the instruction MVI A, 23H. **[8]**

OR

Q4) a) What is subroutine? How the control is transferred to subroutine? Explain the Execution of Return. **[8]**

b) Write an 8085 assembly language program to reverse 10 Byte block of memory starting at 1200H. **[8]**

Q5) a) Compare Memory mapped I/O and I/O mapped I/O. **[4]**

b) Draw an Interfacing diagram to interface 8255 PPI to 8085. Assume suitable addresses. **[8]**

c) What is BSR mode of 8255? Explain. **[4]**

OR

Q6) a) Write an 8085 assembly language program to initialize port A as output port B as input port C_{upper} as output and port C_{Lower} as input for 8255 in mode 0. Then read port B and output the read byte's upper nibble on port C_{upper}. **[8]**

b) Explain mode 1 and 2 of 8255. **[8]**

P.T.O.

SECTION - II

Q7) a) What is ISR? Explain how it is executed with example. **[8]**

b) Give the importance of NMI. Compare it with hardware Interrupt. **[4]**

c) Explain Mode 4 of 8253 in detail. **[4]**

OR

Q8) a) Explain all ICW's and OCW's of 8259 PIC. **[8]**

b) Draw and explain functional block diagram of 8253. **[8]**

Q9) a) Explain 8237 DMA controller in detail. **[10]**

b) Explain RS 232C with all signals. **[8]**

OR

Q10)a) Explain asynchronous mode operation of 8251. **[8]**

b) What is DMA? Explain the concept with neat diagram. **[6]**

c) Compare synchronous and asynchronous mode of operation in 8251. **[4]**

Q11)a) Draw the architecture diagram of 8086. Explain in detail. **[8]**

b) List and explain the DOS Calls for displaying the character(s). **[4]**

c) List and detail any 4 BIOS calls for screen processing. **[4]**

OR

Q12)a) Give various addressing modes of 8086 with example. **[8]**

b) Write an 8086 assembly language program to add N 8-bit numbers. **[8]**

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

P1314

[3966]-52

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

COMPUTER GRAPHICS

(Sem. - V) (2005 Course) (315002)

Time : 3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

1) ***Section I & II to be written in separate answer book.***
2) ***Draw neat diagram wherever required.***

SECTION - I

Q1) a) Explain the following graphics primitives: **[8]**

i) Scanners. ii) Touch panels.

b) Write a pseudo code for the Bresenham's line drawing algorithm. **[9]**

OR

Q2) a) Explain the functioning of Shadow mask CRT devices. **[8]**

b) Derive and explain any one Circle drawing algorithm. **[9]**

Q3) a) Derive the transformation matrix for reflection about $y = x + 2$ line. Find the reflection of the point A(5, 5) about a line $y = x + 2$. **[8]**

b) Explain the Scan conversion algorithm used in polygon. **[9]**

OR

Q4) a) Explain the steps used in rotation about an arbitrary point. **[8]**

b) What is the need of homogenous coordinates. Give the homogenous representation of scaling, translation and rotation matrices. **[9]**

Q5) a) Discuss the structure of segment table and explain any two segment operation. **[8]**

b) Explain the cohen - sutherland algorithm. **[8]**

OR

Q6) Explain the following: **[16]**

a) 2D Clipping. b) Viewing Transformation.

c) Raster techniques. d) Generalized Clipping.

P.T.O.

SECTION - II

Q7) a) Derive the matrix form for the geometric transformations in 3D graphics for the following operations. **[9]**

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

b) Differentiate between parallel and perspective projections. **[8]**

OR

Q8) a) Derive a transformation matrix for perspective projection. **[8]**

b) Explain with neat diagram, how will you represent a point in 3D graphics. **[4]**

c) Explain with example 3D viewing transformation. **[5]**

Q9) a) Explain the Warnock's algorithm in detail. **[9]**

b) Discuss about the characteristics of the following illumination parameters. **[8]**

i) Diffuse reflection. ii) Specular reflection.

OR

Q10)a) Explain Z - buffer algorithm. **[8]**

b) Write a short note on: **[9]**

i) Transparency. ii) Shadows. iii) Ray tracing.

Q11)a) Compare Bezier and B - spline curves. **[8]**

b) Discuss the procedural control methods of animation. What are the advantages of procedural control over full explicit control. **[8]**

OR

Q12)Discuss the following: **[16]**

a) Generation of fractal lines. b) Frame by frame animation.

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

P1315

[3966]-32

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

DATABASE MANAGEMENT SYSTEMS

(2005 Course) (215002) (Sem. - III)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in two separate answer 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 advantages of DBMS over file processing systems. **[8]**

b) Draw a neat diagram showing overall structure of a DBMS and explain each of its components. **[10]**

OR

Q2) a) What do you meant by Physical and Logical Data Independence? **[6]**

b) Draw a neat diagram showing three levels of data abstraction. Explain. **[8]**

c) What is a data model. List various data models. **[4]**

Q3) A DBMS for a bank is to be designed. The bank has several branches, customers, accounts and Loans. Identify entities and relationships, assuming realistic constraints. Draw an E-R diagram and explain. **[16]**

OR

Q4) a) For each of the following, explain the meaning with suitable example and write the notation used in E-R diagram. **[12]**

i) Derived Attribute. ii) Weak Entity Set.

iii) Specialization and Generalization. iv) Aggregation.

b) With suitable examples, explain Primary key, super key, alternate key and foreign key. **[4]**

P.T.O.

Q5) a) List various the SQL DDL data types. **[4]**

b) What are views? Explain. **[4]**

c) What is a schema diagram. Explain using suitable example. **[8]**

OR

Q6) a) List the CODD's rules for relational DBMS. **[8]**

b) What do you meant by Entity Integrity and Referential Integrity constraints? **[8]**

SECTION - II

Q7) a) What are Triggers? Differentiate between statement - level and row - level triggers using suitable examples. **[6]**

b) Write syntax for SQL 'Insert' and SQL 'Select' queries and explain. **[10]**

OR

Q8) Write notes on: **[16]**

a) ODBC. b) Embedded SQL.

c) SQL Built - in functions. d) Aggregate Functions.

Q9) a) What is database normalization? State its purpose. **[8]**

b) Write any relation schema in first normal form. Discuss various update anomalies associated with it. **[8]**

OR

*Q10)*a) With suitable examples, explain 3NF and BCNF. Which of them is a better (higher) normal form, why? **[10]**

b) Explain 'Functional Dependency' and 'Lossless Decomposition'. **[6]**

*Q11)*a) Explain in detail the 'ACID' properties. **[8]**

b) Compare conflict serializability with View serializability. **[10]**

OR

*Q12)*Explain w.r.t. Transaction management (any Three). **[18]**

a) Shadow Paging. b) Multi - version Concurrency schemes.

c) Two - phase locking. d) Deadlocks.

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

[3966] - 101

P1242

First Year M.C.A. (Engineering Faculty)

PROBLEM SOLVING & PROGRAMMING IN C

(Sem. - I) (2008 Pattern) (510901)

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.***
6) ***Steps of Hand running must be shown wherever output of the program is asked.***

SECTION - I

Q1) a) What constraints should be considered for efficiency of algorithms? **[5]**

b) Write an algorithm to display all the prime number below 100. **[6]**

OR

Q2) a) What is Flow Charts? Explain with example. **[5]**

b) Write an algorithm to display all the Fibonacci numbers below 50. **[6]**

Q3) a) Explain scope and life time of variable. **[6]**

b) Write a program to accept 2 numbers from user and display sum of all the odd numbers between them. **[6]**

OR

Q4) a) Explain various iterative statement in C. **[6]**

b) Write a program to calculate the sum of every 7^{th} numbers beginning with i = 5 (ie 5 + 12 + 19 ..... n). Accept the value of n from user. **[6]**

Q5) a) What is array? Explain the difference between the char and int array. **[6]**

b) Write a program to accept 10 numbers from user, store them into an array and display all the even numbers that are present at odd index. **[6]**

P.T.O.

OR

Q6) a) What is multi dimensional array? Explain 2-dimensional and 3- dimensional array with example. **[6]**

b) Write program to accept a string from user into an array and display all the vowels present in it. **[6]**

SECTION - II

Q7) a) What is pointer? What is role of pointer in function. **[5]**

b) Write a program to accept a number form user and calculate their factorial by using recursive function. **[6]**

OR

Q8) a) Distinguish between parameter techniques a call by value and call by reference with suitable example **[5]**

b) Write a program to accept 2 no. from user in the main(). Write a function to interchange their value, and display the resultant value in main(). **[6]**

Q9) a) What is user defined data type? Explain with suitable example. **[6]**

b) Write a program to accept the detail of 5 students (rollNo, Name, marks) and display them in sorted order according to their rollNo. **[6]**

OR

Q10) a) What is difference between array and structure? Explain with example. **[6]**

b) What is bit-wise operator? Explain 2 bit-wise shift operators with complete example. **[6]**

Q11) a) Explain fgetc() and fputc() functions with example. **[6]**

b) Write a program to read the contents of a text file and copy them into another text file in upper case. **[6]**

OR

Q12) a) Differentiate between low level & high level I/O. **[6]**

b) Write a program to read the content of a text file and display the number of words, vowels and consonants present in it. **[6]**

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Total No. of Questions : 12] **[Total No. of Pages : 5**

P1243

[3966] - 102
F.Y. M.C.A. (Engineering Faculty)
DISCRETE MATHEMATICS
(Sem. - I) (2008 Course) (510902)

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) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Prove by mathematical induction for $n \geq 1$ **[5]**

$$1.2 + 2.3 + 3.4 + ... + n(n+1) = \frac{n(n+1)(n+2)}{3}.$$

b) It was found that in FY out of 80 students, 50 know 'c' Language 55 know "Java" and 25 know "COBOL", while 8 did not know any Language, find **[6]**

i) How many know all 3 languages?

ii) How many know exactly 2 languages?

OR

Q2) a) Prove the following using venn diagram **[5]**

i) $A \cap B \oplus C = (A \cap B) \oplus (A \cap C)$

ii) $(A - B) - C = A - (B \cup C)$

b) Obtain the conjunctive normal form and disjunctive normal form for: **[6]**

i) $P \leftrightarrow (\bar{p} \vee \bar{q})$

ii) $(p \vee \bar{q}) \rightarrow q$.

P.T.O.

Q3) a) Write the following statements in symbolic form using quantifiers.

i) All students have taken a course in communication skill.

ii) There is a girl student in the class who is also a sport person. **[6]**

b) Show that $R \rightarrow S$ can be derived from premises $P \rightarrow (Q \rightarrow S)$.

$\sim R \vee P$ and Q. **[5]**

OR

Q4) a) Show that : **[6]**

$((P \vee Q) \wedge 7(7P \wedge (7Q \vee 7R)) \vee (7P \wedge 7Q) \vee (7P \wedge 7R))$ is a tautology.

b) Show the following equivalence **[5]**

$P \rightarrow (Q \vee R) \Leftrightarrow (P \rightarrow Q) \vee (P \rightarrow R)$

Q5) a) In how many ways can we select a committee of 4 republicans, 3 democrats and 2 independents from a group of 10 distinct republicans, 12 distinct democrats & 4 distinct independents? **[5]**

b) A computer password consists of a letter of the alphabet followed by 3 or 4 digits. Find:

i) The total number of password that can be formed and.

ii) The number of passwords in which no digit repeats. **[5]**

c) In how many was can distribute 15 different books among Alice, Bob and Cheery so that Alice and Bob together receieve twice as many books as cheery. **[3]**

OR

Q6) a) Among 120 mathematics students at a college concerning French, German and Russian:

65 study French, 45 study German, 42 study Russian, 20 study french and German, 25 study French and Russian, 15 study German and Russian 8 study all three languages.

Find the number of students who study:

i) Atleast one language.

ii) Only one language. **[8]**

b) Define the terms with examples: **[5]**

i) Rule of sum and rule of product.

ii) Discrete and conditional probability.

SECTION - II

Q7) a) Use warshall's algorithm to find the transitive closure of the relation R = {(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)} on A = {1, 2, 3, 4}. **[5]**

b) Determine whether each of these functions from {a, b, c, d} to itself is one-to-one.

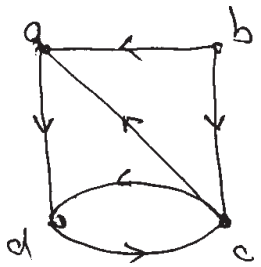
f(a) = b, f(b) = a, f(c) = c, f(d) = d

f(a) = b, f(b) = b, f(c) = d, f(d) = c

f(a) = d, f(b) = b, f(c) = c, f(d) = d. **[6]**

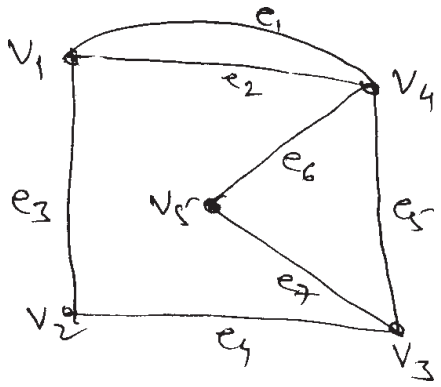
OR

Q8) a) Use Warshall's algorithm to find transitive closure of relation R whose directed graph is as follows. **[5]**



b) Draw the Hasse diagram representing the partial ordering {(a, b) | a divides b} on {1, 2, 3, 4, 6, 8, 12}. **[6]**

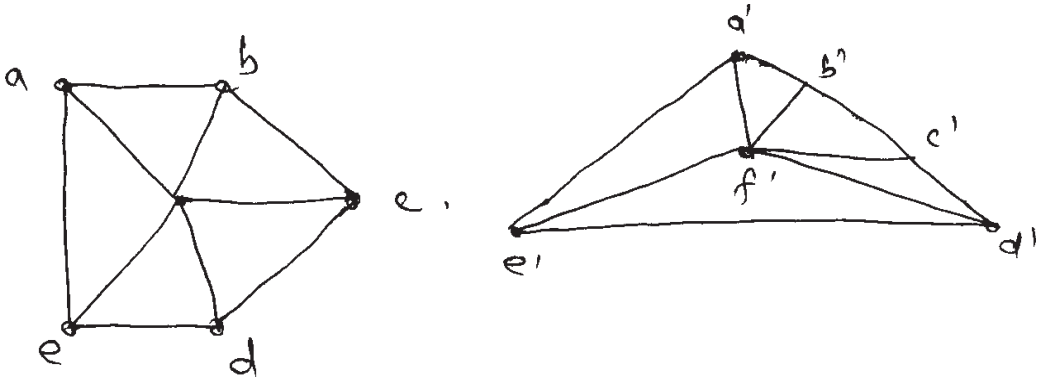
Q9) a) Determine the adjacency and incidence matrices of the following graph. **[6]**



b) Show that the maximum number of edges in a sample graph with n vertices is $\frac{n(n-1)}{2}$. **[5]**

OR

Q10) a) Show that the graphs G and H are isomorphic **[6]**



b) Draw the following graphs: **[5]**

i) Complete graphs with 4, 5 & 6 vertices.
ii) Simple graph with 3 and 4 vertices.

