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

P1128

[3666]-15

M.C.A. (Engineering)

MANAGEMENT SCIENCE

(2005 Course) (115005)

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***
5) ***All questions are compulsory.***

SECTION - I

Q1) a) Define the term 'Management' and explain the evolution of management concepts. **[8]**

b) In your opinion, is the work carried out by Gantt in the development of Management science still relevant? Explain with suitable examples. **[8]**

OR

Q2) a) In your opinion is the Management a Science or an Art or both? Justify your answer. **[8]**

b) What are the main functions of Management? Discuss them in the order of their importance to an organisation. **[8]**

Q3) a) Explain the characteristics of Human Needs. How does it decide the demand for a product? Discuss with suitable examples. **[6]**

b) Discuss the relationship between Utility, Value and Price. **[6]**

c) What is the meaning of Patent? How can it be obtained? **[6]**

OR

Q4) a) Discuss the basic concepts of E-commerce. **[6]**

b) Discuss the meaning of Economy of Scale and how does it help in Management of a business. **[6]**

c) What are the functions of Chambers of Commerce? **[6]**

P.T.O.

Q5) a) Explain the difference between Line Organisation and Staff Organisation. **[8]**

b) What are the limitations and advantages of Proprietorship Organisation? Mention the areas for which it is more common. **[8]**

OR

Q6) a) In your opinion is the existence of Public Sector Organisations relevant today? Justify your answer. **[8]**

b) What are the special aspects of Committees? Discuss any four of these. **[8]**

SECTION - II

Q7) Write short notes on any three of the following: **[18]**

a) Manpower planning and organizational success,

b) Methods of Selection of Employees,

c) Theory X and Theory Y,

d) Job Evaluation and benefits achievable through it.

OR

Q8) a) 'Piece rate system may not be useful in every situation as a tool for increased productivity.' Do you agree? Justify. **[9]**

b) What is meant by 'Motivation'. As a manager of an engineering unit, how will you motivate your subordinates? **[9]**

Q9) a) Mention important provisions in the Factories Act, 1948 which has got significant relevance to the working of IT sector. **[8]**

b) 'The information technology doesn't lead to reduction in emission of green house gases, but it only shifts the place of emission.' Do you agree with this statement? Justify. **[8]**

OR

Q10) a) What is meant by 'factory' under the Factories Act, 1948? What are the main causes of accidents in a factory? How can these be minimized? **[8]**

b) Mention any two important provisions each, relating to Working Hours, Cleanliness, Ventilation and Temperature, and occupier in the factory Act, 1948. **[8]**

Q11) a) Does Quality Assurance differ from Quality Control? Justify your answer with suitable examples. **[8]**

b) Explain the importance of quality circles in an organisation. **[8]**

OR

Q12) a) Does ISO 9000 lead to Quality Assurance? Justify. **[8]**

b) State and discuss in brief any four important provisions of ISO 9000. **[8]**

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

P1138

[3666]-23

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

OPERATIONS RESEARCH

(115011) (2005 Old Course)

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 LP using simplex method. **[10]**

Maximize : $z = 6x_1 + 10x_2 + 2x_3$

Subject to :

$$2x_1 + 4x_2 + 3x_3 \leq 40$$

$$x_1 + x_2 \leq 10$$

$$2x_2 + x_3 \leq 12$$

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

b) Define the following terms in L.P.P. : **[8]**

i) Basic feasible solution

ii) Slack Variable

iii) Optimum basic feasible solution

iv) L.P.P.

P.T.O.

OR

a) Solve the following LP using Simplex method. **[10]**

Maximize : $z = 2x_1 + 3x_2 + 4x_3$

Subject to :

$$3x_1 - 2x_3 \leq 41$$

$$2x_1 + x_2 + x_3 \leq 35$$

$$2x_2 + 3x_3 \leq 30$$

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

b) Explain the LP model (or general structure of LP model). What are the advantages and limitations of LP model? **[8]**

Q2) a) Consider the following transportation problem shown in the table: **[9]**

Market

Plant	1	2	3	4	5	Supply
1	10	2	16	14	10	300
2	6	18	12	13	16	500
3	8	4	14	12	10	825
4	14	22	20	8	18	375
Demand	350	400	250	150	400	

Find the basic feasible sol^n using each of the following methods and compare their total costs.

i) Northwest corner method.

ii) Least-cost cell method.

iii) Vogel's approximation method.

b) What is balanced transportation problem? Explain in detail. **[7]**

OR

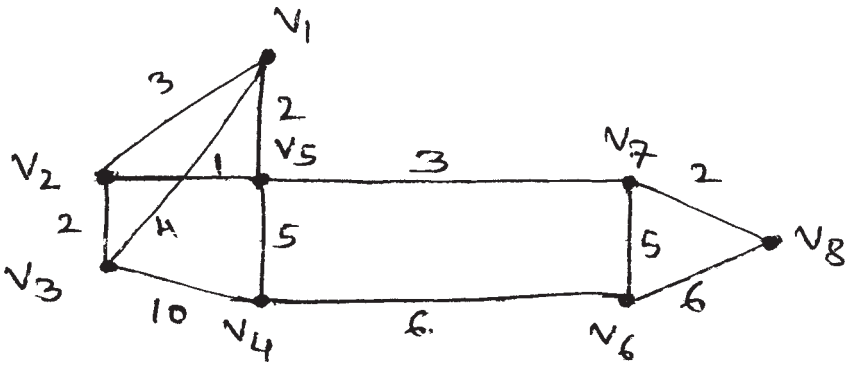
a) Consider the problem of assigning four operators to four machines. The assignment cost are given below: **[10]**

		Operators			
		I	II	III	IV
Machines	A	5	7	11	6
	B	8	5	9	6
	C	4	7	10	7
	D	10	4	8	3

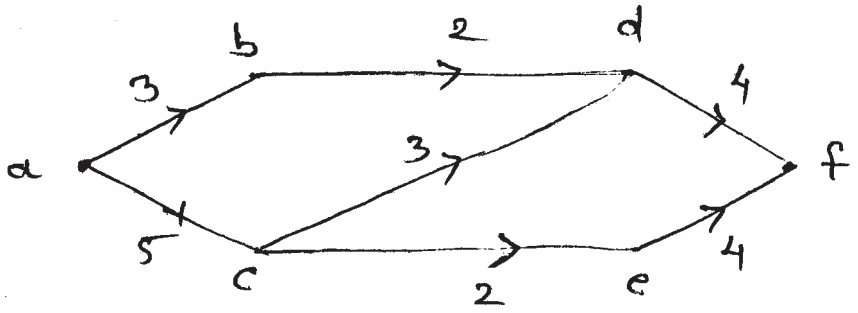
Assign the operators to different machines so that total cost is minimized.

b) Explain an Assignment Model. Compare it with Transportation Model. **[6]**

Q3) a) Using Kruskal's algorithm find the minimum weighted spanning tree in the following graph G. **[8]**



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



OR

a) A small project is composed of activities whose time estimates are listed in the table below: Activities are identified by their begining (i) and ending (j) node numbers. **[8]**

i) Draw the project network.

ii) Find the expected duration and variance for each activity. What is the expected projected 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			

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

i) PERT

ii) CPM

SECTION - II

Q4) a) What is Goal Programming? Explain two methods to solve Goal Programming Problem. **[10]**

b) Consider the following two time series. **[8]**

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?

OR

a) Explain the Integer Linear Programming Problem in detail. Discuss its applications. **[9]**

b) Solve the following integer programming problem using branch-and-bound technique. **[9]**

Maximize : $z = 10x_1 + 20x_2$

Subject to :

$$6x_1 + 8x_2 \leq 48$$

$$x_1 + 3x_2 \leq 12$$

$x_1, x_2 \geq 0$ and integers.

Q5) a) What is decision making under Risk? Explain expected value criterion. **[8]**

b) Explain Maximax and Laplace Criterion for the following illustration: **[8]**

Alternatives	States of nature (product demand)			
	High (Rs.)	Moderate (Rs.)	Low (Rs.)	Nil (Rs.)
Expand	50,000	25,000	–25,000	–45,000
Construct	70,000	30,000	–40,000	–80,000
Subcontract	30,000	15,000	–1,000	–10,000

OR

a) What are types of decisions? Explain them in brief with suitable examples. **[8]**

b) Explain in brief different approaches for decision under uncertainty with suitable examples. **[8]**

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

i) advantages

ii) applications

iii) limitations

iv) methodology of simulation

b) Write the steps involved in carrying out Monte Carlo Simulation. List the two applications of it. **[8]**

OR

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

i) Generation of Random numbers.

ii) Factors affecting the simulation.

b) In a mixed congruence method of generation of random numbers, a random number (r + 1) is given by : **[8]**

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

where

a, b & m are constants.

Generate 10 random numbers, taking $r_o = 1$, a = 16, b = 18, m = 23.

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Total No. of Questions : 06] **[Total No. of Pages : 2**

P1023

[3666]-25

First Year M.C.A. (Under Engg.)

MANAGEMENT INFORMATION SYSTEMS

(Sem. - II) (2005 Course)

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

Instructions :

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

SECTION - I

Q1) a) Explain the important functions of Information Systems in a business enterprise. **[8]**

b) What is a data model? Explain the various models of a logical data model. **[8]**

OR

a) Explain Line and Staff organization. State its advantages and disadvantages. **[8]**

b) State the merits and demerits of planning. **[4]**

c) Differentiate between a strategic plan and a tactical plan. **[4]**

Q2) a) Explain how MIS can be employed in personnel management department of a manufacturing sector. **[8]**

b) Explain the role of MIS in production management. **[8]**

OR

a) Trace the role of MIS in managing a hospital. **[8]**

b) Discuss in brief the various challenges in implementing ERP. **[8]**

Q3) a) What is EMS? Explain the functions of EMS. **[8]**

b) Explain various types of ERP Architecture. **[10]**

OR

a) Explain process model of organization. **[10]**

b) State the functions of a call center. Discuss the issues that should be considered while establishing a call center. **[8]**

P.T.O.

SECTION - II

Q4) a) Describe the various components of CRM. **[8]**

b) Explain the various stages of SCM. **[8]**

OR

Explain the following in brief : **[16]**

a) Categories of e-commerce.

b) Role of SCM at different levels in the organization.

c) EFT

d) Tangible and intangible benefits of e-commerce.

Q5) a) What are the features of a Decision Support System? State the benefits and risks of DSS. **[8]**

b) What is a data warehouse? Discuss steps involved in data warehouse creation. **[8]**

OR

a) Explain the types of analytical modeling in DSS. **[8]**

b) Explain the various applications of Expert Systems. **[8]**

Q6) a) Discuss the principles of Technology Ethics. **[8]**

b) Write short notes on : **[10]**

i) Health issues related to Information Technology.

ii) Hacking.