Q11) a) Define the following terms: **[6]**

i) Rooted tree

ii) M-ary tree

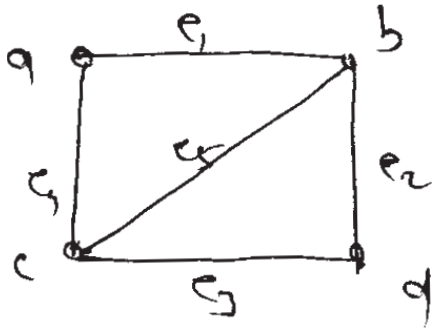
iii) Full binary tree

iv) Height of tree

v) Isomorphic tree

vi) Regular tree

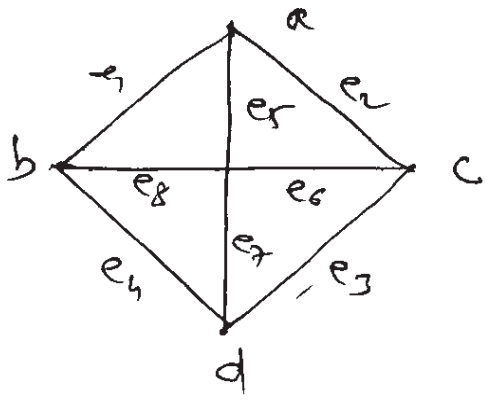
b) Find the all spanning trees for the graph given below: **[5]**

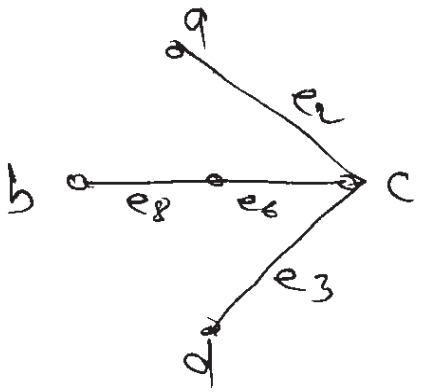


c) Draw all full binary trees with 7 nodes. **[2]**

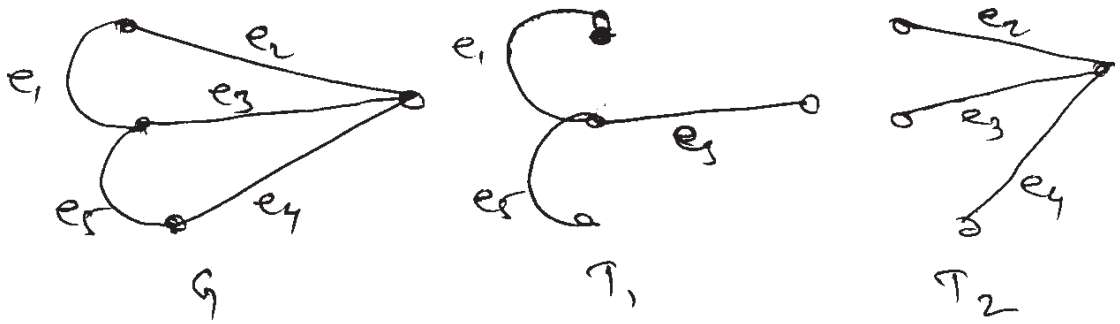
OR

Q12) a) Determine fundamental system of cutsets of the following graphs & its spanning tree. **[6]**





b) Draw fundamental cutsets and union of edge disjoint fundamental cutsets of graph G with respect to trees T_1 and T_2 shown in the figures. **[7]**



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Total No. of Questions : 6] **[Total No. of Pages : 5**

P1244

[3966] - 104
F.Y. M.C.A. (Engineering Faculty)
PROBABILITY AND STATISTICS
(2008 Course) (510904) (Sem. - 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 statistical table and electronic pocket calculator is allowed.***

SECTION - I

Q1) a) Explain the terms with example: **[4]**

i) Probability of an event. ii) Mutually Exclusive events.

b) A bag contains 8 white & 3 red balls. If 2 balls are drawn at random without replacement, find the probability that **[4]**

i) Both are white ii) One of each colour.

c) The probability of occurrence of an event A is 0.7, the probability of non-occurrence of event B is 0.5 and that of at least one of A and B not occuring is 0.6. Find the probability that at least one of A and B occurs. **[4]**

OR

a) State the following: **[4]**

i) Axioms of probability. ii) Bayes' theorem.

b) There are three identical boxes. The first box contains 2 gold coins, the second box contains 1 gold and 1 silver coin and third box contains 2 silver coins. A box is selected at random and one coin is taken out of it. It is found to be a gold coin. What is the probability that the other coin in the box is also a gold coin? **[4]**

c) How many different signals, each consisting of 9 flags hung in a line, can be made from a set of 4 white flags, 3 red flags and 2 blue flags if all flags of the same colour are identical? **[4]**

P.T.O.

Q2) a) Define each of the following: **[4]**

i) Discrete Random variable.

ii) Probability Mass Function of a Discrete Random Variable.

iii) Mean of a Discrete Random variable.

iv) Distribution function of a Discrete Random Variable.

b) The probability that a bomb will hit a target is 0.8. Find the probability that out of 10 bombs dropped, exactly 4 will miss the target. **[4]**

c) The number of monthly breakdowns of a computer is random variable having poission distribution with parameter $\lambda = 1.8$. Find the probability that this computer will function for a month. **[4]**

i) Without a breakdown ii) With only one breakdown.

OR

a) Write p.m.f., mean, variance and real life situation where this distribution is used for the following distributions. **[4]**

i) Poission distribution. ii) Geometric distribution.

b) A bag contains 20 balls of which 15 are of red colour and 5 of black colour. A random sample without replacement of 5 balls is taken. Find the probability that the sample contains 2 black balls. **[4]**

c) Suppose that 30% of the items taken from the end of a production line are defective. If the items taken from the line are checked until 6 defective items are found, what is the probability that 12 items are examined? **[4]**

Q3) a) State the important properties of normal distribution.

The annual rainfall (in inches) in a certain region is normally distributed with mean = 40 and standard deviation = 4. What is the probability that in the current year it will have rainfall of 50 inches or more? **[5]**

b) A candy company distributes boxes of chocolates with a mixture of creams, toffees and nuts coated in both light and dark chocolate. For a randomly selected box, let X and Y respectively be the proportions and suppose that the joint density function is

$$f(x,y) = \begin{cases} \frac{2}{5}(2x+3y), & 0 \le x \le 1, \quad 0 \le y \le 1, \\ 0 & \textit{elsewhere} \end{cases}$$

i) Verify the condition of definition i.e. $\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} f(x,y)\,dx\,dy = 1$

ii) Find P[(X, Y)$\in$ R} where R is the region

$$\left\{(x,y) \mid 0 < x < \frac{1}{2}, \frac{1}{4} < y < \frac{1}{2}\right\}$$ **[6]**

OR

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

i) Continuous Random Variable

ii) Cumulative Distribution function.

iii) Variance of a continuous random variable.

iv) Uniform Distribution.

v) Gamma Distribution.

b) Three balls are drawn at random from a box containing 2 white, 3 red and 4 black balls. If X denotes the number of white balls drawn and Y denotes the number of red balls drawn, find the joint probability distribution of (X, Y). **[6]**

SECTION - II

Q4) a) Write a short note on **[6]**

Point Estimation.

A sample of 50 students of the city is taken and their heights $x_1, x_2, ..., x_{50}$ are noted. Suppose that computations give

$$\sum_{i=1}^{50} x_i = 8000, \sum_{i=1}^{50} (x_i - \bar{x})^2 = 1225$$

Calculate

i) The estimation of population mean μ.

ii) The estimation of population S.D.σ.

iii) The estimation of standard error of $\bar{x}$.

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

i) Random sampling.

ii) Sample statistics.

iii) Location statistics.

OR

a) State central limit theorem (CLT).

A coin is tossed 200 times. Let p and q be the probabilities of getting head and tail respectively. Using CLT find the probability that head will appear more than 140 times and less than 150 times? **[6]**

b) A population consists of 3 balls numbered 1, 2, 3. Find the population mean and the population variance.

List the possible samples of size 2 that can be drawn from the population with replacement, find the sample means and construct the sampling distribution of the sample means. Also find the mean and variance of the sampling distribution of means. **[6]**

Q5) a) Explain the following terms: **[6]**

i) Statistical hypothesis. ii) Type I and Type II errors.

iii) Critical Region.

b) In a radio listeners survey 120 persons were interviewed and their opinions about preference to Hindi or English music were asked. The results are as follows. **[6]**

Type of music	Hindi	English
I	13	45
II	39	23

Examine whether the preference for music type is dependent on language. Use 5% level of significance $\left(\chi^2_{table} = 3.841\right)$.

OR

a) A machine is designed to produce insulating washers for electrical devices of average thickness of 0.025 cm. A random sample of 10 washers was found to have an average thickness of 0.028 cm with s.d. of 0.002 cm. Test whether the machine is working properly at 5% l. o. s (table value = 1.7). **[6]**

b) In a sample of 500 parts manufactured by a company the number of defective parts were found to be 42. The company however claimed that 6% of their product is defective. Is the claim valid? Use 5% l. o. s (table value = 1.96). **[6]**

Q6) a) Describe the χ^2 test as a test of goodness of fit. Write the steps. **[5]**

b) Ten pieces of cloth out of different rolls of equal length contained the following number of defects: 1, 3, 5, 0, 6, 0, 9, 4, 4, 3

Draw a control chart for the number of defects and state whether the process is in a state of statistical control. **[6]**

OR

a) What is acceptance sampling? What is its purpose and what are the conditions for its use? **[5]**

b) The following data shows the distribution of digits in the numbers chosen at random from telephone directory.

Digit	Frequency	Digit	Frequency
0	1026	5	933
1	1107	6	1107
2	997	7	972
3	966	8	964
4	1075	9	853

Test at 1% l. o. s, whether the digits may be taken to occur equally frequently in the directory. $\left(\chi^2_{table} = 21.666\right)$. **[6]**

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

P1245

[3966] - 105
F. Y. M.C.A. (Engineering Faculty)
MANAGEMENT SCIENCE
(2008 Pattern) (511905) (Sem. - I)

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

Instructions to the candidates:

1) ***Answer any three questions from each section.***
2) ***Answer three questions from section I and three questions from section II.***
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) ***Your answers will be valued as a whole.***
7) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
8) ***Assume suitable data, if necessary.***

SECTION - I

UNIT - I

Q1) a) Define management. Explain different functions of management. **[6]**

b) What are the different steps involved in setting up MBO? **[6]**

OR

Q2) a) What is the contribution of Henry Feyol to the management science? **[6]**

b) Explain different advantages the industry will have by applying MBO. **[6]**

UNIT - II

Q3) a) Explain elasticity of supply with different graphs. **[6]**

b) What are the different functions of chamber of commerce? Give at least five names of chamber of commerce in India. **[6]**

OR

Q4) a) Explain importance of economics for managers. **[6]**

b) What do you understand by term "E commerce"? **[6]**

P.T.O.

UNIT - III

Q5) a) What are the different factors that affect forms of business organisation. **[6]**

b) Draw block diagram & explain line, staff & functional organisation. **[5]**

OR

Q6) a) Explain the difference between formal & informal organisation. **[6]**

b) Explain proprietor ship (Individual) in brief with its merits & demerits. **[5]**

SECTION - II

UNIT - IV

Q7) a) What are the different factors affecting manpower planning? **[6]**

b) Explain "Job Evaluation" in brief. **[6]**

OR

Q8) a) Explain Herzberg two factor hygiene theory of motivation. **[6]**

b) What are the barriers in communication. **[6]**

UNIT - V

Q9) a) Explain how accidents in industries are prevented? **[6]**

b) Explain any three industrial acts you know? **[6]**

OR

Q10) a) Explain minimum wage act in brief. **[6]**

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

UNIT - VI

Q11) a) Explain Role of member, Leader, facilitator and management (Steering Committee) in QC. (Quality Circles). **[6]**

b) Explain TQC - Total Quality Control in brief. **[5]**

OR

Q12) a) Write seven steps suggested by Juran to improve quality. **[6]**

b) Explain in brief history of ISO 9000 series. **[5]**

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Total No. of Questions : 12] [Total No. of Pages : 4

P1246

[3966] - 201

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

OBJECT ORIENTED PROGRAMMING

(2008 Course) (510909) (Sem. - II)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate books.***
2) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Differentiate between procedural and object oriented programming. **[5]**

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

i) Generic Programming

ii) Modular Programming

iii) Classes and Objects

OR

Q2) a) Discuss the need for object oriented programming. **[4]**

b) Explain any four fundamental features of object oriented Programming giving example. **[7]**

Q3) a) Answer in short. **[6]**

i) Under what condition an inline function ceases to be an inline function and acts as any other function.

ii) What is the difference between pointer variable and reference variable in C++ ?

iii) Differentiate between a class and a struct.

b) What is function overloading? Explain with example. **[6]**

OR

P.T.O.

Q4) a) What are 'new' and 'delete' operators? Write a program in C++ to explain the same. **[6]**

b) Answer in short. **[6]**

i) Differentiate between **new** and **delete** operator

ii) Can inline functions be nested?

iii) What are the advantages of *cout* and *cin* over printf() and scanf()?