OR

a) Explain in brief different Tools of Security Management. **[10]**

b) Discuss various issues involved in Global Management of IT. **[8]**

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

P1131

[3666]-302

M.C.A. (Engineering Faculty)

DATABASES : CONCEPTS AND SYSTEMS

(2008 Course) (610902)

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) Compare Relational data model, Hierarchical Data Model and Network Data Model. **[5]**

b) Describe the Role of Database Manager and Database Administrator. **[6]**

OR

Q2) a) Explain Multi-user DBMS Architectures in details. **[5]**

b) Describe Query Processor and Storage manager components of DBMS. **[6]**

Q3) a) Consider a University database that keeps track of students, their majors, their transcripts and their registrations, as well as of the university's course offerings. The database also keeps track of the sponsored research projects of faculty and graduate students. Draw an **E-R Diagram** which should be consist of Entity sets, attributes, relationships, mapping cardinality and keys. **[7]**

b) Explain the different constraints on specialization / generalization suitable example. **[5]**

P.T.O.

OR

Q4) a) Consider a University database that keeps track of students, their majors, their transcripts and their registrations, as well as of the university's course offerings. The database also keeps track of the sponsored research projects of faculty and graduate students. Draw an **Extended E-R Diagram** which should be consist of Aggregation, generalization and specialization and constraints on specialization. **[9]**

b) Explain different types of attributes with suitable example and ER diagram notion. **[3]**

Q5) a) Explain Codd's Rules. **[8]**

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

OR

Q6) a) Explain Referential Integrity constraints and Domain Constraints with suitable example. **[6]**

b) Explain different SQL DDL commands with suitable examples for Table, View, Index, sequence, synonyms and constraints. **[6]**

SECTION - II

Q7) a) 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: **[10]**

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) List the Data Types with max length available in PL/SQL. **[2]**

OR

Q8) a) Explain any Explicit Cursor and REF cursor in PL/SQL. **[4]**

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

i) Stored Procedure and Database Trigger.

ii) Embedded and Dynamic SQL.

Q9) a) Consider following Relational Table. Find Nontrivial and Trivial Functional Dependency. **[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. **[5]**

OR

Q10) a) What is Normalization? Explain 3NF and BCNF with suitable example. **[6]**

b) Explain different Database design approaches. **[5]**

Q11) a) Explain View serializability and Conflict serializability with suitable example. **[6]**

b) Describe Two-Phase locking protocol for concurrency control. **[6]**

OR

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

a) Shadow Paging Recovery.

b) Deadlocks in Database Transaction.

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

P1129

[3666]-34

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

DATA COMMUNICATION & COMPUTER NETWORKS

(2005 Course) (215004)

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 & Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section-II.***
2) ***Figures to the right indicate full marks.***
3) ***Answers to the two sections should be written in separate answer books.***
4) ***Assume suitable data if necessary.***
5) ***Use of electronic pocket calculator is allowed.***

SECTION - I

Q1) a) What are the different Transmission Modes? Explain in detail. **[8]**

b) What is Synchronous and asynchronous transmission? **[8]**

OR

Q2) a) List out the Guided Media available for networking and explain the detail structure. **[8]**

b) What is Multiplexing: Explain in details FDM. **[8]**

Q3) a) State the difference between circuits switching, Packet switching. **[8]**

b) List out different Network topologies. **[8]**

c) What are Design issues of Network layer? **[2]**

OR

Q4) a) Explain with Diagram OSI Model. **[8]**

b) What is Sliding Window protocol, explain Go back N with suitable example? **[8]**

c) What are the Data Link Layer Services. **[2]**

Q5) a) Explain how CSMA is more efficient than slotted ALOHA. **[8]**

b) What are the different Wireless LAN Protocols, explain anyone in detail? **[8]**

P.T.O.

OR

Q6) a) Explain WDMA with diagram. **[8]**

b) Discuss in detail ATM. **[8]**

SECTION - II

Q7) a) Differentiate between Connectionless and Connection-oriented Services. **[8]**

b) List out various Routing Algorithms; explain anyone in detail. **[8]**

OR

Q8) a) Explain classes of IP Addresses. **[8]**

b) What is IPV6? Explain in detail. **[8]**

Q9) a) TCP and UDP are at which layer? Explain anyone of them in detail. **[8]**

b) List out the services offered by Transport Layer and what are the service primitives of Transport Layer. **[8]**

OR

Q10) a) What is RPC? Explain in brief. **[8]**

b) What are the different congestion control techniques? Explain anyone in detail. **[8]**

Q11) a) What is Domain Name System (DNS)? Explain various DNS servers. **[9]**

b) What Electronic Mail architecture and list out the services offered by SMTP? **[9]**

OR

Q12) Write Short note on (Any 3). **[18]**

a) File Transfer Protocol

b) HTTP

c) WWW pages and Browsing

d) ICMP

e) Internetworking.

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

P1130

[3666]-57

Third Year M.C.A. (Engineering)

HUMAN COMPUTER INTERFACE

(2005 Course) (Elective - II) (315005)

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

Instructions to the candidates :

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

SECTION - I

Q1) a) What are different Human Factors that are to be considered while designing the user interface? Explain with the help of suitable examples. **[8]**

b) Enumerate different interaction styles. Explain the advantages and disadvantages of Natural Language Interaction style. **[9]**

OR

Q2) a) Describe important differences between STM (Short-Term Memory) and LTM (Long-Term Memory). Give suitable example to support your answer. **[6]**

b) What important issues need to be considered while designing an interface for users with disabilities? **[6]**

c) Explain the goals of user interface design. **[5]**

Q3) a) Explain EIGHT golden rules of interface design. Give suitable examples to justify your answer. **[9]**

b) Explain how GOMS and the Keystroke-Level Model support the interaction design process. **[8]**

P.T.O.

OR

Q4) a) Define "gulf of execution" and "gulf of evaluation". What are principles of good design, suggested by Norman in the stages of action model? **[8]**

b) Explain the guidelines for data display and data entry. Explain with suitable examples. **[9]**

Q5) a) State and explain THREE pillars of interface design process. **[8]**

b) What is participatory design? Explain with suitable examples. **[8]**

OR

Q6) a) Consider two different ATM machines. One giving away the cash and then ejecting the bank card and the other one ejecting the bank card first and then dispensing the cash. Which is a better interface from interaction design point of view? Justify your answer. **[8]**

b) Explain Logical User Centered Interaction Design framework. Also state its goals. **[8]**

SECTION - II

Q7) a) List and explain the steps of Usability Testing. What are some of the limitations of such testing? **[9]**

b) What is direct manipulation technique? Explain any four metaphors used in this interaction style. **[8]**

OR

Q8) a) Describe different command organization strategies. **[6]**

b) Explain menu styles. Comment on depths Vs width of a menu tree. **[6]**

c) Which features are important in designing form filling? **[5]**

Q9) a) Explain an importance of hypertext over linear paper document. List important considerations for creating a good hypertext document. **[6]**

b) How should an error condition be handled in interface design? **[6]**

c) Explain the goals of co-operations. **[5]**

OR

Q10) a) Explain issues in face-to-face communications for CSCW. How will you apply CSCW to education? **[8]**

b) What are the vital features of online manual? What are the negative side effects of online documentation? **[9]**

Q11) a) What is Information Visualization? Explain visual information seeking rule. **[8]**

b) Explain how pointing devices are applicable in six types of interaction tasks. **[8]**

OR

Q12) a) Explain data type by task taxonomy (TTT) of Information Visualizations. Give suitable examples for various data types. **[8]**

b) Discuss important design issues involved in designing a web page. **[8]**

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

[3666] - 44

P1028

M.C.A. (II Year) (Engineering)
ORGANIZATIONAL BEHAVIOUR
(2005 Course)

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.***
5) ***All questions are compulsory.***

SECTION - I

Q1) a) i) Explain in brief systems view of organization. **[8]**

ii) Explain in brief individual, group and organizational variables in the OB model, presented by Robbins. **[10]**

OR

b) i) Compare Autocratic, Custodial, Supportive and Collegial model of OB. **[10]**

ii) In detail explain secondary motives. **[8]**

Q2) a) i) Explain Abraham Maslow's theory of need hierarchy. **[8]**

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

1) Sources of stress.
2) Management of stress.

OR

b) i) Explain Vector Vroom's expectancy theory of Motivation. **[8]**

ii) Explain the process of perception. **[8]**

Q3) a) i) Explain levels of conflicts and conflict management. **[10]**

ii) Explain the ways to improve the team effectiveness in an organization. **[6]**

OR

b) i) Explain how to handle conflicts within an organization. **[8]**

ii) Explain in brief human resource management function in an organization. **[8]**

P.T.O.

SECTION - II

Q4) a) i) Explain various organizational structures. **[8]**

ii) Write short note on: **[10]**

1) Organizational development.
2) Organizational culture.

OR

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

ii) What are the trait, behavioral and situational approaches for leadership style. **[6]**

Q5) a) i) List the forces responsible for change. **[8]**

ii) What are the reasons for resistance for change? What are the ways to overcome such resistance to change? **[8]**

OR

b) i) Compare the traditional vs modern view of conflict and conflict management. **[8]**

ii) How the change within an organization leads to the effective development of an organization. **[8]**

Q6) a) Explain various aspects of Quality? What is Total Quality management? What are the techniques for TQM? What are the benefits of TQM? **[16]**

OR

b) i) Explain the objectives and steps involved in reengineering. **[8]**

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

1) Bench Marking.
2) Learning Organization.

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

P1033

[3666] - 201
First Year M.C.A. (Engineering)
OBJECT ORIENTED PROGRAMMING
(2008 Course) (510909)

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) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

SECTION - I

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

b) Explain object, classes and access specifiers. **[6]**

OR

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

a) Encapsulation

b) Inheritance

c) Polymorphism.

Q3) a) What is inline function? list out the situations in which it will not work as inline. **[6]**

b) Write a C++ program to calculate the area of rectangle and square using function overloading. **[6]**

OR

Q4) a) Discuss the importance of 'new' and 'delete' operators with a suitable example(s). **[6]**

b) Discuss six I/O Manipulators with syntax. **[6]**

P.T.O.

Q5) a) Rewrite the following program without changing main ( ) function, to get the output as: **[6]**

```
                I am writing paper.
                I am in exam hall.
                I have completed paper.
    Class sample
    {
        Public :
            Void display (void)
            {

                Cout << "I am in exam hall.";
            }
    };
    main ( )
    {
        Sample SI = new sample ( );
        SI. display ( );
    }
```

b) Explain static data members and static member functions with an example. **[5]**

OR

Q6) a) Design a class 'Time' which contains int - hour, int min. Include a copy constructor to copy the contents of one object into another object. Implement the same. **[5]**

b) Design a class 'Account' to represent bank account. Include the following data members: **[6]**

i) Name of depositor.

ii) Account Number.