Q5) Answer in short or give the output as applicable. **[12]**

a) Using pointers to call a function is called as

b)

```
class base
{
 public:
    int bval;
   base(){ bval=0;}
};
class deri:public base
      {
      public:
      int dval;
      deri(){ dval=l;}
      };
void SomeFunc(base *arr,int size)
{
for(int i=0; i‹size; i++,arr++)
      cout«arr- › bval;
cout«endl;
}
int main()
{
base BaseArr[5];
SomeFunc(BaseArr,5);
deri DeriArr[5];
SomeFunc(DeriArr,5);
}
```

c)
```
class base
{     public:
void baseFun(){ cout <<"from base"<<endl;}
};
class deri:public base
{     public:
        void baseFun(){ cout<< "from derived"<<endl;}
};
void SomeFunc(base *baseObj) {baseObj->baseFun(); }
int main()
{     base baseObject;
SomeFunc(&baseObject);
deri deriObject;
SomeFunc( &deriObject);
}
```

OR

Q6) a) Write a class 'Point' with x and y coordinates as data members. Derive two classes 'Line' and 'Circle' from 'Point' with appropriate data members. Derive a class' Triangle' from class 'Line'. Implement read () and draw () member functions for all the above classes. **[8]**

b) Explain various access specifiers. **[4]**

SECTION - II

Q7) a) What is the need for operator overloading? Discuss the rules for operator overloading. **[6]**

b) Consider the following statement S3 = S1 + S2 ; where S1, S2 & S3 are objects of the class String. Discuss how does the compiler interpret the '+' operator-overloading function when that overloaded function is declared as a member function and as a friend functions. (Function code is not expected) **[5]**

OR

Q8) a) List down the type conversion functions and explain anyone with suitable example. **[6]**

b) Write a program to overload a '-' minus operator as a unary operator to negate the element. **[5]**

Q9) a) Explain multiple inheritance and the problem of ambiguity with an example. **[6]**

b) Explain virtual functions with an example. **[6]**

OR

Q10) a) What are pure virtual functions? Explain with a suitable example. **[8]**

b) Discuss container classes. **[4]**

Q11) a) Write a note on I/O manipulators. **[5]**

b) Write a 'C++' Program to maintain the employee details using files. Implement functions to add a new employee, delete a record of an employee, modify an employee detail and display the details of an employee. **[7]**

OR

Q12) Write short notes on any three: **[12]**

a) Throw..... try..... catch block

b) I/O Manipulators

c) File Operations

d) File Modes.

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Total No. of Questions : 6] **[Total No. of Pages : 5**

[3966] - 203

P1247

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

OPERATIONS RESEARCH

(510911) (2008 New Course) (Sem. - 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 indicate full marks.***
3) ***Use of electronic pocket calculator is allowed.***
4) ***Assume suitable data, if necessary.***
5) ***All questions are compulsory.***

SECTION - I

Q1) a) Solve the following LPP by the Simplex method: **[8]**

Maximize

$$Z = 10x_1 + 15x_2 + 20x_3$$

Subject to

$$2x_1 + 4x_2 + 6x_3 \leq 24$$

$$3x_1 + 9x_2 + 6x_3 \leq 30$$

$$x_1, x_2, x_3 \geq 0$$

b) Explain the following terms in LPP. **[4]**

i) Feasible solution

ii) Optimum solution

iii) Slack variable

iv) Objective function

OR

a) A television company operates two assembly lines, line I and line II. Each line is used to assemble the components of three types of televisions: Colour, Standard and Economy. The expected daily production on each line is as follows:

P.T.O.

TV Model	Line I	Line II
Colour	3	1
Standard	I	I
Economy	2	6

The daily running costs for two lines average Rs. 6,000 for line I and Rs. 4,000 for line II. It is given that the company must produce at least 24 colours, 16 standard and 48 economy TV sets for which an order is pending. Formulate the above problem as LPP to minimize the total cost and solve it by graphical method. **[8]**

b) Give general structure of LP model. Write two advantages and two limitations of LP model. **[4]**

Q2) a) For the following transportation problem find IBFS by North-West corner method and find its optimum solution. **[8]**

	D_1	D_2	D_3	Availability
S_1	3	5	7	30
S_2	4	2	6	25
S_3	7	8	5	35
Demand	40	30	20	

b) What is degeneracy in Transportation problem? **[3]**

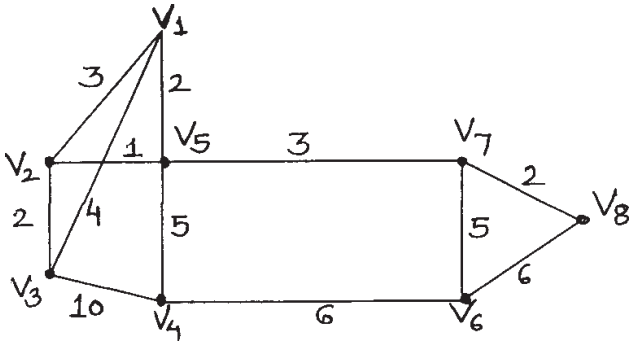
OR

a) Explain the steps used in the 'Hungarian Assignment Method'. Why Assignment problem is regarded as a special case of transportation problem? **[5]**

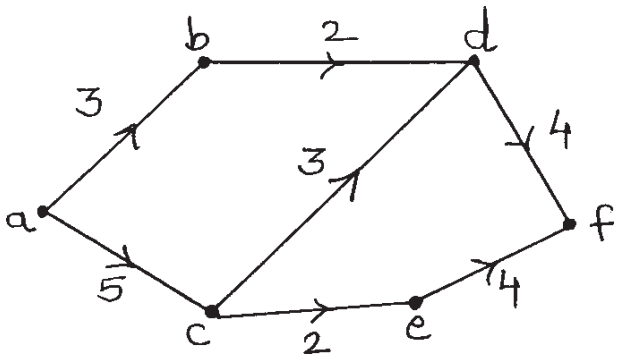
b) Solve the following assignment problem for maximization. **[6]**

	I	II	III	IV	V
A	32	38	40	28	40
B	40	24	28	21	36
C	41	27	33	30	37
D	22	38	41	36	36
E	29	33	40	35	39

Q3) a) Using Kruskal's algorithm finds the minimum weighted spanning tree in the following graph G. **[6]**



b) Capacity of each edge is given. Find maximum flow from 'a' to 'f' in the network. What is the value of maximum flow? **[6]**



OR

a) Compare PERT and CPM. **[5]**

b) A small project is composed of activities whose time estimates are listed in the table below: activities are identified by their beginning (i) and ending (j) node numbers. **[7]**

i) Draw the project network

ii) Find the expected duration and variance for each activity. What is the expected project length?

Activity i - j	Estimated duration (weeks)		
	Optimistic	Most Likely	Pessimistic
1 - 2	1	1	7
1 - 3	1	4	7
1 - 4	2	2	8
2 - 5	1	1	1
3 - 5	2	5	14
4 - 6	2	5	8
5 - 6	3	6	15

SECTION - II

Q4) a) Use branch and bound technique to solve the following integer programming problem: **[6]**

Maximize $z = 7x_1 + 9x_2$

subject to

$$-x_1 + 3x_2 \leq 6$$
$$7x_1 + x_2 \leq 35$$
$$x_1 \geq 0, x_2 \leq 7$$
$$x_1, x_2 \text{ integers}$$

b) What is Goal Programming? Explain two methods to solve Goal programming problem. **[6]**

OR

a) List various forecasting techniques. Explain anyone technique in detail. **[6]**

b) Consider the following two time series: **[6]**

Period	1	2	3	4	5	6	7	8	9	10
Set A	10	12	9	10	11	20	19	23	20	21
Set B	15	13	15	16	16	14	16	15	17	16

i) Compute 3 & 5 period moving average for time series A & B and find the respective forecasts for the eleventh period.

ii) Which one of the above averaging period prove the most accurate forecasts for each time series.

Q5) a) What is decision making under risk? Explain expected value criterion. **[4]**

b) Explain and illustrate the following principles of decision making: **[8]**

i) Laplace ii) Hurwicz

iii) Regret iv) Maximin

OR

a) Explain Decision making under certainty using AHP. **[5]**

b) The manager of a flower shop promises its customers delivery within four hours on all flower orders. All followers are purchased on the previous day and delivered to Parker by 8.00 am the next morning. The daily demand for roses is as follows.

Dozens of roses:	70	80	90	100
Probability:	0.1	0.2	0.4	0.3

The manager purchases roses for Rs. 10 per dozens for roses and sells them for Rs. 30. All unsold roses are donated to a local hospital. How many dozens of roses should Parker order each evening to maximize its profits? What is the optimum expected profit? **[7]**

Q6) a) List **[6]**

i) Advantages

ii) Applications

iii) Limitations of simulation

b) In a mixed congruence method of generation of random numbers, a random number (r + 1) is given by: **[5]**

$r_{i+1} = (ar_i + b)$ (modulo m)

Where

a, b and m are constants.

Generate 5 random numbers, taking $r_0 = 1$, a = 16, b = 18, m = 23.

OR

a) Excel bakery maintains sufficient stock of its 'Ever delight' cake and the daily demand is as follows: **[6]**

Daily Demand	0	10	20	30	40	50	60	70	80
Probability	0.02	0.16	0.23	0.15	0.13	0.12	0.10	0.06	0.03

Using the following, sequence of random numbers simulates the demand for the next 12 days.

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

b) Explain in brief Generation of Random numbers. **[5]**

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

[3966] - 205

P1248

First Year M.C.A. (Engineering Faculty)

MANAGEMENT INFORMATION SYSTEMS

(Sem. - II) (2008 Course) (510913)

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) ***From section I, Answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6).***
4) ***From section II, Answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***
5) ***Neat diagrams must be drawn wherever necessary.***
6) ***Make suitable assumptions wherever appropriate and relevant.***

SECTION - I

Q1) a) Explain the various types of information systems. **[6]**

b) Explain the broader classes of strategies. **[6]**

OR

Q2) a) What are the major Components of information systems? **[6]**

b) Define system with a block diagram and differentiate between an open-loop and a close-loop system. **[6]**

Q3) a) Explain in detail the concept of Enterprise Application Integration. **[6]**

b) Explain cross-functional enterprise systems. What are its benefits? **[6]**

OR

Q4) a) Explain the applications of Management Information Systems (MIS) in: **[6]**

i) Marketing management. ii) Banking sector.

b) What is change management? Explain the implementation challenges in change management. **[6]**

Q5) a) What is Business Process Outsourcing (BPO)? What are the challenges in Business Process Outsourcing (BPO) management? **[6]**

b) Define Enterprise Management System (EMS). What are its components? **[5]**

P.T.O.

OR

Q6) a) What are the basic features of Enterprise Resource Planning (ERP) systems? Describe standard Enterprise Resource Planning (ERP) modules. **[6]**

b) What is call center? What are the different activities performed in call centers? **[5]**

SECTION - II

Q7) a) Write a short note on Electronic fund Transfer. **[6]**

b) What are the three phases of Customer Relationship Management? Explain the trends in Customer Relationship Management. **[6]**

OR

Q8) a) Explain the concept of electronic payment processes. **[6]**

b) Explain the role of Supply Chain Management (SCM) and give its benefits. **[6]**

Q9) a) What is Data Warehouse? Explain the architecture of Data Warehousing. **[6]**

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

i) Knowledge based Expert systems

ii) Geographical Information Systems (GIS)

OR

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

b) What are the benefits and risks of decision support system? **[6]**

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

b) Explain biometric security. List the different hacking techniques. **[5]**

OR

Q12) a) What are the major business drivers for global Information Technology (IT)? Explain. **[6]**

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

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1249

[3966] - 301
S.Y.M.C.A. (Engineering Faculty)
OPERATING SYSTEM
(2008 Course) (610901) (Sem. - III)

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) Explain the design of two pass assembler with neat diagram and example. **[8]**

b) Give the difference between literal and symbol, how it is used in assembler? **[4]**

OR

Q2) a) What do you mean Language processing? State various activities and development tools. **[6]**

b) Draw neat flow chart for macro processor to handle nested macro definitions. **[6]**

Q3) a) List various phases of compiler. Explain optimization in detail with example. **[6]**

b) What are the databases that are required during Pass - I and Pass - II of direct linking loader? Explain. **[6]**

OR

Q4) a) Justify - "We can enhance the compiler portability by separating the analysis phase of compiler into lexical analysis and parsing." **[6]**

b) What is an object module? What information does the object module contain? **[6]**

P.T.O.

Q5) a) Enlist the services provided by operating system. Discuss the hierarchical structure to design operating system. **[6]**

b) Write algorithm for first come first serve job scheduling. **[5]**

OR

Q6) a) Consider following set of jobs: **[7]**

Job	Arrival Time	Run Time
1	10	2
2	10	2
3	11	1
4	13	3
5	14	1

Determine finish time and turn around time using following methods.

i) Shortest job first (assume quantum = 0.5)

ii) Round Robin.

b) Comment on "one can view the operating system as resourse allocator." **[4]**

SECTION - II

Q7) a) Explain address translation mechanism in paging. **[6]**

b) Explain address allocation and page replacement in virtual memory management. **[6]**

OR

Q8) a) Write short note with respect to contiguous memory management scheme. **[8]**

i) Protection.

ii) Sharing.

iii) Wasted memory.

iv) Access time (speed).

b) What is preferencing? How is it different from demand fetching? **[4]**

Q9) a) Why I/O buffering is needed? State and explain different approaches of I/O buffering. **[8]**

b) Explain - programmed I/O and Interrupt driven I/O. **[4]**

OR

Q10) a) List the contents of file directory entry. **[6]**

b) Explain two level, tree structured and acyclic graph directories. **[6]**

Q11) a) Write a short note on: **[8]**

i) Linux file system.

ii) Kernel data structure.

b) What are different process states? **[3]**

OR

Q12) a) Explain Inode assignment to new file. **[6]**

b) List process management system calls and explain any two. **[5]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1250

[3966]-303

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

FINANCIAL ACCOUNTING AND MANAGEMENT

(Sem. - III) (2008 Course) (610903)

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

UNIT - I

Q1) a) What are components of financial statement? Explain in brief. **[6]**

b) Record the following transactions, in a journal : **[6]**

Transactions

- April 25, 1997 opened a hardware shop with Rs. 50,000/-
- April 27, 1997 brought grinding wheels worth Rs. 30,000/-
- April 29, 1997 sold grinding wheels to 'A' Rs. 20,000/-
- May 2, 1997 commission paid Rs. 250/-
- May 4, 1997 paid to bank Rs. 5,000/-
- May 11, 1997 bought welding electrodes Rs. 5,000/-

OR

Q2) a) What are objectives of financial statements? **[6]**

b) Shyam starts a business with a capital of Rs. 20,000/- on January 1, 1980. He purchased furniture for cash for Rs. 5,000/- on January 5, 1980. He paid rent for business premises for Rs. 2,000/- on January 10, 1980. He purchased goods on credit for Rs. 2,000/- from Suresh on January 20, 1980. Record the above transactions in a Journal. **[6]**

P.T.O.

UNIT - II

Q3) a) What are different overhead costs? Explain in brief. **[4]**

b) What are limitations of Ratio Analysis? **[4]**

c) The Indian Steel Corporation Ltd. wants to achieve its Rs. 30,000/- of planned profit by increasing its selling price from Rs. 1.75 per unit to Rs. 2.25 per unit, and reduce its variable cost from Rs. 1 per unit to Rs. 0.75. What will be its break-even point and how? **[4]**

OR

Q4) a) Explain classification of Ratio Analysis. **[4]**

b) Briefly explain the importance of marginal costing. **[4]**

c) The Indian Steel Wires Pvt. Ltd. wants to make a profit of Rs. 30,000/- by reducing its variable costs from Rs. 1 per unit to Rs. 0.75 per unit. It keeps its fixed costs and selling price constant. What is its break-even point now and how much it should produce in order to earn its planned profit. **[4]**

UNIT - III

Q5) a) Elaborate different factors affecting the need of working capital in any enterprise. **[6]**

b) Explain any one method of making working capital forecasts. **[5]**

OR

Q6) a) What is the importance of management of working capital? Explain in detail. **[6]**

b) Explain in detail the estimation method of the amount of different components of working capital. **[5]**

SECTION - II
UNIT - IV

Q7) Explain any three with example : **[12]**

a) Net Present Value (NPV).

b) Internal Rate of Return (IRR).

c) Average Rate of Return (ARR).

d) Payback period.

OR

Q8) Explain the complete capital Budgeting process in detail. **[12]**

UNIT - V

Q9) a) What is cost of capital? Why should a financial manager know the cost of capital of his firm? **[6]**

b) A company has issued 20 - year bonds of Rs. 1,000/- face value at Rs. 900/- each. Rate of interest is 10 percent and the tax rate for the company is 52 percent. The company has taxable profit. What is the cost of bond capital. **[6]**

OR

Q10)a) What are the various approaches to the estimation of overall cost of capital? Explain. **[6]**

b) A shareholder purchased a share for Rs. 100. For 10 years he received dividend at the rate of 10% per year. At the end of 10 years, he sold his share for Rs. 200. What is his rate of return. **[6]**

UNIT - VI

Q11)Explain different components of Tally 9.0, which is useful for financial management in any enterprise. **[11]**

OR

Q12)Explain the features or characteristics of any financial software / tool, which should be useful or important to finance manager of any organisation.**[11]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1251

[3966]-305
S.Y. M.C.A. (Engineering Faculty)
PRINCIPLES OF MULTIMEDIA
(Sem. - III) (2008 Course) (611905)

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

Instructions to the candidates:

1) ***Answers any 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) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain Goals & Objectives of Multimedia? Explain use of multimedia in GUI development of web applications. **[6]**

b) What is Authoring? Explain features of any one authoring tool used in Multimedia. **[6]**

OR

Q2) a) Explain any two hypermedia document architecture model. **[6]**

b) Explain the features of MM Databases. List any two MM Databases. **[6]**

Q3) a) Explain GIF file format in detail. **[6]**

b) A GIF image occupies a rectangular are of A inch by B inch on a monitor is C dpi. What is the file size of the image in KB? The dimensions of the image is A inch* B inch. **[5]**

OR

Q4) a) What is image enhancement? How it is achieved by point processing? **[6]**

b) Compare RLE, shannon Fano and Arithmetic coding. **[5]**

P.T.O.

Q5) a) Discuss the following with suitable diagrams/examples in context to digital audio : **[6]**

i) Sampling rate.

ii) Quantization error.

iii) S-to-N Ratio.

b) Differentiate : **[6]**

i) MIDI and digital audio.

ii) Channel messages and system messages in MIDI.

OR

Q6) a) How audio is captured? How do you define quality of audio data? **[6]**

b) Explain WAV file format in details. **[6]**

SECTION - II

Q7) a) What do you mean by digitization of video? Explain any one video recording system. **[6]**

b) Explain various DVD formats. **[5]**

OR

Q8) a) Show how you would use Huffman coding to encode the following set of tokens : **[6]**

"AAABDCEFBBAADCDF"

b) Explain the various Video broadcast Standards. **[5]**

Q9) a) What are the various display devices for virtual reality? Explain HMD. **[4]**

b) Explain the features of VRML 2.0 using examples. Write pseudo code for virtual Garden. **[8]**

OR

Q10)a) What are the elementary tools for the virtual reality? Explain any two of them in details. **[4]**

b) Explain the features of VRML 2.0 using examples. Write pseudo code for coffee house. **[8]**

Q11)a) What is 2D animation? Explain different techniques of animation. **[6]**

b) What is morphing? Explain how animations are use in entrainment industry. **[6]**

OR

Q12)a) Explain the principles of animation with an example. **[6]**

b) Compare client pull and server-push animation. **[6]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1252

[3966] - 401
S.Y. M.C.A. (Engineering Faculty)
SOFTWARE ENGINEERING
(Sem. - IV) (2008 Course) (610909)

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) State the relationship between process and product. **[6]**

b) Describe the significance of CMMI process model. **[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 three domains are considered during analysis modeling. **[6]**

b) Specify the notations used in Activity Diagram. Draw a activity diagram for the scenario : Withdraw the amount from ATM. **[6]**

P.T.O.

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]**

OR

Q6) a) Consider the system : Online digital Library. Draw a complete use case diagram for the given system. **[5]**

b) Draw level 0, level 1 and level 2 Data flow diagrams for the above given system. **[6]**

SECTION - II

Q7) a) Explain User Interface analysis and design process. **[6]**

b) What is interface? What is the role of interface in a class-based component level design? **[6]**

OR

Q8) a) Explain the following architectural styles with merits/demerits : **[6]**

i) Data - centered Architecture.

ii) Data - flow architecture.

b) What is the relationship between modularity and functional independence? **[6]**

Q9) a) What is the objective of Black-Box testing? Compare it with white box testing? **[6]**

b) What are strategic issues in software testing? **[6]**

OR

Q10)a) Explain basis path testing with an example. **[6]**

b) Explain the significance of Alpha and Beta testing. **[6]**

Q11)a) Explain McCall's quality factors that affect the software quality. **[6]**

b) Explain Goal Oriented measurement method (GQM papradigm) for identifying meaningful metrics for any part of software process. **[5]**

OR

Q12)a) Explain in detail function - point metric. **[6]**

b) What characteristics can be measured when we assess an object oriented design. **[5]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1253

[3966]-403
S.Y. M.C.A. (Engineering Faculty)
OBJECT ORIENTED ANALYSIS & DESIGN
(Sem. - IV) (2008 Pattern) (610911)

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) Explain new features of UML 2.0. **[6]**

b) Describe the CORBA architecture. **[5]**

OR

Q2) a) Explain Object Oriented features with examples. **[6]**

b) What is XML and how it is useful in XMI. **[5]**

Q3) a) Categorize UML diagrams as structural and behavioral diagrams. Explain the need of each diagram in brief. **[6]**

b) Explain any three Extensibility mechanisms with examples. **[6]**

OR

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

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

Q5) a) An Event Management System for a college is supposed to perform following functionalities : **[8]**

i) Finance Management.
ii) Volunteer Management.
iii) Schedule Management / Sub events management.
iv) Participant's management etc.

Draw a Use case diagram by making certain assumptions for extension and inclusion of use cases.

b) Explain different relationships in UML class diagram. **[4]**

P.T.O.

OR

Q6) a) Draw class diagram for the system in Q.5 a. **[8]**

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

i) Interface.

ii) Template.

SECTION - II

Q7) a) Compare sequence and communication diagram based on : **[6]**

i) Visual emphasis.

ii) Freedom to represent objects information.

iii) The way Sequencing is shown.

iv) The way iteration / looping is shown.

b) Which are the different Interaction Diagrams? Give an example for each diagram. **[5]**

OR

Q8) a) Explain use of frame and lifeline in UML sequence diagram. **[6]**

b) Compare use of ALT and OPTION frames in UML sequence diagram. Illustrate with suitable examples. **[5]**

Q9) a) Draw an activity diagram to explain the way one would write a letter and Print it using standard word processing software like MS-WORD. Show Activities which are optional, which can be done alternatively etc. When one Writes a letter (for example one may or may not spell check). **[8]**

b) Explain concepts and notation through simple examples for following Terms in UML. **[4]**

i) Action.

ii) Concurrent states.

OR

Q10)a) Draw an activity diagram by considering different scenario for Washing machine. **[8]**

b) What are the common uses of timing diagram? **[4]**

Q11)a) How deployment diagram are useful to model fully distributed and client Server system. **[6]**

b) Explain forward and reverse engineering for component diagram. **[6]**

OR

Q12)a) Describe the commercial application of UML. **[6]**

b) List and explain notations used in deployment diagram. **[6]**

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

P1254

[3966]-404
S.Y. M.C.A. (Engineering Faculty)
JAVA PROGRAMMING
(2008 Course) (Sem. - IV) (610912)

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 whenever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What is difference between vector and array? Explain element At( ) and Add element( ) method. **[6]**

b) What is Package? How they are created? Explain with examples. **[5]**

OR

Q2) a) Explain Hash table? Also explain methods of Hash table. **[6]**

b) Explain life cycle of thread along with diagram. **[5]**

Q3) a) Explain with example various layout managers used in JAVA. **[6]**

b) What are interface available in Java? **[5]**

OR

Q4) a) Give the use of following swing control. **[6]**

i) Jtabbed pane. ii) Jtable.

iii) Jtree. iv) Jframe.

b) What are different event classes in java? **[5]**

Q5) a) List various method in Applet class? Explain in detail all the methods. **[7]**

b) What is applet? Write a program using applet to draw rectangle which is filled with red colors. **[6]**

OR

P.T.O.

Q6) a) Write a program to create an applet that will display the name, family, size and style of currently selected font. **[7]**

b) What is the difference between application and applet? Give the ways to view an applet? **[6]**

SECTION - II

Q7) a) What is ObjectOutputStream and ObjectInputStream class? Explain any five methods of these two classes. **[6]**

b) Explain the concept of creation of Zip file stream in Java. **[5]**

OR

Q8) a) What is string tokenizer class? Explain in detail. **[6]**

b) What is exception handling? What are different types of exceptions which can be handled during input? **[5]**

Q9) a) Explain two-tier and three-tier architecture. **[6]**

b) Classify JDBC drivers types according to their architecture. **[5]**

OR

Q10)a) Explain prepared statement in detail. **[6]**

b) Write a program to establish a connection with a database using JDBC. **[5]**

Q11)a) What are the difference between TCP and UDP? Explain with header format. Methods in both the classes. **[7]**

b) Write a program (both client and server side) to establish a connection between client and server. **[6]**

OR

Q12)a) Explain the use of InetAddress class and its methods. **[7]**

b) Explain concept of proxy server and firewall. **[6]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1255

[3966]-502
T.Y. M.C.A. (Engineering Faculty)
COMPUTER GRAPHICS
(Sem. - V) (2008 Pattern) (710902) (New)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain the following graphics primitives. **[4]**

i) Tablets.

ii) Touch panels.

b) Explain Bresenham's line drawing algorithm and compare the advantages of it over DDA algorithm. **[8]**

OR

Q2) a) Explain the following : **[4]**

i) Scanner.

ii) Raster scan display.

b) Derive the expression for decision parameter used in Bresenham's circle algorithm. Also explain the Bresenham's circle algorithm. **[8]**

Q3) a) Explain scan-line fill algorithm for polygon. and distinguish between seed filling and scan filling algorithm. **[6]**

b) Prove that shear transformations can be expressed in terms of scaling and rotation in clockwise direction. **[6]**

OR

P.T.O.

Q4) a) Show that the transformation of reflection about a line y = x is equivalent to reflection relative to X-axis followed by anticlockwise rotation of 90 degree. **[8]**

b) Enumerate the advantages and disadvantages of flood fill and boundary filling algorithms. **[4]**

Q5) a) What is a segment? Explain creation and deletion of segment. **[5]**

b) Apply the Cohen-Sutherland line clipping algorithm to clip the line P_1P_2 with $P_1(10, 30)$ and $P_2(80, 90)$ against the window ABCD with A(20, 20) B(90, 20) C(90, 70) D(20, 70). **[6]**

OR

Q6) a) Discuss the segment table structure and explain the various data structure used to implement segment table. **[6]**

b) Explain 2D Midpoint subdivision algorithm for line clipping. **[5]**

SECTION - II

Q7) a) Explain : **[6]**

i) Parallel projection.

ii) Perspective projection.

b) Obtain the 3D transformation matrix for rotation about an arbitrary axis. **[6]**

OR

Q8) a) Describe 3D viewing parameter. **[6]**

b) Explain 3-dimensional transformation matrices for : **[6]**

i) Translation.

ii) Scaling.

iii) Rotation about X, Y, Z axis.

Q9) a) Explain binary space partition algorithm for hidden surfaces. **[6]**

b) Explain and differentiate between CMY and RGB color model. **[6]**

OR

Q10)a) Explain Painter's algorithm for hidden surface removal. Why is Painter's algorithm a priority algorithm. **[6]**

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

i) Ray tracing.

ii) Transparency.