Member functions :

i) To assign initial values.

ii) To display name and account number.

Implement it for multiple objects using the concept of array of objects.

SECTION - II

Q7) a) Write a C++ program using operator overloading and friend function to negate a given number. **[8]**

b) Explain the necessity of operator overloading. **[4]**

OR

Q8) a) Explain the following type conversions and also explain how they are achieved. **[8]**

i) Basic to class

ii) Class to basic

iii) Class to class

b) List out the operators which cannot be overloaded. **[4]**

Q9) a) What is a virtual function? Explain with suitable program. **[6]**

b) What is virtual base class and abstract base class? **[6]**

OR

Q10) a) What are the different visibility modifiers in inheritance? Explain the effect of inheritance on the visibility of members. **[6]**

b) Explain static and dynamic binding with suitable example. **[6]**

Q11) a) Write a program to merge two files. **[6]**

b) Explain try - catch - throw block. **[5]**

OR

Q12) a) Describe the exception handling mechanism in C++. Also write a function 'DIV' that **[6]**

i) Accepts two integers a and b;

ii) Returns value a/b b $\neq$ 0 and

iii) Throws an exception when b = 0.

b) What are different file mode parameters and their meaning. **[5]**

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

[3666] - 204

P1034

M.C.A. - I (Engineering)
MICROPROCESSOR APPLICATIONS
(2008 Course) (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) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain the function of all the pins of 8085 microprocessor. **[8]**

b) What is a buffer IC? Where is it used in interfacing. **[4]**

OR

Q2) a) List and explain the usage of various registers of 8085. **[6]**

b) What is Memory map? What are the essentials of Memory interfacing? **[6]**

Q3) a) What is the necessity of WAIT state? Explain with proper timing diagram. **[6]**

b) Explain the execution of following instructions, **[6]**

i) LXI ii) PUSH iii) LHLD

OR

Q4) a) Draw the timing diagram for MOVM, A. **[6]**

b) What are the advantages of using the subroutine in a program? Explain the functionality of CALL and RET instructions' execution. **[6]**

Q5) a) What is BSR mode of 8255 PPI? Write the code to set and reset alternate bit of the concern port staring at LSB position. **[6]**

b) Draw the diagram to interface 8255 with 8085. **[5]**

OR

P.T.O.

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

b) Give the usage of input and output related instructions with respect to I/O handling. **[4]**

c) Explain polled I/O. **[3]**

SECTION - II

Q7) a) What is an Interrupt? Explain the complete process of Interrupt handling in 8085. **[6]**

b) Draw and explain block diagram of 8253. **[5]**

OR

Q8) a) What are vectored interrupts? Give all the Vector interrupts and their addresses in 8085. **[7]**

b) Explain the usage of enabling and disabling interrupts with proper instructions. **[4]**

Q9) a) List and explain all the registers of 8086. **[8]**

b) Explain Minimum mode operation of 8086. **[4]**

OR

Q10) a) Explain how the control signals are regenerated while operating 8086 in Maximum Mode. **[6]**

b) What are the advantages of using segmentation? How 20 bit address is generated out of 16 bit registers? **[6]**

Q11) a) Explain the usage of DB, DW, DD, DQ and DT assembly language directives. **[5]**

b) Write an 8086 assembly language program to add 10 numbers in an array. **[7]**

OR

Q12) a) Write an 8086 assembly language program to convert two digit Binary Coded Decimal number into equivalent Hexadecimal. **[7]**

b) List and explain the DOS Calls for displaying character(s) on the screen and list any four BIOS calls. **[5]**

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

P1021

[3666]-21
First Year M.C.A. (Engineering)
OBJECT ORIENTED PROGRAMMING
(2005 Course) (115009)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) List features of object oriented programming and explain any five with example. **[12]**

b) What are the limitations of procedural programming. **[5]**

OR

Q2) a) What are the characteristics of procedural programming, compare procedural programming with object, oriented programming. **[8]**

b) Explain the following with example : **[9]**

i) Message passing.

ii) Polymorphism.

iii) Inheritance.

Q3) a) Write a program in C++ for creating a temporary database of students using array of objects. **[7]**

b) What is a constructor? Explain different types of constructor with example. **[10]**

OR

P.T.O.

Q4) a) What is function overloading? Write a program in C++ to overload a function area() for calculation of area of circle, area of rectangle, area of triangle, and are of sphere. **[10]**

b) Explain with example : **[7]**

i) Inline member function.

ii) Static member function.

iii) Copy constructor.

Q5) a) What is type conversion? Explain different types of type conversion with example. **[8]**

b) Make use of Hybrid Inheritance to create a student information system for an Institute having students of Engineering & Medical. **[8]**

OR

Q6) a) What is operator overloading? Explain different ways of overloading a binary operator. **[8]**

b) What is polymorphism? What are its different types? Explain runtime polymorphism with a sample program. **[8]**

SECTION - II

Q7) a) List the features of Generic programming. **[6]**

b) What is a template function? Can we overload a template function. **[3]**

c) Write a program in C++ to sort an array of integer and double type making use of bubble sort technique. **[8]**

OR

Q8) a) What are the advantages of Generic programming? **[6]**

b) What is a class template? Explain class template with multiple parameter. **[5]**

c) Make use of a function template to find roots of Quadratic equation. **[6]**

Q9) a) Explain in detail with example the basic blocks of exception handling in C++. **[9]**

b) Write a program in C++ for reading objects from a file and writing objects in a file. **[8]**

OR

Q10)a) Make use of structures to create a student database and store the records in a sequential file named students. dat. **[10]**

b) What is an Exception? How do we handle exception in C++? **[7]**

Q11)a) Compare class & interface in Java. Give example of each. **[8]**

b) What is Inheritance? What are the different type of inheritances supported in Java? Is multiple inheritance supported by Java? Justify. **[8]**

OR

Q12)a) Explain different access specifiers in Java with example. **[6]**

b) What is a method? Explain different types of methods in Java. **[10]**

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

P1030

[3666]-52
T.Y. M.C.A. (Engineering)
COMPUTER GRAPHICS
(2005 Course)

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) Explain Bresenham line algorithm with the help of necessary derivation. **[8]**

b) What is antialiasing? How aliasing effect is removed in vector generation algorithm? **[6]**

c) Define the following terms : **[3]**
   i) Aspect Ratio.
   ii) Frame buffer.
   iii) Resolution.

OR

Q2) a) Explain mid-point circle drawing algorithm. **[8]**

b) Explain various methods of character generation. **[6]**

c) Explain Cathode Ray Tube. **[3]**

Q3) a) Explain the steps in scan line algorithm for filling the polygon. **[9]**

b) Find a transformation of triangle A(1, 0), B(0, 1), C(1, 1) by rotating 45° about the origin and then translating one unit in *x* and *y* direction. **[8]**

OR

P.T.O.

Q4) a) What is the need of homogenous co-ordinates? Give the homogenous co-ordinates for translation, rotation and scaling. **[9]**

b) What is scan conversion? What are major adverse side effects of scan conversion? **[8]**

Q5) a) What is a segment? Explain segment table and different operations performed on it. **[8]**

b) Explain Cohen-Sutherland outcode algorithm with the help of suitable example. **[8]**

OR

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

a) Interior and Exterior clipping.

b) Viewing transformation.

c) Use of segmentation in animation.

d) Data structure used in segmentation.

SECTION - II

Q7) a) Explain the following 3-D transformations. **[9]**

i) Rotation about all co-ordinate axes.

ii) Rotation about any arbitrary axis.

b) Explain parallel and perspective projections. Also state the types of parallel and perspective projections. **[8]**

OR

Q8) a) Explain 3D viewing transformation and 3D clipping. **[8]**

b) Derive the general perspective transformation on to a plane with reference point R_0 (x_0, y_0, z_0), normal vector $N = n_1I + n_2J + n_3K$ and using origin as centre of projection. **[9]**

Q9) a) Compare between Phong shading and Gouroud shading. Which one is better. **[9]**

b) Explain the painter's algorithm for hidden surface removal. Why painter's algorithm is a priority algorithm? **[8]**

OR

Q10)a) Why Warnock algorithm is called as Area subdivision algorithm? Explain the algorithm. **[8]**

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

i) Diffuse illumination.

ii) Ray tracing.

iii) Colour models.

Q11)a) State advantages of B-Spline functions over Bezier functions for generating curve. **[8]**

b) List Graphics Kernel System (GKS) output primitives and explain any two in detail. **[8]**

OR

Q12)a) Define Fractal, fractal line and explain how fractal lines are used for generating fractal surfaces. **[8]**

b) What are the different ways through which animation can be achieved? **[8]**

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

P1031

[3666]-54

Third Year MCA (Engineering)

SOFTWARE TESTING

(2005 Course) (Elective - I) (Sem. - I) (315004) (Theory)

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) Compare and contrast three measurement scale types : nominal, ordinal, interval scales. Give examples from software field. **[6]**

b) Explain any eight activities related to software metrics which involves some degree of software measurement. **[8]**

c) Comment on following cost and effort estimation. **[3]**

OR

Q2) a) What is 'Prediction system'? Comment on validating prediction system? How to choose on appropriate prediction system in case of software measurement validation. **[8]**

b) Define the term 'models'. Explain major steps in planning formal experiments. **[9]**

Q3) a) Explain Halstead's major equations for following : **[12]**

i) Total vocabulary. ii) Length.

iii) Volume. iv) Level.

v) Difficulty. vi) Efforts.

vii) Faults.

Calculate estimated program length and efforts required by taking suitable example.

P.T.O.

b) Differentiate between Albrecht's efforts estimation method and COCOMO approach for the effort prediction. **[5]**

OR

Q4) a) What are the notations used in control flow structure for programming construct? Draw control flow graph for any search algorithm. **[8]**

b) Explain the following terms : **[9]**

i) Modularity.

ii) Morphology.

iii) Information flow.

Q5) a) Explain different states of defects. **[8]**

b) Explain in detail, different functions/responsibilities to be handled in a testing life cycle. **[8]**

OR

Q6) a) Enumerate all components of a test plan. Explain test scheduling and test environment planning in detail. **[10]**

b) Explain with suitable example developer/tester support for defect repository. **[6]**

SECTION - II

Q7) Write short notes on :

a) Test case design for black box testing. **[4½]**

b) Test case design for white box testing. **[4½]**

c) Domain testing. **[4]**

d) Positive testing. **[4]**

OR

Q8) a) Write down minimum four mutants for the following program code :

r ; = 1;

for i : = 2 to 3 do

if $a[i] > a[r]$ then r : = i;

By assuming suitable data explain for above code at least one secondary mutant **[8]**

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

i) Requirement based testing.

ii) Code complexity testing.

Q9) a) Explain in detail what is acceptance testing, necessity of acceptance testing? Give suitable example if required. **[8]**

b) Explain life cycle for integrated testing . **[6]**

c) Explain 'software Test Automation'. **[3]**

OR

Q10)In a enterprise security system, to improve the performance of secure web server (SSL deployed) a web server is modified. The modified web server is caching the session. So the HTTP response for a client would be fast enough. Results are bench marked by using appropriate bench marking tools. Write down minimum four test cases of above project. Write down scope statement in detail to support your answer (scope statement carries 2 marks). **[17]**

Q11)a) What are the challenges, best practices and pitfalls in problem resolution. **[8]**

b) Explain the skill set needed for two important roles. **[8]**

i) Product-in-charge.

ii) Support Analyst.

OR

Q12)a) What do you mean by problem fixing? Explain process of problem fixing and reporting. **[8]**

b) Explain the two major factors which help in prioritizing problem for working on fix. **[8]**

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

P1035

[3666]-301
M.C.A. (Engineering)
OPERATING SYSTEM
(2008 Course) (Sem. - I) (610901)

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

Instructions to the candidates:

1) ***Answers 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) Give the difference between literal and symbol. How these are treated by assembler? **[6]**

b) Compare and contrast the properties of macros and subroutines with respect to the following : **[6]**

i) Code space requirement.

ii) Execution speed.

iii) Processing required by assembler.

OR

Q2) a) What is the use of stack in macroprocessor? Give example. **[6]**

b) Does 'C' language support the macros? If yes, explain with suitable example how they will be processed? **[6]**

Q3) a) Explain the top down parsing technique. What are the advantages of this method? **[6]**

b) Consider the following segment of code **[6]**

```
main ( )
{
    int a, b;
    float a, b;
    a = 10 + b;
    b = a * s;
}
```

Show the output of lexical analyzer for the above code segment.

P.T.O.

OR

Q4) a) What is an object module? What information does the object module contain? **[6]**

b) What are the different features of MS-DOS linker? **[4]**

c) At what point of time direct linking loader perform binding? **[2]**

Q5) a) What are the different scheduling criteria for evaluating performance of scheduling algorithms? **[4]**

b) Differentiate system calls and library functions. **[4]**

c) Give comments on time quantum in round robin algorithm. **[3]**

OR

Q6) a) With the help of neat diagram explain different types of schedulers. **[6]**

b) Consider the following set of processes **[5]**

Process	Arrival time	Processing time
A	0	3
B	1	5
C	3	2
D	9	5
E	12	5

Draw the Gantt charts illustrating the execution of these processing using :

i) SJF

ii) FCFS

Also find average turn-around time and average waiting time in each case.

SECTION - II

Q7) a) What is page fault rate? Explain with an example. **[4]**

b) Why demand paging approach is preffered over segmentation? Explain. **[4]**

c) Explain fragmentation with respect to different types of memory management schemes. **[4]**

OR

Q8) Write short note on : **[12]**

a) Virtual memory management.

b) Swapping.

c) Paying.

Q9) a) Enlist the different free space management techniques. Explain any one of these. **[6]**

b) Why I / O buffering is needed? State and explain different approaches of I / O buffering. **[6]**

OR

Q10)a) Explain two level, tree structured and a cyclic graph directories. **[6]**

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

i) SCAN.

ii) FCFS.

Q11)a) Differentiate fork and exec function. **[6]**

b) Explain the kernel data structure in details. **[5]**

OR

Q12)a) Explain the various data structure used by linux file subsystem and how it supports the implementation of various file system functionalities. **[8]**

b) State silent features of Linux operating system. **[3]**

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

P1036

[3666]-303
Second Year M.C.A. (Engineering)
FINANCIAL ACCOUNTING & MANAGEMENT
(2008 Course) (610903)

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

Instructions to the candidates:

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

SECTION - I
Unit - I

Q1) a) Explain any 3 of the followings : **[6]**

i) Management Accounting.

ii) Financial Accounting.

iii) Cost Accounting.

iv) Functions of a finance officer.

b) What is a balance sheet and what information does it convey to outsider? Explain with example. **[6]**

OR

Q2) a) How does management accounting differ from financial accounting? Explain briefly, how management accounting helps the management of a company in making decision. **[6]**

b) What do you mean by recording of financial transactions? Explain significance of subsidiary books, ledger, cashbook and trial balance. **[6]**

P.T.O.

Unit - II

Q3) a) What are different elements of costs? Explain in brief. **[8]**

b) What is rate of return on equity for a company whose profit margin is 12%, total assets / turnover ratio is 2 times and its equity / total assets ratio is 40%. **[4]**

OR

Q4) a) What is ratio analysis? Describe any two with formulaes. **[6]**

b) From the following information relating to M/S XYZ Pvt. Ltd., **[6]**

Calculate the break-even point and the turnover required to earn a profit of Rs. 3,00,000/-.

Fixed overhead = Rs. 2,10,000/- (total)

Variable cost = 20 per unit

Selling price = 50 per unit

If the company is earning a profit of Rs. 3,00,000/-, what is the margin of safety available to it?

Unit - III

Q5) a) What is the importance of management of working capital? Discuss the factors that enter into the determination of working capital. **[5]**

b) The ABC Pvt. Ltd. has a sales level of Rs. 2,80,000/- with a 10% profit margin before interest and taxes. To generate this sales volume, the firm maintains a fixed asset investment of Rs. 1,00,000/-. Currently the firm maintains Rs. 50,000/- in current assets. Determine the total asset turnover for the firm and compute the rate of return on total assets before taxes. **[6]**

OR

Q6) a) What does working capital management encompass? Distinguish between "temporary" and "permanent" working capital. **[5]**

b) The ABC Pvt. Ltd. has a sales level of Rs. 2,80,000/- with a 10% profit margin before interest and taxes. To generate this sales volume, the firm maintains a fixed asset investment of Rs. 1,00,000/-. Currently the firm maintains Rs. 50,000/- in current assets. Compute the before-tax rate of return on assets at different levels of current assets starting with Rs. 10,000/- and increasing in Rs. 15,000/- increments to Rs. 1,00,000/-. **[6]**

SECTION - II

Unit - IV

Q7) a) What is capital budgeting? What is the most acceptable criterion for making capital budgeting decisions? **[6]**

b) Your bank pays you Rs. 12,000/- at the end of 7 years of your deposit of Rs. 1200/- a year for 7 years in a recurring deposit account. What is the net present value of your investment if your required rate of return is 10%? What is the internal rate of return? **[6]**

OR

Q8) a) Discuss and distinguish between net present value and yield of investment methods of making investment decisions. Which of the two, do you consider to be more sound criterion. **[6]**

b) You pay annual premium of Rs. 1,000/- to your insurance company for 20 years and you get Rs. 30,000/- at the end of this period. What is the net present value and internal rate of return? **[6]**

Unit - V

Q9) a) What is cost of capital? What is the costliest source of capital funds? **[6]**

b) A company wants to issue 10,000 bonds of the face value of Rs. 100/- each with maturity of 20 years. The floatation costs, sales value of bond, interest rates and marginal tax rates are given below, calculate the cost of debt in each case : **[5]**

Sales value of bond	Rate of interest	Floatation costs	Marginal tax rates
98	8	2%	48%
97	9	2.5%	50%

OR

Q10)a) Why is the cost of preference share is more than the cost of equity capital? Which of them do you consider to be the most suitable? Why? **[6]**

b) A share holder purchased a share of Rs. 100/-. For five years he received dividend at the rate of 10% per year. At the end of 5 years, he sold his share for Rs. 130/-. What is his rate of return? **[5]**

Unit - VI

Q11)a) "Accounting and finance function should be handled with the help of computers and software packages more easily". Evaluate this statement critically. **[6]**

b) Explain the features, which should be part of any software package (like Tally) for computerised accounting and finance functions. **[6]**

OR

Q12)a) Narrate the role of computers and software in accounting and finance. **[6]**

b) What should be the basic building blocks of a software package (like Tally) which deals with activities of share market, trading, purchasing and inventories related matters. **[6]**

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

P1140

[3666]-53
Third Year M.C.A. (Engineering)
ADVANCED DATABASES
(2005 Course) (315003)

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) What is the need of query optimization? **[3]**

b) Discuss the cost components for a cost function that is used to estimate query execution cost. Are there cases in which it is desirable for users to be aware of the costs of computing query processing strategies? Explain your answer. **[8]**

c) Explain & compare nested loop join & block nested loop join algorithm. **[6]**

OR

Q2) a) With suitable block diagram explain the steps in query processing. **[6]**

b) Explain role of "selection" operation in query processing. **[6]**

c) Let relations $r_1(A, B, C)$ & $r_2(C, D, E)$ have the following properties : r_1 has 20,000 tuples, r_2 has 45,000 tuples, 25 tuples of r_1 fit on one block, & 30 tuples of r_2 fit on one block. Estimate the number of block accesses required, using each of the following join strategies for $r_1 \bowtie r_2$:

i) Nested loop join.

ii) Block nested loop join. **[5]**

P.T.O.

Q3) a) Explain with neat diagram typical transaction server system in detail. **[8]**

b) Differentiate between speedup & scaleup. **[3]**

c) Why distributed database architecture is required? Explain with example. **[6]**

OR

Q4) a) Compare centralized & client-server architecture. **[4]**

b) Explain parallel database architecture. **[8]**

c) State the advantages & disadvantages of distributed system. **[5]**

Q5) a) Explain the need of complex data type. **[4]**

b) What is the difference between persistent & transient objects? How is persistent objects are handled in typical object oriented database systems? **[8]**

c) Explain object identity & pointers. **[4]**

OR

Q6) a) Explain the concept of object containment. **[4]**

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

c) Explain type inheritance & table inheritance with example. **[6]**

SECTION - II

Q7) a) Explain the architecture of data warehouse. **[6]**

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? **[5]**

c) Explain the following operations with respect to data cube **[6]**

i) Slice and dice.

ii) Roll-up.

OR

Q8) a) Explain star schema for multidimensional databases in detail. **[6]**

b) What is noise? Explain the data smoothing techniques. **[7]**

c) What is data integration and transformation? **[4]**

Q9) a) Explain "Apriori Algorithm" for association rules in detail. **[9]**

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

i) Text mining.

ii) Decision tree.

OR

Q10)a) State and explain k-means algorithm for clustering. How we can make this algorithm scalable? **[9]**

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

i) Outlier analysis.

ii) Bayesian classifier.

Q11)a) What is difference between DBMS and Information Retrieval system? **[4]**

b) Explain popularity ranking. **[6]**

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

i) Information extraction.

ii) Homonyms.

iii) Ontologies.