Q11)a) What are the properties of Bezier curve? Describe the procedure to generate Bezier curve. **[6]**

b) Explain real time animation. **[5]**

OR

Q12)a) What is fractal dimension? Explain triadic curve in detail. **[6]**

b) Explain the methods for controlling animation. **[5]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1256

[3966]-503
T.Y. M.C.A. (Engineering Faculty)
ADVANCED DATABASES
(New) (2008 Course) (710903) (Sem. - 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) ***Assume suitable data, if necessary.***

SECTION - I

Q1) What is Query Processing? Explain in detail the steps involved in Query Processing. **[11]**

OR

Q2) a) Explain the following : **[8]**
   i) Materialized Evaluation.
   ii) Pipelined Evaluation.
   b) Explain in brief Double Buffering. **[3]**

Q3) a) Explain the different categories of server systems architectures. **[6]**
   b) Explain the different types of interconnection networks. **[6]**

OR

Q4) a) Explain the need for building a distributed Database system. **[6]**
   b) Explain the features of LAN and SAN. **[6]**

Q5) a) How does the concept of an object in object oriented model differ from the concept of an entity in E-R model? **[6]**

P.T.O.

b) A car rental company maintains a vehicle database for all vehicles in its fleet. For all vehicles, it includes the vehicle identification number, license number, manufacturer, model, date of purchase and color. Special data are included for certain types of vehicles. **[6]**

Trucks : Cargo capacity

Sports car : hoursepower, renter age requirement

Vans : number of passengers

Construct an SQL 1999 schema definition.

OR

Q6) Explain the different approaches used to make an object persistent while turning a language into Database programming language. **[12]**

SECTION - II

Q7) a) Explain showflake schema for the multidimensional databases in detail. **[8]**

b) While analyzing the data, it was found that many tuples have no recorded values for several attributes. Explain how this problem of missing values can be solved. **[4]**

OR

Q8) a) Explain star schema for the multidimensional databases in detail. **[8]**

b) Write short note on : **[4]**

Data cube.

Q9) a) Explain the following with suitable example : **[8]**

i) Data characterization.

ii) Data discrimination.

b) Write the k-means algorithm for partitioning. **[4]**

OR

Q10)a) Explain in detail classification and prediction. **[8]**

b) What is outlier analysis? **[4]**

Q11)a) How is retrieval effectiveness measured? **[5]**

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

i) Vector space.

ii) Web search precision.

iii) Web search recall.

OR

Q12)a) What are the different techniques for document indexing? Explain any one. **[5]**

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

i) Web crawler.

ii) Synonyms.

iii) False drop.

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1257

[3966]-504
T.Y. M.C.A. (Engineering Faculty)
ENTERPRISE RESOURCE PLANNING
(2008 Course) (710904) (New) (Sem. - V)

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) ***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.***

SECTION - I

Q1) a) How can a company use ERP as a competitive strategy formulation tool? Explain Benefits of ERP to staff. **[6]**

b) Is it possible to determine the business value of an ERP system? Explain it for a manufacturing company. **[6]**

OR

Q2) Can we compare ERP system in business with Indian Railways Computerised Reservation System*? Explain the importance of integrated system in service industry like Railways.

* The Indian Railways Computerised Reservation System is a centralized information system implemented by the railways to provide multiple service delivery channels of Reservation Counter, Internet, Mobile based booking of Railway reservation Tickets to their customers. **[12]**

Q3) a) Explain how the Organizational Departmental Culture affects ERP implementation. Explain for ERP implementation in manufacturing company. **[6]**

b) Explain the change management process required for ERP implementation. Explain how to tactfully manage the end User resistance for change. **[6]**

P.T.O.

OR

Q4) a) Explain the role played by management in the ERP implementation. **[6]**

b) Which types of Organizational Culture are more suitable for ERP implementation? How to overcome User resistance in ERP implementation. **[6]**

Q5) Explain the ERP implementation strategies used by Indian Companies. Explain the typical ERP system architecture for Indian Company. **[11]**

OR

Q6) a) Explain architecture of one of the currently available ERP packages in India. Explain why an Out-of-box ERP implementation could possibly fail. **[5]**

b) Which in your opinion is better ERP implementation strategy-Big Bang or phased rollout? Justify your answer for an Indian manufacturing company having multiple manufacturing plants and multiple showrooms, dealers, marketing offices. **[6]**

SECTION - II

Q7) a) Explain the rationale behind some companies decision of ERP software purchase rather than developing the ERP software in-house. **[6]**

b) Explain the Design and Customization Issues for ERP implementation. **[5]**

OR

Q8) a) What can be and cannot be outsourced in ERP implementation? **[6]**

b) Explain the selection criterion for ERP system. **[5]**

Q9) a) What is the difference between CRM and SCM systems? **[6]**

b) Explain the Business Process Reengineering and its use in ERP. **[6]**

OR

Q10)a) Explain the use of E-business in global ERP implementation of a company which sells fast moving consumer durable items online. **[6]**

b) Explain the concept of Data Warehouse in the context of ERP. How the data from ERP can be integrated with data warehouse solution?**[6]**

Q11)Explain the typical ERP system module structure for a Indian manufacturing company with a brief explanation of their inter relationship. **[12]**

OR

Q12)a) Explain the Finance and Costing module of ERP. **[6]**

b) Explain the HRM and Production modules of an ERP. **[6]**

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Total No. of Questions : 12] **[Total No. of Pages : 4**

P1258

[3966]-11

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

PROBLEM SOLVING AND PROGRAMMING IN C

(Sem. - I) (2005 Course) (115001)

Time : 3 Hours] ***[Max. Marks : 100***

Instructions to the candidates:

1) ***Answer any three questions from each section.***
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) How the concept of Redundant computations is useful in designing efficient algorithms? **[4]**

b) Design an algorithm to determine whether or not a number *n* is a factorial number. **[6]**

c) Design an algorithm to establish all the primes in the first n positive integers. **[8]**

OR

Q2) a) Explain in brief about Computational complexity of given algorithm with an example. **[4]**

b) Design an algorithm to sum the digits in an integer. **[6]**

c) Implement the Fibonacci algorithm function that accepts as input two consecutive Fibonacci numbers and returns as output the next Fibonacci number. **[8]**

Q3) a) What do you mean by Associativity and Precedence of an operator? List out all the operators in C with suitable example. **[8]**

b) Write a program which reads a string and prints YES if all the characters are in strict alphabetical order; otherwise prints NO. **[8]**

P.T.O.

OR

Q4) a) What is mean by Data type? Explain various categories of data type with an example and calculate the range for given data type. **[8]**

b) Write a C program to compute factorial of given number using Recursive function. **[8]**

Q5) a) What is the difference between array and pointer? Which functions are use to allocate memory dynamically. Explain with suitable example. **[8]**

b) What would be the output of the following program assuming that the array begins at location 1002: **[4]**

```
void main ( )
{
int arr [2][3][4] = {
                        {0,1,2,1,
                        2,8,7,8,
                        4,5,3,5 },
                        {3,1,6,7
                        2,9,7,8,
                        5,0,3,1}      };
      printf("\n%u %u %u %d ", a, *a, **a, ***a);
}
```

c) What would be the output of the following program assuming that the array begins at location 1002 : **[4]**

```
void main()
{
      int arr[3][4] = {
                              { 1,2,3,4},
                              { 5,6,7,8},
                              { 9,10,11,12}
                        };
      printf("\n%u %u %u ", a[0]+1, * ( a[0]+ 1) , *(*( a +0)+1) );
}
```

OR

Q6) a) How to allocate dynamic memory to two dimensional integer array with suitable example? **[8]**

b) How many bytes of memory would the following code reserve? Clarify. **[4]**

```
# include <alloc.h >
main ()
{
      int *p ;
      p = ( int *) malloc(256*256);
      if( p = NULL)
      printf(" Allocation failed");
}
```

c) How would you dynamically allocate a 3-D array of integers? **[4]**

SECTION - II

Q7) a) Write a short note on nested union. Explain with example structure nested in union. **[8]**

b) Write a short note in command line argument. **[4]**

c) Explain bitwise shift operator with example. **[4]**

OR

Q8) a) Define a structure called Employee that will describe following information: Employee_No, Employee_Name, Employee_Address, Department, Joining_Date, and Salary.
Using Employee create array of employees and write a program for following operation: **[8]**

i) Read the information about all employees.
ii) Display information Department wise.
iii) Modify information (Address, salary).
iv) Delete information.

b) Write macro definition for following situation : **[4]**

i) Define macro called circumference which will calculate the circumference of the circle in terms of its radius.
ii) Write a multiline macro called interest which will evaluate the compound interest formula:

$$F = P*(1 + i)^n$$

Where, P = Principle, I = Interest, N = no. of years.

c) Explain how to pass entire structure as parameter to function. **[4]**

Q9) a) Student information of two semesters is stored in different file "sem1.txt" and "sem2.txt". Both files include same information as student roll number, name, and percentage marks. Write a program to create a new file which will contain student names who has secured 60% marks in both semesters. **[9]**

b) Write file opening modes. **[3]**

c) Explain the following functions : **[6]**

i) fseek () ii) rewind () iii) getw ()

OR

Q10)a) Write a C program that can be used as a simple line-oriented text editor. This program must have the following capabilities. **[9]**

i) Enter several lines of text and store in data file.

ii) Display the data.

iii) Insert new line.

iv) Delete line.

b) What is a difference between binary and text file? **[3]**

c) Explain the following functions : **[6]**

i) fread() ii) fscanf() iii) fwrite()

Q11)a) Explain with example direct and interactive methods. **[8]**

b) Solve with Gauss elimination method : **[8]**

i) $x - 2y + 3z + 9t = 5$

ii) $3x + 10y + 4z + 2t = 7$

iii) $11x + 5y + 9z + 2t = 13$

iv) $2x + 3y + 7z + 6t = 11$

OR

Q12)a) Explain Simpson's $3/8^{th}$ rule over $[x_0, x_n]$. **[8]**

b) Compute $\int_1^2 dx/x$ using trapezoidal rule for h = 0.25. **[8]**

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Total No. of Questions : 5] **[Total No. of Pages : 3**

P1259

[3966]-12
F.Y. M.C.A. (Engineering Faculty)
MT- 11 : DISCRETE MATHEMATICS
(2005 Pattern) (Sem. - I) (115002)

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

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Solve any two questions from the remaining.***
3) ***Figures to the right indicate full marks.***

Q1) a) Prove that $(p \vee q) \wedge \sim p \equiv \sim p \wedge q$ **[5]**

b) A = {1, 2, 3, 4}, the relation matrix is

$$M_R = \begin{bmatrix} 1 & 0 & 1 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 1 & 1 & 1 \\ 0 & 1 & 1 & 0 \end{bmatrix}$$

Draw it's Diagraph and determine the relation is reflexive, symmetric and transitive. **[5]**

c) Define albelian group. G = {0, 1, 2, 3, 4, 5, 6, 7} and operation is "t_8" addition modulo 8 then (G, + 8) is an albelian group. **[5]**

d) Determine the number of edges in a graph with 6 nodes, 2 of degree 4 and 4 of degree 2. Draw two such graphs. **[5]**

e) i) Given that the values of $p \rightarrow q$ is false, Determine the values of $(\sim p \vee \sim q) \rightarrow q$.

ii) Given that the value of $p \rightarrow q$ is true, Determine the value of $\sim p \vee (p \rightarrow q)$. **[5]**

f) How many nodes are necessary to construct a graph with exactly 8 edges in which each node is of degree 2. **[5]**

P.T.O.

Q2) a) For the set X = {2, 3, 6, 12, 24, 36}, a relation ≤ is defined as $x \leq y$ if x divides y. Draw the Hasse diagram for (X, ≤). Answer the following: **[5]**

i) What are the maximal elements.

ii) What are the minimal elements.

b) Let A = {1, 2, 3, 4} and R = {(1, 2), (2, 4), (1, 3), (3, 2)}. Find the transitive closure of R by Warshall's algorithm. **[5]**

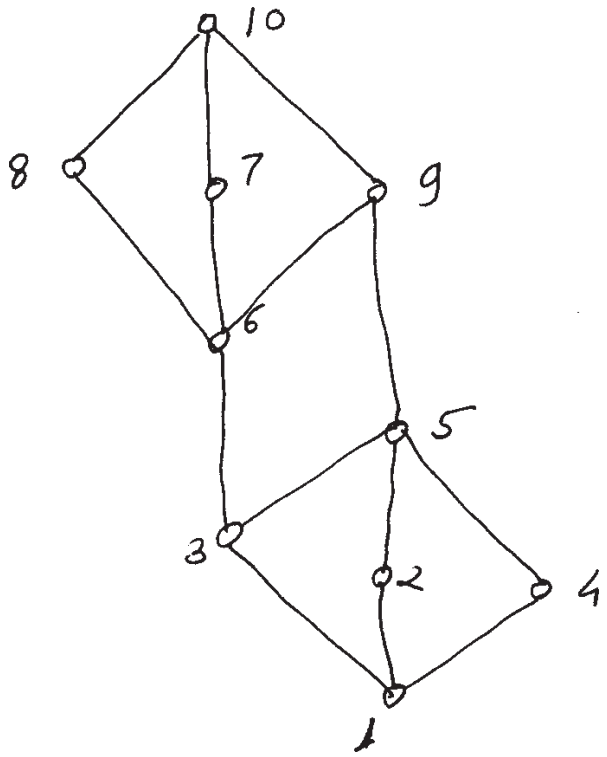
c) Let function $f(x) = x + 2$, $g(x) = x - 2$, $h(x) = 3x$ for $x \in$ R where R = set of real numbers. Find gof, fof, gog, foh, hog. **[5]**

d) For A = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}, consider the poset (A, R) whose Hasse diagram is shown below. find, **[5]**

i) GLB {2, 3} ii) GLB {2, 7}

iii) LUB {3, 2} iv) LUB {4, 8}

v) GLB {5, 8}



Q3) a) Find the Conjunctive Normal Forms (CNF) for the following without using truth table. **[5]**

i) $\sim (p \vee q) \leftrightarrow (p \wedge q)$

ii) $((p \wedge (p \rightarrow q)) \rightarrow q)$

b) Prove that $(p \rightarrow (q \rightarrow r)) \Rightarrow ((p \rightarrow q) \rightarrow (p \rightarrow r))$ **[5]**

c) Define the validity of the following arguments : **[5]**

S_1 : All my friends are musicians.

S_2 : John is my friend.

S_3 : None of my neighbours are musicians.

S : John is not my neighbour.

d) Show whether the following statement is tautological, contradiction or contigency. **[5]**

i) $(p \wedge (p \rightarrow q)) \rightarrow q$ ii) $[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow p \rightarrow r$

Q4) a) Set 2I of all even integers with zero is an albelian group with respect to addition, prove it. **[5]**

b) Define with example (with respect to groups) **[5]**

i) Semigroup. ii) Subgroup.

iii) Left coset. iv) Right coset.

v) Monoid group.

c) Explain Isomorphism of groups. **[5]**

d) Find the minimum distance of an encoding function e : $B^2 \rightarrow B^5$ given as **[5]**

e(0 0) = 00000

e(01) = 10011

e(10) = 01110

e(11) = 11111

Q5) a) Define the following graphs with example : **[5]**

i) Weighted graph. ii) Plannar graph.

iii) Bipartite graph. iv) Factors of graph.

v) Complete graph.

b) Explain Regular m-any tree with example. **[5]**

c) Determine whether the following G = (V, E) and G* = (V*, E*) are isomorphic or not. **[5]**

G = {a, b, c, d} where

{(a, b), (a, d), (b, d), (c, d), (c, b), (d, c)}.

G* = ({1, 2, 3, 4}, {(1, 2), (2, 3), (3, 1), (3, 4), (4, 1), (4, 2)}).

d) Explain Eulerian path and Eulerian circuit with example. **[5]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1266

[3966]-43
S.Y. M.C.A. (Engineering)
OBJECT ORIENTED MODELING & DESIGN
(Sem. - IV) (2005 Course) (215011)

Time : 3 Hours] ***[Max. Marks : 100***

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) How is polymorphism achieved in C++ or JAVA. Show sample code declaration fragment. **[6]**

b) Give a diagram for rational unified process. **[6]**

c) What are the key advantages of CORBA. **[5]**

OR

Q2) a) In brief give UML history, what were the goals, objectives of UML team. **[6]**

b) What is XML and how it is useful in XMI. **[6]**

c) Write a short note on OMG. **[5]**

Q3) a) Justify the need for a object constraints language concept in UML. Give examples constraints on attributes, operation and relationship. **[6]**

b) Explain what do you understand by 4 layer architecture. **[6]**

c) What do you mean that some UML diagram show behavior of system. **[5]**

OR

Q4) a) Write a short note on : Extension mechanism in UML. **[6]**

b) Which are the two entirely new iteration diagram in UML 2.0 and what is their purpose. **[6]**

c) Why and where to use OCL? **[5]**

P.T.O.

Q5) a) A software company trains its own employees. The training is conducted currently in two categories namely technology and soft skills. Trainers are specialized in either category. The training sessions on specific topics in specific categories are announced and the trainees need to register for the training. The possible classes for the system are trainers, categories, training session and trainees. Make suitable assumptions about the attributes and relationships that may exist between classes.

Draw appropriate objects, their links i.e. relationships in an OBJECT diagram showing clearly attributes and relationship details. **[8]**

b) Illustrate the forward and reverse engineering opportunities from UML class diagram. **[8]**

OR

Q6) a) Draw class diagram for software written to control a coffee vending machine. **[8]**

b) For composite structure diagram in brief explain by giving examples. **[8]**

i) port.
ii) connector.

SECTION - II

Q7) a) Discuss the concept of a signal. **[4]**

b) Compare sequence and communication diagram with one example for each. **[7]**

c) Describe expansion and interruptible activity region. **[6]**

OR

Q8) a) Explain use of regions and partitions in UML Interaction diagram. **[4]**

b) Explain Interaction Overview Diagram with an example. **[7]**

c) What are the common modeling technique for communication diagram. **[6]**

Q9) a) Explain action state and activity state. **[4]**

b) Draw an activity diagram to explain the Lodge Management System. **[7]**

c) Explain concepts and notation through simple examples for following Terms in UML. **[6]**

i) Activity.
ii) Object flow.
iii) Concurrent states.

OR

Q10) a) Write a short note on fork and join. **[4]**

b) Draw an activity diagram for an "Inter College Sports Event Management System". **[7]**

c) What are the uses of State Machine diagram. Give an example. **[6]**

Q11) a) What is the need of Deployment diagram? Explain with an example. **[8]**

b) Draw a component diagram for "Online Airline Reservation System". **[8]**

OR

Q12) a) Describe the Web application of UML. **[8]**

b) Draw a Package diagram for the system mentioned in Q.10 b. **[8]**

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

P1267

[3966]-45
S.Y. M.C.A. (Engineering Faculty)
JAVA PROGRAMMING
(2005 Pattern) (215013) (Sem. - IV)

Time : 3 Hours] ***[Max. Marks : 100***

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.***

SECTION - I

Q1) a) What is difference between vector and array? Explain element At( ) and Add element( ) method? **[8]**

b) What is Package? How they are created? Explain with examples? **[8]**

OR

Q2) a) Explain Hash table? Also explain methods of Hash table? **[8]**

b) Explain life cycle of thread along with diagram? **[8]**

Q3) a) Explain with example various layout managers used in JAVA? **[8]**

b) What are interface available in Java? **[8]**

OR

Q4) a) Give the use of following swing control? **[8]**

i) Jtabbed pane.
ii) Jtable.
iii) Jtree.
iv) Jframe.

b) What are different event classes in java? **[8]**

Q5) a) List various method in Applet class? Explain in detail all the methods? **[6]**

b) What is the order of method invocation in an Applet? **[6]**

c) What is applet? Write a program using applet to draw rectangle which is filled with red colors? **[6]**

P.T.O.

OR

Q6) a) Write a program to create an applet that will display the name, family, size and style of currently selected font? **[6]**

b) What is the difference between application and applet? Give the ways to view an applet? **[6]**

c) Explain with example HTML applet tag? **[6]**

SECTION - II

Q7) a) What is ObjectOutputStream and ObjectInputStream class? Explain any five methods of these two classes. **[8]**

b) Explain the concept of creation of Zip file stream in Java? **[8]**

OR

Q8) a) What is string tokenizer class? Explain in detail. **[8]**

b) What is exception handling? What are different types of exceptions which can be handled during input? **[8]**

Q9) a) Explain two-tier and three-tier architecture? **[8]**

b) Classify JDBC drivers types according to their architecture? **[8]**

OR

Q10) a) Explain prepared statement in detail? **[8]**

b) Write a program to establish a connection with a database using JDBC. **[8]**

Q11) a) What are the difference between TCP and UDP? Explain with header format methods in both the classes. **[9]**

b) Write a program (both client and server side) to establish a connection between client and server? **[9]**

OR

Q12) a) Explain the use of InetAddress class and its methods. **[9]**

b) Explain concept of proxy server and firewall? **[9]**

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1268

[3966]-51
T.Y. M.C.A. (Engineering Faculty)
PRINCIPLES AND PRACTICES FOR IT MANAGEMENT
(Sem. - V) (2005 Pattern) (315001)

Time : 3 Hours] ***[Max. Marks : 100***

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

Unit - I

Q1) a) Define management. What are different levels of Management? How does the role of manager change at different levels of management? **[10]**

b) What are different principles of management? Elaborate the principles in brief. **[6]**

OR

Q2) a) Define management. Explain the importance of management principles in any organization. Explain in detail. **[10]**

b) What are business ethics and social responsibilities of a manager in any organization. **[6]**

Unit - II

Q3) a) Explain breakdown structure of an IT project, with example. **[8]**

b) Explain the significance of risk assessment and risk management during the IT project. **[8]**

OR

Q4) a) Explain different stages or phases of an IT project. **[8]**

b) Explain the following : **[8]**

i) Requirement gathering and analysis.

ii) Formal Technical review of the project.

P.T.O.

Unit - III

Q5) Write notes on any three : **[18]**

a) Progress Tracking of project.

b) Project network diagram.

c) Resource procurement for IT project.

d) Change control.

OR

Q6) Write notes on any three : **[18]**

a) Project scheduling.

b) Need for revision.

c) Project constraints.

d) Project Team issues.

SECTION - II

Unit - IV

Q7) a) Explain theories of group formation in detail. **[8]**

b) Elaborate conflict management in detail. **[8]**

OR

Q8) a) What are different strategies for resolving destructive conflicts in any organization. **[8]**

b) Explain the importance of Team work in any organization. **[8]**

Unit - V

Q9) Explain any three : **[18]**

a) Knowledge Management.

b) Technology Management.

c) Cyber Crimes and laws.

d) Project Quality Standards.

OR

Q10) Explain any three : **[18]**

a) Supply Chain Management.

b) Intellectual Property Rights.

c) Project Quality Standards.

d) Change Management.

Unit - VI

Q11) a) What are the functional component of a CRM (Customer Relationship Management) tool? Explain in brief. **[8]**

b) Identify distinguish features of MIS in health care industry against banking. **[8]**

OR

Q12) a) How IT is useful in Inventory Management system? Explain in detail. **[8]**

b) What are different quality design and quality control aspects in any MIS project? Elaborate the quality factors in detail. **[8]**

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

P1269

[3966]-53
T.Y. M.C.A. (Under Engineering)
ADVANCED DATABASES
(2005 Course) (315003) (Sem. - V)

Time : 3 Hours] ***[Max. Marks : 100***

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) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain and compare nested loop and block nested loop join algorithm. **[8]**

b) Explain in detail materialization and pipelining. **[9]**

OR

Q2) a) Explain in detail query optimization. **[9]**

b) How cost of query is measured? Explain. **[8]**

Q3) a) Explain the following : **[8]**

i) Shared disk architecture.
ii) Transaction server.

b) Compare and contrast speedup and scaleup. **[4]**

c) State the advantages and disadvantages of distributed system. **[5]**

OR

Q4) a) Explain the following : **[12]**

i) Client-server system.
ii) Data servers.
iii) Centralized systems.

b) What are the issues in implementation of distributed systems? **[5]**

Q5) a) What is the difference between persistent and transient objects? **[4]**

b) Explain with example object identity and reference types in SQL. **[8]**

c) Write short note on :
Storage and access of persistent objects. **[4]**

P.T.O.

OR

Q6) a) With suitable example explain structured types and inheritance in SQL. **[8]**

b) What is persistent programming language? How it is different from embedded language? **[8]**

SECTION - II

Q7) a) Explain in detail the dimensional data modeling. **[8]**

b) Explain the following in brief :

i) OLAP.
ii) Materialized view.
iii) ETL. **[9]**

OR

Q8) a) What is a Data warehouse? Explain the key features of Data warehouse. **[8]**

b) Explain with suitable examples the data smoothing techniques. **[9]**

Q9) a) Explain Apriori Algorithm for association. **[9]**

b) Explain in brief : **[8]**

i) Text Mining.
ii) Outlier analysis.

OR

Q10) a) Explain K-means Algorithm for clustering. **[9]**

b) Explain in brief :

i) Decision tree.
ii) Data discrimination. **[8]**

Q11) a) What are the drawbacks of page rank algorithm? How these drawbacks are removed? **[8]**

b) Explain the following terms : **[8]**

i) Homonyms.
ii) Inverted Index.

OR

Q12) a) Explain popularity ranking in detail. **[8]**

b) Explain the following terms : **[8]**

i) Web crawler.
ii) Ontologies.

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1270

[3966]-54
T.Y. M.C.A. (Engineering Faculty)
SOFTWARE TESTING
(2005 Pattern) (Theory) (Elective - I) (315004) (Sem. - V)

Time : 3 Hours] ***[Max. Marks : 100***

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) What are measurement scales and levels of measurement? **[6]**

b) What do you meant by direct and indirect measurement? **[4]**

c) Define - "Data". How to collect, store and extract data. Explain with suitable example. **[6]**

OR

Q2) a) Explain any eight activities related to software metrics which involve some degree of s/w measurement. **[8]**

b) Explain software measurement validation with example. **[8]**

Q3) a) What are the aspects of software size, length and reuse. **[8]**

b) Draw common flow graphs as per program structure models or as per basic control structure in imperative language programming. **[8]**

OR

Q4) a) What is Halstead software science? Explain in detail. **[8]**

b) Explain object-oriented metrics in details. **[8]**

Q5) a) What is cyclomatic complexity? How to compute it. **[6]**

b) Explain following terms : **[8]**

P.T.O.

i) Modularity.
ii) Morphology.
iii) Information flow.

c) Define the term defect. What are origin of defects? **[4]**

OR

Q6) a) Explain all defect classes in detail. **[10]**

b) Write short note on : **[8]**

i) Test Plan Execution.
ii) Defect Repository.

SECTION - II

Q7) a) Explain Boundary value analysis and Equivalence Partitioning with example. **[8]**

b) Explain white Box testing adequacy criterias. **[8]**

OR

Q8) a) Explain Mutation Testing with suitable example. **[8]**

b) Write short note on : **[8]**

i) Compatibility Testing.
ii) User documentation testing.

Q9) a) Explain GUI Testing in detail. **[10]**

b) What are aspects to be measure in performance testing? **[6]**

OR

Q10) Write a short note on : **[16]**

a) Software Test Automation.

b) Adhoc Testing.

c) Regression Testing.

d) Validation Testing.

Q11) a) What are the challenges, best practices and pitfalls in problem resolution? **[8]**

b) Explain "problem Reporting". Which are various problems and best practices context to this? **[10]**

OR

Q12) a) Explain two major factors which help in prioritizing problem for working on fix. **[8]**

b) Explain skill sets needed for two important roles - 'product-in-charge' and 'support analyst'. **[8]**

c) Define the term "Fix Distribution". **[2]**

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1271

[3966]-57
T.Y. M.C.A. (Engineering Faculty)
HUMAN COMPUTER INTERFACE
(2005 Pattern) (Elective - II) (315005) (Sem. - V)

Time : 3 Hours] ***[Max. Marks : 100***

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate sheet.***
2) ***Use of logarithmic tables, slide rules and electronic pocket calculator is allowed.***
3) ***Neat diagram must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is the difference between direct control pointing devices and indirect control pointing devices? Explain both types of devices with 3 examples. **[8]**

b) What are different Human Factors that are to be considered while designing the user interface? Explain with the help of suitable examples.**[9]**

OR

Q2) a) What is the difference between slips and mistakes? Explain with the help of suitable example. **[8]**

b) What is reasoning? Explain different types of reasoning with examples.**[9]**

Q3) a) Explain guidelines for data entry and data display. **[8]**

b) Explain with suitable example the contrast between the action object and object action interface model. **[9]**

OR

Q4) a) Evaluate Microsoft Word interface using the "Eight golden rules of interface design". **[8]**

b) Task analysis breaks user's activities into a series of goals and sub-goals. In order to print a document, you must first select the 'print' command. You must then select the printer, the number of copies and so on. Briefly describe the benefits that task analysis can offer to the design of interactive computer systems. **[9]**

P.T.O.