OR

Q12)a) Explain the following terms with respect to ranking using TF-IDF : **[4]**

i) Inverse document frequency.

ii) Term frequency.

iii) Proximity of terms.

iv) Stop words.

b) How is the retrieval effectiveness measured? **[6]**

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

i) Web crawlers.

ii) Inverted index.

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

P1144

[3666]-205
F.Y. M.C.A. (Engineering)
MANAGEMENT INFORMATION SYSTEMS
(2008 Course)

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) 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) ***Neat diagrams must be drawn wherever necessary.***
6) ***Make suitable assumptions wherever appropriate and relevant.***

SECTION - I

Q1) a) Define management. Explain the various functions of the manager in detail. **[8]**

b) Define Management Information Systems (MIS). Explain the role of the Management Information Systems. **[4]**

OR

Q2) a) Define system with a block diagram and differentiate between an open-loop and a close-loop system. **[6]**

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

Q3) a) Explain in detail accounting and finance management as an application of Management Information Systems. **[8]**

b) Explain Management Information Systems (MIS) applications in banking sector. **[4]**

OR

Q4) a) Explain cross-functional enterprise systems. What are its benefits? **[6]**

b) What is personal management? What are its objectives? **[6]**

Q5) a) What is Enterprise Resource Planning (ERP)? Describe standard Enterprise Resource Planning (ERP) modules. **[6]**

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

P.T.O.

OR

Q6) a) What is Business Process Re-engineering? Explain. **[4]**

b) What is Business Process Outsourcing (BPO)? Discuss types of Business Process Outsourcing (BPO). Enlist challenges in Business Process Outsourcing (BPO) management. **[5]**

c) Discuss value stream model of organization. **[2]**

SECTION - II

Q7) a) List the components of Supply Chain Management and explain them briefly. **[6]**

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

OR

Q8) a) What is Customer Relationship Management? Explain the benefits and challenges in Customer Relationship Management. **[6]**

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

i) Three phases of Customer Relationship Management.
ii) e-Commerce applications.

Q9) a) Explain data mining for decision support system. **[6]**

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

i) Geographical Information Systems (GIS).
ii) Expert system.

OR

Q10) a) Explain what-if analysis and Goal seeking analysis in decision making process. **[6]**

b) What is Data Warehouse? Mention steps involved in implementation of a data Warehouse. **[6]**

Q11) a) Explain the ethical responsibility of Business Professionals. **[6]**

b) Write a short note on Global IT strategies. **[5]**

OR

Q12) a) Discuss the following issues in brief : **[6]**

i) Computer crime.
ii) Software Piracy.

b) Explain Disaster recovery and elaborate on fault-tolerant systems. **[5]**

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

P1194

[3666]-14
F.Y. M.C.A. (Under Engineering Faculty)
PROBABILITY AND STATISTICS
(2005 Course) (115004)

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

Instructions to the candidates:

1) ***Answer of two sections should be written on separate answer books.***
2) ***Neat diagrams must be drawn wherever necessary.***
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) A plane has got 4 engines. The probability of any engine failing is 1/3. If at least one engine does not fail it will not fail, but there will be air crash if all engines fail. Each engine may fail independently of the other engine. Find the probability that

i) Plane crashes.
ii) Plane is in critical conditions. **[5]**

b) Prove that : **[6]**

i) $P(A) = 1 - P(\overline{A})$, $\overline{A}$ – complement of A.

ii) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$.

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

i) Independent events.
ii) Mutually exclusive events.
iii) Conditional probability.

OR

a) A particular breed of hens lay eggs four days in a week one egg on a day. If the poultry has 10 hens. Find the probability that on a particular day poultry gets 4 eggs. **[5]**

b) State and prove axioms of probability. **[6]**

c) A student takes his examination in 4 subjects A, B, C and D. He estimate his chances of passing in A as 4/5, in B as 3/4, in C as 5/6 and in D as 2/3. To qualify he must pass in A and at least in 2 other subjects. What is the probability that he qualifies? **[6]**

P.T.O.

Q2) a) A die is thrown thrice. A success is getting 6 on a throw. Find the mean and variance of the number of successes. **[6]**

b) Determine k such that the function defined as follows is a p.m.f. **[6]**

$$P(x)=\begin{cases} k\times 2^{-x}, \text{for } x=1,2,3,.... \\ 0, \quad \text{otherwise} \end{cases}$$

Also find $P(x < 5)$.

c) If X and Y are independent random variables with E [X] = 3, E [X^2] = 25, E [Y] = 10 and E [Y^2] = 164. Find

i) E [2X – 3Y + 7]

ii) Var [3X + Y – 8] **[5]**

OR

a) The probability of a man hitting a target is 1/3. How many times must he fire so that the probability of hitting the target at least once is more than 90%? **[6]**

b) One percent of articles produced by a company are defective. A sample of 100 items is selected at random. Find the probability that there are 3 defective items in a sample. (given $e^{-1} = 0.3679$) **[6]**

c) State and prove multiplication theorem of probability. **[5]**

Q3) a) Find the moment generating function of a distribution whose p.d.f. is given by $f(x) = \lambda e^{-\lambda x}$, $x > 0$ and λ is a parameter. **[6]**

b) A die is thrown until 6 appear. What is that probability that it must be thrown more than 5 times? **[6]**

c) Explain the term memory-less property of Geometric distribution. **[4]**

OR

a) The joint probability function of two variables X and Y is given by

$$f(x,y)=\begin{cases} xy^2+\dfrac{x^2}{8}, \text{for } 0\le x\le 2,\ 0\le y\le 1 \\ 0, \quad \text{otherwise} \end{cases}$$

Find $P(x>1)$, $P\left(y<\dfrac{1}{2}\right)$. **[6]**

b) Define a standard normal random variable. Find mean and variance of standard normal distribution. **[6]**

c) If X and Y are independent random variables, prove that

$Var\,(X+Y) = Var\,(X) + Var\,(Y)$. **[4]**

SECTION - II

Q4) a) Nine observations on a random variable are recorded as 406, 395, 400, 450, 410, 415, 401, 408, 390. Find **[6]**

i) Sample mean.
ii) Median location.

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

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

c) Explain the method of moments to derive point estimate. **[5]**

OR

a) Let X be a variable which stands for elements 5, 9, 13 and Y be a variable which stands for elements 4, 7, 11 of the population. Compute : μ_X , μ_Y , σ_X , σ_Y , μ_{X-Y} and σ_{X-Y} . **[6]**

b) Find the mean and standard deviation of sampling distribution of variance for the population 2, 3, 4, 5 by drawing a sample of size 2 without replacement. **[6]**

c) Explain with suitable example sampling distribution of proportion. **[5]**

Q5) a) Explain the term one-tailed and two-tailed test. **[6]**

b) The length of life X of certain computer is approximately normally distributed with mean 800 hours and standard deviation 40 hours. If a random sample of 30 computers has a life of 788 hours. Test the null hypothesis that $\mu = 800$ hours against the alternate hypothesis $\mu \neq 800$ hours at 5% level of significance. **[6]**

c) What is point estimator and point estimate? What properties of estimator make it a good estimator? **[5]**

OR

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

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

i) Interval estimate.
ii) Unbiased estimate.
iii) Efficient estimate.
iv) Confidence limit.

c) A random sample of size 5 is drawn from a binomial distribution with parameter n = 20 and p unknown. Evaluate p for the given data 18, 17, 15, 19, 20 using method of moments. **[5]**

Q6) a) Explain the term 'p-chart' of statistical quality control. **[4]**

b) A set of 5 similar coins is tossed 320 times, and the result is : **[6]**

No. of heads	0	1	2	3	4	5
Frequency	6	27	72	112	71	32

Test the hypothesis that the data follows a binomial distribution using Chi-square goodness of fit.

c) Prove that $\overline{X}$ is an unbiased estimator for μ . **[6]**

OR

a) A die has thrown 9000 times and a throw of 5 or 6 was obtained 3240 times. On assumption of random throwing do the data indicate a unbiased die? **[6]**

b) What is hypothesis testing? What is the significance of alpha and beta? **[6]**

c) What properties should the quality control chart possess? **[4]**

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

P1195

[3666]-35
Second Year M.C.A. (Engineering)
PRINCIPLES OF MULTIMEDIA
(2005 Course) (215005)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is Multimedia? Describe its Goals and Objectives. **[8]**

b) What is Multimedia Authoring? Explain any one Multimedia Authoring tool in detail. **[8]**

OR

Q2) a) Draw the block diagram of Multimedia System Architecture and explain the functions. **[8]**

b) Explain any two Multimedia Document Architecture. **[8]**

Q3) a) Explain TIFF file format in detail. **[10]**

b) List & Explain various methods of Image Enhancement. **[8]**

OR

Q4) a) Explain JPEG-DCT algorithm in detail. **[10]**

b) Explain RLE algorithm. **[8]**

Q5) a) List and explain the various elements of audio systems. **[8]**

b) Describe the various modes of CD-ROM and their limitations. **[8]**

P.T.O.

OR

Q6) a) Explain MPEG-IV file format used for Audio. **[6]**

b) Write short note on : **[10]**

i) WAV file format.

ii) VOC file format.

SECTION - II

Q7) a) Explain different types of Video Transmission Standards. **[9]**

b) Explain in detail DVD format method in detail. **[9]**

OR

Q8) Write short note on any three : **[18]**

a) LZW text compression.

b) Huffman coding.

c) Video recording systems.

d) PDF file format.

Q9) a) What is Virtual Reality? Explain the norms for Virtual Reality. **[8]**

b) Explain different types of Virtual Reality devices in detail. **[8]**

OR

*Q10)*a) Describe the basics of VRML in brief. **[10]**

b) Explain virtual objects in detail. **[6]**

*Q11)*a) What is an animation? Explain the principles of animation in detail. **[8]**

b) Explain different techniques of animation in detail. **[8]**

OR

*Q12)*a) What are types of animation? Illustrate with a suitable example. **[8]**

b) Describe the different tools to create animation. **[8]**

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

P1196

[3666]-42
Second Year M.C.A. (Engineering)
WEB TECHNOLOGY
(2005 Course) (215010)

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

Instructions to the candidates:

1) ***Figures to right indicate full marks.***
2) ***Answers to 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) Write in brief as to what one means by terms/concepts given here : **[18]**

a) ARPANET.

b) Intranet.

c) Bridges.

d) http daemon.

e) Problems in internetworking.

f) Presentation layer of OSI.

OR

Q2) Write short notes on all three : **[18]**

a) Internet topology.

b) WWW and its impact on our lives.

c) UDP.

Q3) a) How did HTML originate, what are new features in HTML4 family?**[6]**

b) How and when will one use the following HTML/DHTML elements/ widgets/tags in a web page design, illustrate with suitable examples.**[6]**

i)
ii) headers.
iii) lists.

c) Compare HTML and XML. **[4]**

P.T.O.

OR

Q4) a) Write short notes on HTML forms. **[6]**

b) Design a table to show marks of students for SSC 10th class exam, show how a typical table and contents will look like and then write html code to display the table you have shown (make suitable assumptions and state them) **[6]**

c) What are cascading style sheets and how do they contribute to DHTML. **[4]**

Q5) What do you understand by following terms, explain with examples : **[16]**

a) Scripting languages.

b) Object orientation in JavaScript.

c) JavaScript's relation to Java.

d) Object constructors.

OR

Q6) In context of JavaScript **[16]**

a) Discuss arithmetic expressions, give examples.

b) What are Boolean and bitwise operations, give examples, syntax?

c) Does JavaScript need browser support, how do you enable, disable JavaScript on internet explorer.

d) Write/define a function to find maximum of three numbers.

SECTION - II

Q7) a) How is internally information stored about HTML page and how can one programmatically manipulate a HTML document? **[8]**

b) Explain the JavaScript role in DHTML. **[4]**

c) What does one mean by static web pages, what are their limitations? **[4]**

OR

Q8) What do you understand by given concepts? explain in brief : **[16]**

a) Text area object in DOM.

b) Interactive web sites

c) Events.

d) getElements By TagName ('element_ name').

Q9) a) Compare servelets and CGI. **[6]**

b) Write short notes on general server characteristics. **[6]**

c) What is role of servlets in J2EE. **[4]**

OR

Q10) a) Are servlets used on client side, or server side, what kind of applications can make use of servlets, explain with examples. **[6]**

b) Compare servlets and JSPs. **[6]**

c) What is an HTTP specific servlet. **[4]**

Q11) What do you understand by following concepts **[18]**

a) Distributed applications.

b) .nio.

c) Server in context of sockets.

d) Client in context of sockets.

e) Computer network applications.

f) Well known ports.

OR

Q12) Write short notes on all three : **[18]**

a) How to do socket programming?

b) IP addressing for subnetting.

c) Terms : tcpip port, serversocket, host

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

P1020 **[3666] - 13**

First Year M.C.A. (Engineering)

FOUNDATION OF INFORMATION TECHNOLOGY

(2005 Course) (115003)

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

Instructions to the candidates:

1) ***Answer Q1 or Q2; Q3 or Q4; Q5 or Q6 from Section-I and Q7 or Q8; Q9 or Q10; Q11 or Q12 from Section-II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Explain design of half adder and full adder with truth table. **[8]**

b) Differentiate between the characteristics of primary and secondary storage of a computer system. **[5]**

c) Convert to binary number system : **[4]**

i) $(534)_{10}$ ii) $(4CB2)_{16}$

OR

Q2) a) Draw a block diagram of the basic organization of a computer system and explain the functions of the various blocks? **[8]**

b) What are the basic operations of a computer system for converting raw input data in to useful information? **[5]**

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

i) 896 to Octal. ii) $(1715)_8$ to Decimal.

Q3) a) Explain the basic architecture of processor and memory of a computer system. **[8]**

b) Write short note on (any 2) : **[9]**

i) Types of printers.

ii) Optical disks.

iii) I/O devices.

OR

Q4) a) What is a processor? What are its different types? Explain each giving its advantages and limitations. **[9]**

P.T.O.

b) Explain **[8]**

i) Characteristics of storage unit.

ii) Basic operating principle in Magnetic disks.

Q5) a) What are the characteristics of a good Programming Language? **[6]**

b) Discuss similarity and difference between different types of Computer Languages. **[6]**

c) Compare Compiler and Interpreter. **[4]**

OR

Q6) a) What is a software package? What steps are followed for its in-house development? **[6]**

b) What are the advantages of Assembly Language over Machine Language? **[6]**

c) Define system software? List the key features performed by an system software. **[4]**

SECTION - II

Q7) a) What is a process? Explain different mechanisms for process management in a operating system. **[8]**

b) Explain some common features provided in a word processing package. **[5]**

c) What is a utility program? List some of the frequently used utility program. **[4]**

OR

Q8) a) What is a virtual memory? List advantages and limitations of virtual memory. **[8]**

b) What are the requirements for multiprogramming system? **[5]**

c) What are the file operations provided by an operating system? **[4]**

Q9) a) What is Testing? What is Debugging? Differentiate between them. **[9]**

b) What are the different modes of file organization? Explain in detail giving advantages and disadvantages of each. **[8]**

OR

Q10)a) What is a Database Management system? What are the different models for Database Management? Explain in detail. **[9]**

b) List out the commonly used media types generally used in Modern Computer systems and explain how each one help in information presentation. **[8]**

Q11)a) List the advantages and disadvantages of satellite communication system. **[6]**

b) What is modulation? Explain different modulation techniques. **[6]**

c) Compare between LAN and WAN. **[4]**

OR

Q12)a) Explain with neat diagram the 7 layer OSI Network model. **[8]**

b) What are the basic elements of a communication system? What is the purpose of each? **[4]**

c) What are the advantages of distributed computing? **[4]**

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

P1024 **[3666] - 31**

Second Year M.C.A. (Engineering)

OPERATING SYSTEMS

(2005 Course) (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.***

SECTION - I

Q1) a) What are the components of system software? Explain each component in detail emphasizing its functionality. **[8]**

b) Give any two differences between system programs and application programs. **[2]**

c) What is the need for an assembler in the system? What is a single pass assembler? How does an assembler work? Give the details of the working of an assembler. **[8]**

OR

Q2) a) What is a Language Processor? What are the different types of Language Processors? **[4]**

b) i) What is a Macro? What does the macro definition consists of? Explain. **[4]**

ii) Give the differences between Macros and Subroutines. **[2]**

c) What are the Language Processing Activities? Each activity should be explained with diagramatic support. **[8]**

Q3) a) State and explain different loader schemes (any 4 loader schemes). **[8]**

b) Write a short note on MS-DOS linker. **[4]**

c) What are functions of a compiler? (Give any 2 functions). Give any 2 differences between an assembler and a compiler. **[4]**

OR

Q4) a) Explain the different phases of compilation in detail. **[8]**

b) Explain the following loader schemes :- **[4]**

i) Absolute loaders.

ii) Relocating loaders.

P.T.O.

c) "Relocation can be done before linking". State whether this statement is true or false. Justify your answer. **[4]**

Q5) a) Explain the following classes of operating systems :- **[6]**

i) Batch processing.

ii) Multi programming systems.

iii) Real Time Operating Systems.

b) Explain the concept of a Virtual Machine operating systems. **[4]**

c) Explain any 3 functions performed by an operating system. **[6]**

OR

Q6) a) Give the process state transition diagram and explain. **[6]**

b) State and explain any 3 process scheduling criteria. **[6]**

c) Compare pre-emptive and non-pre-emptive scheduling with the support of examples. **[4]**

SECTION - II

Q7) a) Compare contiguous & non contiguous memory allocation. **[4]**

b) Explain the concept of Paging. What is demand paging? What are the different page replacement algorithms? Explain. **[6]**

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

i) Fixed partitioned allocation.

ii) Variable partitioned allocation.

iii) Fragmentation.

iv) Compaction.

OR

Q8) a) Give any 4 differences between paging and segmentation. **[4]**

b) Explain the concept of segmentation. What is paged segmentation? Can segments be shared? Elaborate. **[6]**

c) Give the concept of Virtual Memory. Explain the Data structures for the VM handler. **[8]**

Q9) a) What are the three techniques for performing I/O? Explain. **[6]**

b) Explain any three I/O buffering schemes. [with diagram support]. **[6]**

c) Give the file system architecture, and explain in brief. **[4]**

OR

Q10)a) Explain the following file organizations :- **[6]**

i) The sequential file.

ii) Indexed - sequential file.

iii) The direct or hashed file.

b) Explain any 3 file allocation methods. **[6]**

c) Explain the terms enlisted below, with respect to Disk I/O. **[4]**

i) Seek time.

ii) Rotational delay.

iii) Transfer time.

iv) Access time.

Q11)a) Give the features of Linux O.S. (any two). Give any 2 differences between Linux and Unix. **[4]**

b) Explain with suitable diagramatic support the components of Linux System in detail. **[8]**

c) Give any 4 differences between a process and a thread. **[4]**

OR

Q12)a) i) What is a system call?

ii) What is a system command? Give examples of both, i.e. example of system call & system command. **[4]**

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

i) The Virtual File System [VFS].

ii) The Ext2fs or Ext3fs file system.

c) Explain the functionality of the following system calls :- **[4]**

i) fork.

ii) exec.

iii) wait.

iv) exit.

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

P1025

[3666] - 32
S.Y.M.C.A.
DATABASE MANAGEMENT SYSTEMS
(2005 Course) (215002)

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) Discuss significant differences between file processing system and a DBMS. **[6]**

b) Explain the difference between physical data independence & logical data independence. **[6]**

c) Discuss data abstraction methods. **[4]**

OR

Q2) a) Explain the role of database administrator. Discuss data definition languages. **[4]**

b) Discuss overall structure of database. Comment on multiuser DBMS architecture. **[6]**

c) List five responsibilities of database management system. Explain the problems may arise if responsibilities are not discharged properly. **[6]**

Q3) a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associated with each patient a log of the various tests and examinations conducted. **[10]**

b) Explain the differences between strong and weak entity set. **[8]**

OR

Q4) a) Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. **[10]**

b) Explain how the E-R diagram helps in modeling the software system using UML. **[8]**

P.T.O.

Q5) a) Describe the differences in the meaning between the terms relation and relational schema. **[6]**

b) Consider the following relational schema

Employee(empno, name, office, age)

Books (isbn, title, authors, publisher)

Loan(empno, isbn, date)

Write the following queries in relational algebra

i) Find the names of employees who have borrowed a book published by McGraw-Hill.

ii) For each publisher, find the names of employees who have borrowed more than five books of that publisher.

iii) Find the names of employees who have borrowed all books published by McGraw-Hill. For the names of employees who have borrowed more than five different books published by McGraw-Hill. **[10]**

OR

Q6) a) Show that in SQL, **< > all** is identical to **not in**. **[6]**

b) Let the following relation schemas be given :

R = (A, B, C)

S = (D, E, F)

Let the relation r(R) and s(S) be given. Give an expression in SQL that is equivalent to each of the following queries.

i) $\Pi_{A}(r)$.

ii) $r \times s$.

iii) $\sigma_{B} = 17(r)$.

iv) $\Pi_{A,F}\left(\sigma_{C} = {}_{D}(r \times s)\right)$. **[10]**

SECTION - II

Q7) a) What is embedded SQL? Describe its features. Under which circumstances would you use it? **[8]**

b) Write an SQL query without using a "with" clause to find all branches where the total account deposit is less than the total account deposit at all branches :

i) Using a nested query in the "from" clause.

ii) Using a nested query in a "having" clause. **[8]**

OR

Q8) a) Explain different data types in PL/SQL with suitable example. **[8]**

b) What are various directly allowable statements from SQL to PL/SQL? Explain. **[8]**

Q9) a) Explain what is meant by repetition of information and inability to represent information. Why each of these properties may indicate a bad relational database design? **[6]**

b) Why certain functional dependencies are called trivial functional dependencies? Explain with suitable examples. **[6]**

c) Use Armstrong's axioms to prove the soundness of the decomposition rule. **[6]**

OR

Q10)a) Consider the following proposed rule for functional dependency : **[6]**

If a -> b

c -> b then

a -> c.