Q5) a) What is interaction design process? Explain. **[8]**

b) What is participatory design? Explain with suitable examples. **[8]**

OR

Q6) a) Explain the processes of design. If your system is poorly designed from a human interaction standpoint, what are the problems user may face? **[8]**

b) You have been asked to design a web-site for a company. Users will be able to browse and then purchase a 'ring-tone' for their mobile phone. Briefly explain how you would test for the success or failure of a design as you get close to the final delivery of your 'ring-tone' web site. Discuss the challenges and solutions. **[8]**

SECTION - II

Q7) a) Explain element of windowing systems. Distinguish between tiled window, overlapping window and cascading window. **[9]**

b) List and explain the steps of usability testing. What are the limitations of such testing? **[8]**

OR

Q8) a) Should menus be narrow and deep or broad and shallow? Why? **[6]**

b) Briefly explain dialog design notations. **[6]**

c) Describe different techniques of evaluating an user interface during its active use. **[5]**

Q9) a) Compare and contrast paper prototype with screen prototype. **[8]**

b) What is group-ware? Explain the organizational factors that can make or break group-ware systems. **[9]**

OR

Q10) a) What is CSCW? Explain any two issues in face-to-face communication for CSCW? **[8]**

b) Explain applications of asynchronous interaction and synchronous distributed interaction in cooperative work. **[9]**

Q11) a) What are the problems you face when you change your mobile handset? Do you think touch screen devices are more user friendly than key pad based mobile handset? Why? **[8]**

b) Explain Object-Action Interface model with respect to web site design. Draw suitable diagram. **[8]**

OR

Q12) a) Explain following Data Type by Task Taxonomy :- **[8]**

i) 1D Linear Data.
ii) 3D World.
iii) Temporal Data.

b) Explain important design issues involved in designing a web page. **[8]**

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1316

[3966]-13

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

FOUNDATIONS OF INFORMATION TECHNOLOGY

(2005 Course) (115003) (Sem. - I)

Time : 3 Hours] ***[Max. Marks : 100***

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.***

SECTION - I

Q1) a) What is meant by "generation" in computer terminology? List computer generation you know. **[8]**

b) Explain the principle of duality in boolean algebra. **[5]**

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

i) $(111.01)_2$

ii) $(247.65)_8$

OR

Q2) a) Simplify following Boolean expression and draw logic circuit diagram using ANO, OR & NOT gates. **[8]**

$\overline{A}\,\overline{B}C + \overline{A}BC + A\,\overline{B}$

b) Explain the basic operations of computer system for converting raw input data into useful information. **[5]**

c) Define the term 'byte'. What is the difference between a bit and a byte? **[4]**

Q3) a) List out the main advantages of magnetic disk as compared to magnetic tapes, as a secondary storage device. **[8]**

b) List out the main functions of CPU in a computer system. **[5]**

c) What is a touch screen device? **[4]**

OR

P.T.O.

Q4) a) What is a voice reproduction system? How does it function? Give some of its applications. **[8]**

b) What factors determine the storage capacity of disks? **[5]**

c) Explain the printing mechanism of drum printer. **[4]**

Q5) a) When is a computer language called machine dependent? What is the main disadvantage of such a language? **[8]**

b) What is firmware and what is its importance to the computer system architect? **[8]**

OR

Q6) a) What are the different ways of acquiring software? List out their relative advantages and limitations. **[8]**

b) What is a self documenting language? Illustrate with an example. **[8]**

SECTION - II

Q7) a) What is cryptography? How does it help in improving the security of a computer system? **[8]**

b) Define multiprogramming. Explain how multiprogramming ensures effective utilization of main memory and CPU. **[5]**

c) What is meant by text, graphics and image importing facility? How is it useful? **[4]**

OR

Q8) a) Differentiate between vector graphics and poster graphics. Give their relative advantages and disadvantages. **[8]**

b) Write a short note on word processing package. **[5]**

c) What is an operating system? Why is it necessary for a computer system? **[4]**

Q9) a) What are the different methods of data organization? What are the limitation of database oriented approach? **[8]**

b) What is debugging? Explain the methods for correction of logical errors. **[5]**

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

OR

Q10)a) What do you mean by software testing? What are typical errors that occur? **[8]**

b) What is a data dictionary? How is it created/updated? **[5]**

c) What is a "hypertext"? Explain how it helps in presentation and use of information. **[4]**

Q11)a) Compare : **[8]**

i) Synchronous and asynchronous communication.
ii) Analog and digital computers.

b) List out some of the advantages and disadvantages of e-mail service against fax service. **[8]**

OR

Q12)a) Describe some of the typical uses of Internet. **[8]**

b) What is a coaxial cable? Give some of its practical uses. **[8]**

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1317

[3966]-103
F.Y. M.C.A. (Under Faculty of Engineering)
FOUNDATION OF INFORMATION TECHNOLOGY
(Sem. - I) (2008 Course) (510903)

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) Why were first and second generation computers more difficult and castlier to produce commercially than the computers of subsequent generations? **[8]**

b) Convert : **[4]**

i) $(11001)_4 = (\ ?\ )_{10}$

ii) $(1Ac)_{16} = (\ ?\ )_{10}$

iii) $(562)_8 = (\ ?\ )_2$

iv) $(2AB)_{16} = (\ ?\ )_2$

OR

Q2) a) When is a computer said to be upward compatible with another computer? How is this feature useful for the others of these computers. **[8]**

b) Construct a logic diagram for the boolean expression given below using only NoR gates **[4]**

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

Q3) a) List out the main advantages of magnetic disks as compared to magnetic tapes, as a secondary storage device. **[8]**

b) Describe in brief printing mechanism of laser printer. **[4]**

OR

P.T.O.

Q4) a) What is a CD-ROM jukebox? What are its main components? List out some typical uses of a CD-ROM jukebox. **[8]**

b) What is meant by a family of CPUs? When do two CPUs belong to the some family? **[4]**

Q5) a) What are the different ways of acquiring software? List out their relative advantages & limitations. **[6]**

b) What is a mnemonic? How is it useful in case of computer languages? **[5]**

OR

Q6) a) What factors generally influence the process of selecting a programming language out of the many options available for coding an application. **[6]**

b) Give the full form of the following : **[5]**

i) FORTRAN	ii) COBOL
iii) BASIC	iv) RPG
v) MICR	vi) LISP
vii) SNOBOL	viii) OOP
ix) CRT	x) OCR

SECTION - II

Q7) a) What is the difference between a uniprogramming system and a multiprogramming system? What are their relative advantages & disadvantages? **[8]**

b) What is a bit-mapped image? Why is it so called? **[4]**

OR

Q8) a) Write short note on the following with reference to a spreadsheet package : **[8]**

i) Cell content.

ii) Range of Cells.

b) What are the typical jobs performed by the security module of an operating system. **[4]**

Q9) a) What is a database model? Name the four commonly used database models and describe any two. **[8]**

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

OR

Q10)a) What are the two standard methods used in data processing system for organizing data? Explain their relative advantages & disadvantages. **[8]**

b) What is a debugger? How does it help a programmer? **[4]**

Q11)a) What is meant by internetworking? Explain the difference among the following terms : **[6]**

i) Bridge.

ii) Router.

iii) Gateway.

b) What is packet switching? Why is this method used for digital data communication. **[5]**

OR

Q12)a) What is a www browser? What types of navigation Facilities are typically supported by modern browsers to help users save time while internet surfing? **[6]**

b) Differentiate between : **[5]**

i) Leased line and

ii) Dial up connection.

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1321

[3966]-302
S.Y. M.C.A. (Engineering Faculty)
DATABASES : CONCEPTS AND SYSTEMS
(2008 Course) (610902) (Sem. - 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) ***Assume suitable data, if necessary.***
4) ***Section I : Q1 or Q2, Q3 or Q4, Q5 or Q6.***
5) ***Section II : Q7 or Q8, Q9 or Q10, Q11 or Q12.***

SECTION - I

Q1) a) Explain Data Independence with suitable example. **[6]**

b) Describe functions of DBA. **[5]**

OR

Q2) a) Describe Query Processor and Storage manager components of DBMS. **[6]**

b) Compare Relational Data Model vs Hierarchical Data Model. **[5]**

Q3) a) Design an E-R diagram with EER features which will model all the entities and relationships among them for the Airline Reservation System Database. **[6]**

b) Give the significance of following design constraints. **[6]**

i) User-defined.
ii) Condition-defined.
iii) Disjoint.
iv) Overlapping.

OR

Q4) a) Design an E-R diagram with EER features which will model all the entities and relationships among them for the Library Management System Database. **[6]**

P.T.O.

b) Explain the following terms with suitable example. **[6]**

i) Mapping constraints.
ii) Specialization.
iii) Generalization.

Q5) a) Explain properties of relations in database. **[4]**

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

c) Explain codd's comprehensive sub-language rule and data independence rule. **[4]**

OR

Q6) a) Explain significance of integrity and referential constraints in relational model. **[6]**

b) Explain domain types in relational database. **[6]**

SECTION - II

Q7) a) Consider the following Relations. It defines the schema of the database application for a bank. **[8]**

Consider the following Relations. It defines the schema of the database application for a bank. It manages the branches and customers of the bank. Customers take loans (borrow money) or open accounts (deposit money) at one or more branches.

Branch (B_No, B_name, B_city, asset), Customer (C_No, C_Name, C_city, street)
Loan (Loan_no, B_name, amount), Account (Acc_No, B_name, Balance)
Borrower (C_No, Loan_No), Depositor (C_No, Acc_No)

Answer the following queries in each of the query languages that you know :

i) Find the names and address of customers who have a loan.
ii) Find loan data, ordered by decreasing amounts, then increasing loan numbers.
iii) Find the pairs of names of different customers who live at the same address but have accounts at different branches.
iv) Find the names and address of customers who have a loan for an amount exceeding 3 times their current balance.
v) Find the names of customers with both an account and a loan at Perryridge branch.

b) Describe SQL Types and Literals. **[3]**

OR

Q8) a) Explain stored Procedure and stored function in PL/SQL. **[4]**

b) Write short notes on Assertion and Database Triggers. **[4]**

c) Explain Indexes and Sequence in SQL. **[3]**

Q9) a) Define Multivalued dependency. List all the non trival Multi-valued dependency satisfied by the relation given below : **[6]**

A	B	C
a_1	b_1	c_1
a_1	b_1	c_2
a_2	b_1	c_1
a_2	b_1	c_3

b) Write a short note on Prototyping in database application design. **[6]**

OR

Q10) a) Explain why 4NF is more desirable than BCNF. Rewrite the definition of 4NF and BCNF using the notions of domain constraints and general constraints. **[6]**

b) Compute closure of the following set F of functional dependencies for relational schema R = (A, B, C, D, E) **[6]**
F : $A \rightarrow BC$ $CD \rightarrow E$ $B \rightarrow D$ $E \rightarrow A$

Q11) a) Explain Recovery from deadlock. **[4]**

b) Describe Multi-version Concurrency Control Methods. **[8]**

OR

Q12) a) Explain the method for determining conflicts and view serializability. **[4]**

b) Write a short note on : **[8]**

i) Shadow Paging.

ii) Two-Phase Locking Protocol.

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Total No. of Questions : 12] **[Total No. of Pages : 3**

P1342

[3966]-42
S.Y. M.C.A. (Engineering Faculty)
WEB TECHNOLOGY
(2005 Pattern) (215010) (Theory) (Sem. - IV)

Time : 3 Hours] ***[Max. Marks : 100***

Instructions to the candidates:

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

SECTION - I

Q1) In brief, write on following with example if relevant. **[18]**

a) ARPANET.

b) Various protocols at 'application layer' of TCP-IP.

c) Browser- Web Server interaction using html/http.

d) Static HTML web pages.

e) URL.

f) ARP, RARP.

OR

Q2) Write short notes on ANY THREE : **[18]**

a) TCP and UDP

b) OSI 7 layers.

c) WWW.

d) Routers.

Q3) a) Assume that you are designing a HTML based Marksheet for a student. Use the following HTML features in your marksheet design and show a sample mark sheet for a hypothetical student. Your sheet should include use of following HTML elements/features: Headings, paragraph, multi column table, image (for student photo), Formatting tags to make some text bold, underlined; links etc.

Make appropriate assumptions about the look of the mark sheet, so that you get a chance to apply all above features of HTML. **[12]**

b) What is CSS and how does it compare with HTML formatting tags. **[4]**

OR

Q4) a) Write short notes on DHTML and how it works. **[6]**

b) What are FORMS and how does one design a LOGIN FORMS in HTML, illustrate with examples of your own showing elements like text field, password file, radio button, checkbox, and submit button. **[6]**

c) What are the different types of HTML lists, illustrate. **[4]**

Q5) a) What is the difference between javascript and java **[4]**

b) What is the use of JavaScript on client side. **[4]**

c) In context of Javascript what do you understand by following concepts:

i) Javascript objects.
ii) Javascript is an interpreted language.
iii) Javascript variables: types, local, global.
iv) Javascript assignment and arithmetic operators.

[8]

OR

Q6) In context of Java Script illustrate with GOOD EXAMPLES, what you understand and how to use correctly. **[16]**

a) SWITCH statement.

b) How to create a DATE object, set date, and compare dates.

c) Regular expression objects REGEX.

d) Javascript events.

SECTION - II

Q7) a) Show how the following form validations can be done in JAVASCRIPT Email field.
Why should validation be done on client side rather than sever side. **[6]**

b) Write short notes on Javascript execution environment. **[6]**

c) What are static and dynamic documents. How does JavaScript make a document dynamic. **[4]**

OR

Q8) a) Write short Notes on DOM **[6]**

b) What are events and event handlers in DOM/Javascript. Show what events are associated with mouse and keyboard and give examples of how to use this events in an application to make it more interactive. **[6]**

c) What is the use for load, unload and onfocus events in DOM. **[4]**

Q9) In context of java SERVLETS write on following : **[16]**

a) What is HTTP, what are HTTPServlets

b) doGET and doPOST methods of HTTPSERVLETS

c) how to output html in servlets

d) advantages of servlets

OR

Q10) a) Write short notes on SERVELET. **[6]**

b) Consider a simple scenario of a web page for login form " ".

Write a servlet for above example. **[6]**

c) What is the difference between webpages designed using only html AND servlet based 'webpages. **[4]**

Q11) In context of developing networking applications, write in detail on following Concepts **[18]**

a) IP addresses, MAC addresses for machines.

b) Internet applications for shopping.

c) socket constructor, bind, connect calls.