Prove that this rule is not sound by showing a relation r that satisfies a -> b & c -> b but does not satisfy a -> c.

b) List three design goals of relational databases and explain why each is desirable. **[6]**

c) Explain why we might choose a non - BCNF design while designing a relational database. **[6]**

Q11)a) Explain the distinction between the term serial schedule & serializable schedule. **[6]**

b) What is recoverable schedule? Why is recoverability of schedules desirable? **[6]**

c) Why do database systems support concurrent execution of transaction even though it adds programming overhead? Explain. **[4]**

OR

Q12)a) List ACID properties. Explain usefulness of each. **[4]**

b) Why the conflict serializability is given more emphasize than the view serializability? **[6]**

c) What is cascadeless schedule? Why the cascadelessness is desirable? When noncascadeless schedule can be allowed? Explain. **[6]**

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

P1026 **[3666] - 41**

S.Y. M.C.A. (Engineering)
SOFTWARE ENGINEERING - I
(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) What are the five generic process framework activities? What are the umbrella activities involved in process framework? **[8]**

b) What is the difference between Incremental development and Iterative development? Explain prototyping paradigm? **[9]**

OR

Q2) a) What are practitioner's myths? What is the impact of scope change in the later stage of the project? **[9]**

b) As you move outward along spiral process flow, what can you say about software that is being developed. **[8]**

Q3) a) What is software engineering practice? Why it is important? What are the major steps involved in it. **[8]**

b) What are different principles and tasks involved in construction practice? **[8]**

OR

Q4) a) What is business process engineering? What architectures are defined and developed as a part of business process engineering. **[8]**

b) What is UML? Explain its significance with system modeling. **[8]**

Q5) a) What is requirements engineering? Explain the different steps involved in it. **[8]**

b) What is use case development? Draw a complete use case diagram for the scenario "Buying a stock using an on-line brokerage Account". **[9]**

OR

P.T.O.

Q6) a) What is data modeling? Draw a complete data model for the system 'A web based order processing system for a computer store'. **[9]**

b) What is the purpose of domain Analysis? How it is related to the concept of requirements pattern? **[8]**

SECTION - II

Q7) a) Explain in brief : **[9]**

i) Abstraction.

ii) Modularity.

iii) Refinement.

b) Explain the significance and difference between component level design elements and deployment level design elements. **[8]**

OR

Q8) a) Explain in brief : **[9]**

i) Transform flow.

ii) Transaction flow.

iii) Transform Mapping.

b) Explain the difference between Data Centered Architecture and Layered Architecture. **[8]**

Q9) a) Is unit testing possible or even desirable in all circumstances? Provide examples to justify your answers. **[8]**

b) Explain Regression testing and its significance. **[8]**

OR

Q10)a) What is debugging? What are different debugging strategies? **[8]**

b) What is equivalence partitioning? Compare it with Boundary value Analysis. **[8]**

Q11)a) Explain the difference between measures, metrics and indicators. **[9]**

b) Explain the metrics for specification quality. **[8]**

OR

Q12)a) Explain in brief : **[9]**

i) Depth of Inheritance Tree.

ii) Coupling between object classes.

iii) Method Inheritance factor.

b) Explain Halsteads software science measurement for measuring a source code. **[8]**

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

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

OBJECT ORIENTED MODELING & DESIGN

(2005 Course) (Sem. - IV) (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) Explain CORBA architecture. **[8]**

b) Explain design view in 4+1 view architecture. **[6]**

c) Explain any one new features of UML 2.0. **[3]**

OR

Q2) a) Write short note on - **[8]**

i) XML Metadata Interchange (XMI).

ii) Meta Object Facility (MOF).

b) Write in brief Object Oriented features. **[5]**

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

Q3) a) Explain the benefits of using UML. **[6]**

b) What is Meta model? Describe in brief the four layers of meta model architecture. **[6]**

c) Compare classes & interfaces with example. **[5]**

OR

Q4) a) Explain the following with examples : **[6]**

i) Stereotypes.

ii) Tagged values.

iii) Constraints.

b) Explain use of following diagrams with example - **[6]**

i) Interaction overview diagram.

ii) Timing diagram.

c) Define profiles. Explain its use with an example. **[5]**

P.T.O.

Q5) a) A bank is supposed to render following services to its customers - **[12]**

i) Savings account - Money deposit, withdrawl, transfer money to a different client account.

ii) Saving account with CHEQUE facility all above services at customer & through CHEQUE.

iii) Current account - same as savings account with CHEQUE facility plus overdraft.

Draw class diagram.

b) What is generalization? How it is represented? **[4]**

OR

Q6) a) Draw a use case diagram exploiting full notation for a hypothetical BACK UP software. Back up software will be used by users to take back ups of their folders on floppies, restore file folders from earlier back up floppies. User can opt for back up with compression. User can also get a status while length back ups are taking place. System can tell whether floppy has enough space for selected folders to be copied, format optionally floppies & also an overwrite option is available. Administrator have similar, backup / restore capabilities but applicable for all files / folders & for tape media as back up device. Automated scheduled back ups, incremental back ups are facilities available to system administrator. **[12]**

b) What is difference between <<include>> and <<extend>> relationships? Explain with example. **[4]**

SECTION - II

Q7) a) Draw a sequence diagram for the use case 'Connect a call to a certain extension number' in a telephone EPABX at your college. EPABX has multiple incoming lines. Incoming call is forwarded to extension number directly if you know only name of employer, extension number is first searched, then extension is connected. Call can be kept on hold till extension if busy is available or a local conversation (between two extensions) be interrupted for outside call. **[12]**

b) Which are the different Interaction diagrams? **[5]**

OR

Q8) a) Compare sequence diagram & communication diagram. **[5]**

b) Draw an Interaction overview diagram for simple sales process. Sales process consists of subprocesses like - Order Item, Search Item, update, modify, cancel, delete, ordered item, delivery of item etc. **[12]**

Q9) a) Compare activity diagrams & state machine diagrams. **[6]**

b) Explain signals & exceptions. **[6]**

c) What is the difference between actions & activities. **[5]**

OR

Q10)a) What is the use of timing diagrams? Explain with example. **[6]**

b) What is the purpose of drawing a state machine diagram? Which are the different notations used in state machine diagram? **[6]**

c) What are swimlanes & focus of control? **[5]**

Q11)a) Compare component diagrams & deployment diagrams. Give examples of both. **[8]**

b) Explain the following - **[4]**

i) Artifacts.

ii) Required & provided interfaces.

c) Write note on applications of UML in Embedded systems. **[4]**

OR

Q12)a) Explain different relationships between packages with example. **[4]**

b) Draw a deployment diagram for "Online Book Shopee". Assume your scope for the system. **[12]**

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

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Third Year M.C.A. (Engineering)

PRINCIPLES & PRACTICES FOR IT MANAGEMENT

(2005 Course) (315001)

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.***
5) ***All questions are compulsory.***

SECTION - I

UNIT - I

Q1) a) Explain the significance and process of management in general. **[10]**

b) Give detail idea about business policy in IT. **[7]**

OR

Q2) a) Explain principles of management in detail. **[10]**

b) Give brief idea about business ethics and social responsibilities in IT industries. **[7]**

UNIT - II

Q3) a) What are different phases/stages of planning of an IT project? Explain each one in brief. **[10]**

b) Write the significance of risk management during planning of a project. **[6]**

OR

Q4) Explain any four **[16]**

a) Budgeting an IT project.

b) Breakdown structure of a software project.

c) Cost and effort estimation of an IT project.

d) Defining project scope.

e) Establishing project priorities.

P.T.O.

UNIT - III

Q5) a) What are different factors to keep in mind while formation of a project team? Explain in detail. **[8]**

b) Explain ways to handle the case of revision and / or changes in an IT project. **[9]**

OR

Q6) a) How to define project schedule? Explain different approaches of project scheduling. **[8]**

b) What are different constraints during project implementation? How to keep track of project progress? **[9]**

SECTION - II

UNIT - IV

Q7) a) Explain formal and informal group formation in detail. Also explain the way of interactions among various groups. **[10]**

b) Explain the importance of group dynamics. **[6]**

OR

Q8) a) Highlight the features of teams in project management. How the team is formulated and what should be the characteristics of a team leader? **[10]**

b) Write notes on any three **[6]**

i) Conflict management.

ii) Stress management.

iii) Employee welfare.

iv) Energy Audit.

UNIT - V

Q9) a) Explain knowledge management in detail. **[7]**

b) What are different Intellectual Property Rights? Explai in detail. **[10]**

OR

Q10)a) Write short notes on Cyber Laws. **[7]**

b) Explain the processes involved in following **[10]**

i) Six-sigma.

ii) CMM.

iii) CMMI and

iv) PCMM.

UNIT - VI

Q11) Explain the application of IT in management of inventory, stores and purchases in detail. Give proper justification as regards to schedule, estimation, implementation and quality standards. Take suitable model / example to explain. **[17]**

OR

Q12) Explain the application of IT in finance and banking with respect to its operation, customer satisfaction and quality standards. Take suitable model/ example to explain. **[17]**

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

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M.C.A. (Engg. - I)

MANAGEMENT SCIENCE

(2008 Course)

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) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

UNIT - I

Q1) a) Explain concept of Management, Administration and Organisation in brief. **[6]**

b) What is the contribution of Gilbreth to the management science. **[6]**

OR

Q2) a) What are the advantages of MBO? **[6]**

b) Explain the difference between planning and controlling functions of management. **[6]**

UNIT - II

Q3) a) What is wealth in economics? How it is classified? **[6]**

b) What is elasticity of supply? Draw the graphs of perfectly elastic supply & perfectly inelastic supply. **[6]**

OR

Q4) a) What are the major applications of ERP - Enterprise Resource Planning? **[6]**

b) What are the salient features of law of contract? **[6]**

UNIT - III

Q5) a) Explain advantages and limitations of co-operative sector. **[6]**

P.T.O.

b) What is committee organisational structure used in industry? **[5]**

OR

Q6) a) Explain Partnership business with its types of partners. **[6]**

b) Explain project organisation in brief. **[5]**

SECTION - II

UNIT - IV

Q7) a) Explain the factors affecting manpower planning. **[6]**

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

OR

Q8) a) Explain theory X and theory Y used in motivation. **[6]**

b) What are wages and incentives paid in industry? Explain in brief. **[6]**

UNIT - V

Q9) a) Explain the objectives & scope of factory Act - 1948. **[6]**

b) Explain the safety measures to be taken to prevent industrial Accidents. **[6]**

OR

Q10)a) How air pollution is controlled in industry? Explain. **[6]**

b) What are the different types of labour laws? **[6]**

UNIT - VI

Q11)a) Explain objectives and benefits of Quality Circles. **[6]**

b) Write short note on Total Quality Management - TQM. **[5]**

OR

Q12)a) What are the benefits of ISO 9000 implementation? **[6]**

b) What is Intellectual Property Right (IPR)? Explain in brief. **[5]**

Total No. of Questions : 12] **[Total No. of Pages : 6**

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[3666]-12

First Year M.C.A. (Engg.)