OR

Q12) Write short notes on ALL Three : **[18]**

a) Internet applications for education field.

b) .nio package (and i/o transfer using buffers, channels)

c) networked, distributed and web based applications.

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

P1343

[3966]-44
S.Y. M.C.A. (Engineering Faculty)
ORGANIZATION BEHAVIOR
(2005 Course) (215012) (Sem. - IV)

Time : 3 Hours] ***[Max. Marks : 100***

Instructions to the candidates:

1) ***All questions are compulsory.***
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.***

SECTION - I

Q1) a) i) Explain in brief Autocratic model and Supportive Model of Organizational Behavior. **[8]**

ii) Compare Autocratic, Custodial, Supportive, Collegial and SOBC models of Organization Behavior. **[8]**

OR

b) i) Explain motivation process along with content and process model of motivation. **[8]**

ii) Define Organization Behavior and list the key elements in OB. **[8]**

Q2) a) i) Which are the defence mechanism for interpersonal Conflict frustration? Which are the different types of motives? **[10]**

ii) Explain Fredrick Herzberg's two factor theory of motivation. **[8]**

OR

b) i) Define stress and explain in detail sources of stress. **[10]**

ii) Explain the relationship of Morale to Productivity. **[8]**

Q3) a) Write short note on : **[16]**

i) Team effectiveness.

ii) Conflict management.

iii) Human resource management.

iv) Types of Groups.

P.T.O.

OR

b) i) Explain how to handle levels of conflicts within an organization. **[8]**

ii) Which factors influence the human resource planning in an Organization. **[8]**

SECTION - II

Q4) a) i) Define Leadership and explain importance of leadership to the organization. **[8]**

ii) Write short note on : **[10]**

1) Hersey and Blanchard's theory.
2) Organizational design.

OR

b) i) Write short note on : **[12]**

1) Organizational climate.
2) Organizational culture.

ii) Explain various organizational structure. **[6]**

Q5) a) i) Which are the constructive conflicts and what are the strategies for conflict resolution. **[8]**

ii) Explain conflict process with an example. **[8]**

OR

b) i) Write short note on : **[8]**

1) Conflict management.
2) Resistance to change.

ii) How the change within an organization leads to the effective development of an organization. **[8]**

Q6) a) Write short note on : **[16]**

i) Downsizing.
ii) Bench marking.
iii) TQM.
iv) Various quality aspects.

OR

b) i) What is Quality in turn of an organization? Which are the benefits of TQM? **[8]**

ii) What is relation of re-engineering with empowerment? **[8]**

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

P1344

[3966]-405
S.Y. M.C.A. (Engineering)
ORGANIZATION BEHAVIOR
(2008 Course) (Elective - I) (610913) (Sem. - 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 answer 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) Explain in brief Autocratic model of Organizational Behavior. **[6]**

ii) Explain in brief primary dependent and independent variables in general model of OB, presented by Robbins. **[6]**

OR

b) i) Explain motivation process along with content and process model of motivation. **[6]**

ii) In detail explain Goal setting and Reward system. **[6]**

Q2) a) i) What are the ill-effects of stress on human? Explain management of stress in brief. **[6]**

ii) Explain the relationship of Morale to Productivity. **[5]**

OR

b) i) Explain Douglas McGregor's theory 'X' and 'Y'. **[6]**

ii) Explain Vector Vroom's expectancy theory of motivation in detail. **[5]**

Q3) a) i) How performance appraisal helps in overall development of an employee and organization. **[6]**

ii) How the team effectiveness helps in overall development of an organization. **[6]**

OR

b) i) Explain how to handle levels of conflicts within an organization. **[6]**

P.T.O.

ii) Which factors influence the human resource planning in Organization. **[6]**

SECTION - II

Q4) a) i) Explain Fielder's Contingency Model of leadership. **[6]**

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

1) Life Cycle Theory.
2) Leadership style.

OR

b) i) Write short note on : **[8]**

1) Organizational structure.
2) Organizational design.

ii) List qualities of a leader. **[4]**

Q5) a) i) Explain the situation when change is accepted in an organization. **[6]**

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

OR

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

1) Responses to change.
2) Resistance to change.

ii) Which are the constructive conflicts and what are the strategies for conflict resolution. **[5]**

Q6) a) What is Quality in turn of an organization? Which are the benefits of TQM? **[6]**

b) What is relation of re-engineering with empowerment? **[6]**

OR

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

i) Various Quality Aspects.

ii) Bench marking.

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1344

[3966]-405
S.Y. M.C.A. (Under Faculty of Engineering)
HUMAN COMPUTER INTERFACE
(2008 Course) (Elective - I) (610913) (Sem. - IV)

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

Instructions to the candidates:

1) ***Answer question 1 or 2, 3 or 4, 5 or 6 from Section I and Question 7 or 8, 9 or 10 and 11 or 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) Suggest ideas for an interface, which uses the properties of sound effectively. **[6]**

b) What is Metaphor paradigm? Explain any software interface, which follows this paradigm. **[5]**

OR

Q2) a) Explain in brief : Human Memory. **[6]**

b) Explain Five factors to evaluate any interface. **[5]**

Q3) a) With respect to Human Diversity how to accommodate users with disabilities and elderly users. **[6]**

b) Describe different techniques to prevent errors. **[6]**

OR

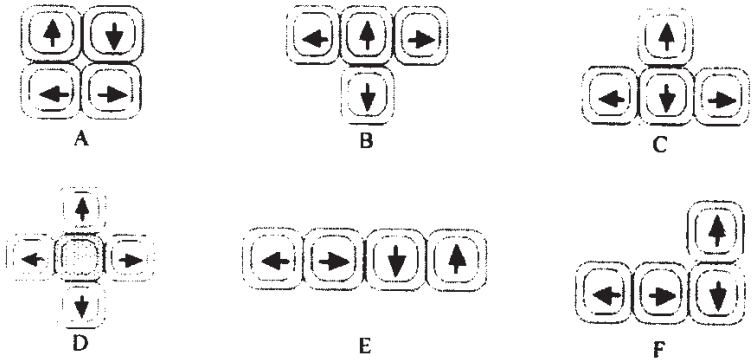
Q4) a) Explain BNF & Task Action Grammar. **[8]**

b) Describe the guidelines for data entry. **[4]**

Q5) a) How will you use white space in screen design? Explain with example. **[6]**

P.T.O.

b) Consider following six layouts for cursor keys.



Which one do you think is more suitable? Also explain why it is more suitable. **[6]**

OR

Q6) a) How does making a phone call differ when using :

- A public phone box.
- A cell phone.

How have these devices been designed to take into account.

i) The kind of users.
ii) The type of activity being supported.
iii) The context of use. **[6]**

b) Explain scenarios. What are the advantages and disadvantages of scenarios. **[6]**

SECTION - II

Q7) a) Explain different dialog design notations. **[8]**

b) What do you mean by usability? Explain in brief. **[4]**

OR

Q8) a) Give one good and one bad features for following interaction style **[6]**

i) Direct manipulation.
ii) Menu selection.
iii) Command language.

b) Explain in brief individual-Window design with respect to window interface objects and window interface actions. **[6]**

Q9) a) Discuss advantages and disadvantages of online manuals over printed manuals. **[8]**

b) Explain error messages with respect to specificity and constructive guidance & positive tone. **[4]**

OR

Q10) a) Explain an importance of hypertext over linear paper document. List important considerations for creating a good hypertext document. **[8]**

b) What is CSCW? Explain how it is applicable to Education. **[4]**

Q11) What are pointing devices? Explain in detail how these are applicable in different types of interaction tasks? **[11]**

OR

Q12) a) Write a short note on : Multimedia Document Searches. **[6]**

b) Consider any social networking site and discuss any three good and any two bad features of it. **[5]**

✷✷✷

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1345

[3966]-56

Third Year M.C.A. (Under Faculty of Engineering)

ENTERPRISE RESOURCE PLANNING

(2005 Course) (Sem. - V) (Elective - II) (315005)

Time : 3 Hours] ***[Max. Marks : 100***

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 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) Why integrated data model is considered the heart of an ERP system? What are the benefits of an ERP? **[8]**

b) What are the various resources an ERP has to optimize? How does intelligence resource planning help this? **[9]**

OR

Q2) a) Discuss a case study of an ERP in competitive strategy. **[8]**

b) What do you understand by integrated functionality in enterprise and cross enterprise functionality? How each one of them achieved? **[9]**

Q3) a) Discuss about organizational structure and organizational culture. **[8]**

b) What is change management? How can it affect in an organization. **[9]**

OR

Q4) a) Explain ERP architecture in detail. What are the basic necessities in implementing the ERP system in an organization? **[8]**

b) How ERP plays an important role in an organization? **[9]**

P.T.O.

Q5) a) What are the different implementing strategies of an ERP? Explain in detail? **[8]**

b) Enlist and discuss critical success factors for ERP system. **[8]**

OR

Q6) a) Enlist general problems faced during implementation of ERP and discuss solutions for it. **[8]**

b) Explain the steps in ERP implementation. What is to be done during post implementation phase? **[8]**

SECTION - II

Q7) a) What are selection criteria of an ERP package? Explain with example. **[9]**

b) Explain In - house development v/s Outsourcing. **[8]**

OR

Q8) a) Explain design issues in ERP package. **[9]**

b) What do you mean by In-house development? Discuss the problems occurred during In-house development. **[8]**

Q9) a) Illustrate with relevant case study as to how ERP solutions have led to business re-engineering and creation of better business practices. **[9]**

b) What is CRM? Explain how ERP is related with CRM. **[8]**

OR

Q10) a) Explain relevance between BPR, IT and ERP. **[9]**

b) Write a short note on: **[8]**

i) SCM.

ii) Data Warehousing.

Q11) a) What are the different ERP system contents? Explain any two. **[8]**

b) Write a short note on: **[8]**

i) Quality control.

ii) Finance.

OR

Q12) a) Discuss about Sales and Marketing in ERP system. **[8]**

b) Explain in detail about Human resource. **[8]**

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1346 **[3966]-505**

Third Year M.C.A. (Engineering Faculty)

SOFTWARE TESTING

(2008 Course) (Sem. - V) (Elective - II) (710905)

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 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 is Software Testing? Explain four principles of Investigation. **[6]**

b) Comparison between SDLC and V model in details. **[6]**

OR

Q2) a) What is group data and how to collect and define data? **[4]**

b) What is Representation of measurement? What is Direct & Indirect measurement? **[8]**

Q3) a) What is software Measurement? Give the classification of software measures. **[5]**

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

i) Verification.

ii) Validation.

OR

Q4) a) Explain in details Halstead's Software Science. **[5]**

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

i) White - Box Testing.

ii) Black - Box Testing.

Q5) a) What are the different software Quality attributes? Explain in details. **[6]**

b) What is process? Describe the difference between process and project metrics? **[6]**

OR

Q6) a) Explain the software defect prevention process in details. **[4]**

b) Define terms: **[8]**

i) COCOMO II

ii) DeMarco's Approach.

iii) Faults.

iv) Errors.

SECTION - II

Q7) a) What is test plan? Explain the importance of test plan in Software Testing. **[4]**

b) What is Testing Defects? Explain in brief Defect Classes & Defect Repository Metrics works? **[8]**

OR

Q8) a) What is Integration Testing? Explain in details different types of Integration Testing. **[6]**

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

Q9) a) What is Test summary Report? **[6]**

b) Explain logistics and tooling with suitable example. **[5]**

OR

Q10) a) What is Automation Testing? What is difference between Manual Testing and Automation Testing? **[6]**

b) What is Ad hoc testing? Explain Ad hoc testing with an example. **[5]**

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

b) What is Structural Testing? What are different types of Structural Testing? **[6]**

OR

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

a) Code Complexity Testing.

b) Regression Testing.

c) Usability and Accessibility Testing.

d) GUI Testing.

Total No. of Questions : 12] **[Total No. of Pages : 3**

P1346 **[3966]-505**

Third Year M.C.A. (Engineering Faculty)

NEURAL NETWORK AND FUZZY LOGIC

(Sem. V) (2008 Course) (Elective - II) (710905)

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) ***Assume suitable data, if necessary.***
4) ***Attempt 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***

SECTION - I

Q1) a) Comment on different types of Learning in Artificial Neural Network. **[7]**

b) What is Linear Separability? Illustrate with example. **[5]**

OR

Q2) Implement XOR function using McCulloch-Pitts neuron. Consider binary data. **[12]**

Q3) a) Write Perceptron Training Algorithm for Single output classes. **[7]**

b) Define Bias, Weight, Learning Rate and Momentum factor. **[4]**

OR

Q4) a) What is an Activation Function? Explain Sigmoidal functions in detail. **[7]**

b) What is Linear Discriminant Function? Elaborate your answer. **[4]**

Q5) a) Using Hebb rule find the weights required to perform the following classifications of the given input pattern shown in the figure below, **[7]**

+	+	+
	+	
+	+	+

Where '+' symbol represents the value 1 and empty square indicates –1.

b) Explain Multilayer Perceptron Network in brief. **[5]**

OR

Q6) Explain Back-Propagation algorithm in detail. **[12]**

SECTION - II

Q7) a) What are the properties of Crisp Set? How the shortcomings are overcome in Fuzzy Set representation? **[7]**

b) What is Non Interactive Fuzzy Set? Explain in detail. **[5]**

OR

Q8) a) What are the different methods of Membership value assignment? Explain any one in detail. **[8]**

b) Explain Fuzzification elaborately. **[4]**

Q9) a) Let X and Y be two Fuzzy members. With suitable membership function explain the following arithmetic operations:

i) X + Y

ii) X – Y

iii) X / Y **[7]**

b) Discuss in brief how Fuzzy rule based model is used for function approximation. **[5]**

OR

Q10) a) What is Fuzzy relation? How it is represented? How standard composition of binary Fuzzy relation is represented? **[7]**

b) Explain in brief TSK Fuzzy Rule based model. **[5]**

Q11) a) Explain Categorical and Qualitative reasoning in detail. **[8]**

b) What is DeFuzzification? **[3]**

OR

Q12) a) Compare between probability theory and possibility theory. **[5]**

b) What is Fuzzy Measure concept? Provide general Mathematical framework. **[6]**