DISCRETE MATHEMATICS

(2005 Course)

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

Instructions to the candidates :

1) ***In Section-I attempt Q 1 or Q 2, Q 3 or Q 4, Q 5 or Q 6. In Section-II attempt Q 7 or Q 8, Q 9 or Q 10, Q 11 or Q 12.***
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) There are two restaurants next to each other. One has a sign that says 'Cheap food is not good' and other has a sign that says 'Good food is not a cheap'. Are both the signs saying same thing? Prove it. **[5]**

b) How many elements are in the union of 5 sets if the set contains 10,000 elements each, each pair of sets has 1000 common elements, each triple of sets has 100 common elements, every four of the sets has 10 common elements and there is one common element in all 5 sets? **[5]**

c) Show that $n^3 + 2n$ is divisible by 3 for all $n \geq 1$. **[3]**

d) Among the integers 1 to 300, find how many are not divisible by 3 nor by 5. Also find how many are divisible by 3, but not by 7. **[3]**

OR

Q2) a) Prove the following using Venn diagram. **[6]**

i) $A \cap (\overline{B} \cap C) = (A \cup \overline{B}) \cap (A \cup C)$.

ii) $A \cap B \oplus C = (A \cap B) \oplus (A \cap C)$.

b) Let $A = \{\phi, b\}$ construct the following sets. **[4]**

i) $A - \phi$.

ii) $\{\phi\} - A$.

iii) $A \cup P(A)$

iv) $A \cap P(A)$ where P is power set.

P.T.O.

c) Among 100 students 50 knows 'C' language, 55 knows basic language & 25 know 'C++', while 8 did not know any language, find **[6]**

i) How many know all 3 languages?

ii) How many know exactly 2 languages?

Q3) a) If Tina marries Rahul, she will be in Pune. If Tina marries Ramesh, she will be in Mumbai. If she is either in Pune or in Mumbai, she will definitely be settled in life. She is not settled in life. Thus she did not marry Ramesh or Rahul. Test the validity of the above argument. **[5]**

b) Show that the following implication without constructing the truth table : $P \rightarrow Q \Rightarrow P \rightarrow (P \wedge Q)$. **[5]**

c) Prove that $(\exists x)\,(P(x) \wedge Q(x)) \Rightarrow (\exists x)\,P(x) \wedge (\exists x)(Q(x))$. **[6]**

OR

Q4) a) If the universe of discourse is the set {a, b, c}, eliminate the quantifiers in the following formulae. **[6]**

i) $(x)\,(P(x) \rightarrow Q(x))$

ii) $(x)\,(R(x) \wedge (x)\,S\,(x))$

b) Show the following equivalences. **[5]**

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

c) Show that SVR is tautologically implied by $(P \vee Q) \wedge (P \rightarrow R) \wedge (Q \rightarrow S)$. **[5]**

Q5) a) A box contains 6 white balls and 5 black balls. Find the number of ways 4 balls can be drawn from the box if. **[6]**

i) Two must be white.

ii) All of them must have same colors.

b) Let (A, ≤) be a partially ordered set. Let ≤ be a binary relation on A such that for a & b in A, a ≤ b if & only if b ≤ a. Show that ≤ is a partial ordering relation. **[6]**

c) Let A = {a, b, c} & let $N_R = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 1 & 1 \end{bmatrix}$. Determine whether R is an equivalence relation. **[6]**

OR

Q6) a) How many permutations are there of the 26 letters of the alphabet in which the 5 vowels are in consecutive places? **[6]**

b) 6 boys & 6 girls are to be seated in a row such that : **[6]**

i) All boys sit together & girls sit together.

ii) No two girls sit together.

iii) Boys & girls sit alternately.

iv) The extreme positions are occupied by boys.

Find the number of ways in each case.

c) Two fair dice are rolled simultaneously, find the probabilities of the following events. **[6]**

i) The sum of two numbers is odd.

ii) The sum of two numbers is greater than 8.

iii) The sum of two numbers is odd or less than 7.

SECTION - II

Q7) a) Determine the following diagraphs whether isomorphic or not. **[6]**

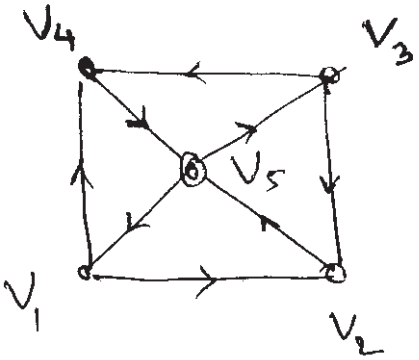


Fig (a)

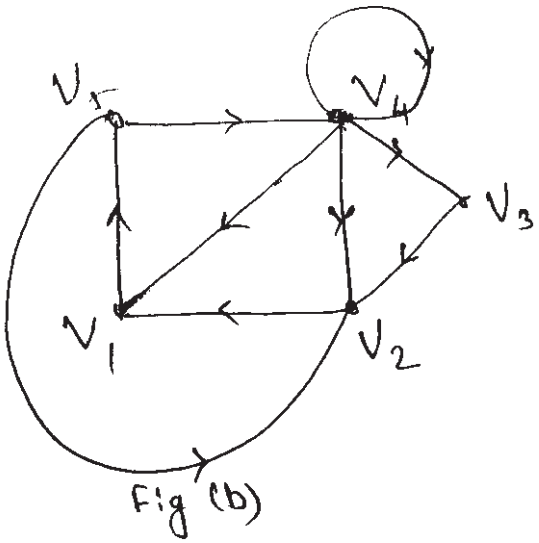
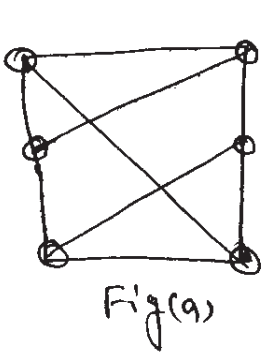
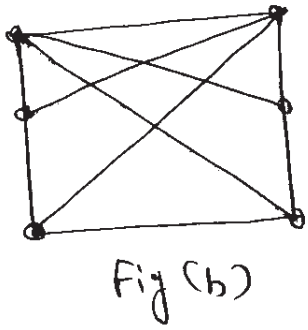
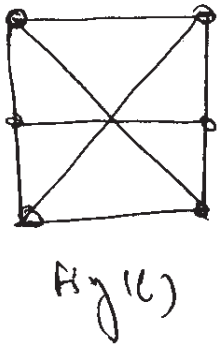


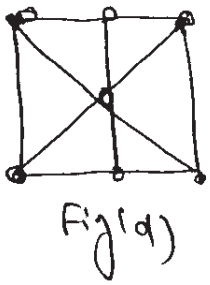
Fig (b)

b) Identify whether graphs given are planer or not. **[6]**









c) Define the following with examples. **[6]**

i) Eulerian path. ii) Eulerian circuit.

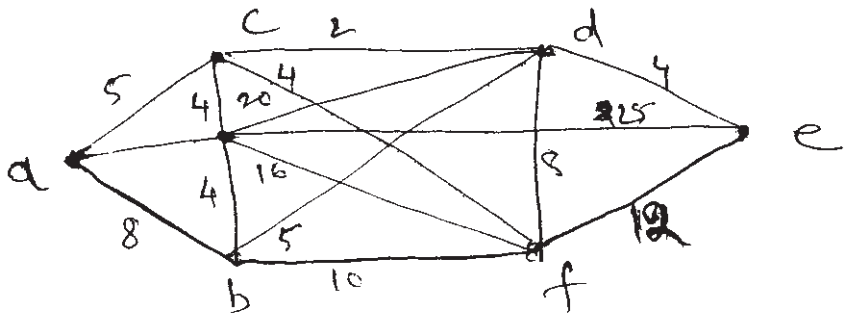
iii) Hameltanion path. iv) Hameltanion circuit.

v) Regular graph. vi) Factors of a graph.

OR

Q8) a) Explain Kruskals algorithm with example. **[6]**

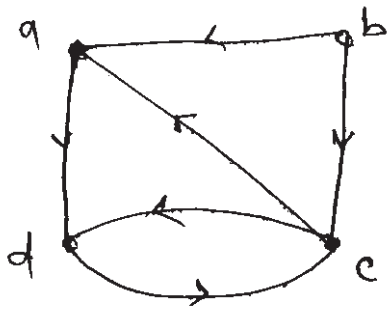
b) For the following graph; find the shortest path using dijkstras algorithm. **[8]**



c) Draw the following graphs : **[4]**

Complete graph with 4, 5, 6 & 8 vertices.

Q9) a) Use Warshalls algorithm to find transitive closure of relation R whose directed graph is as given below. **[6]**



b) Draw the Hasse diagram representing the partial ordering {(a, b) | a divides b} on {1, 2, 3, 4, 6, 8, 12}. **[5]**

c) Given the relation matrics M_R and M_S. Find M_{ROS}, M_{SOR}. **[5]**

$$M_R = \begin{bmatrix} 1 & 0 & 1 \\ 1 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix} \qquad M_S = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 1 & 0 \end{bmatrix}$$

OR

Q10) a) Define the following terms. **[3]**

i) Semi group.

ii) Abelian group.

iii) Subgroup.

b) Show that in a group $\langle G, * \rangle$, if for any a, b $\in$ G, $(a * b)^2 = a^2 * b^2$, then $\langle G, * \rangle$ must be abelian. **[4]**

c) Prove that for any commutative monoid $\langle M, * \rangle$ the set of idempotent elements of M forms a submonoid. **[4]**

d) Show that the set of N natural numbers is a semigroup under the operation $x * y = \max\{x, y\}$. Is it a monoid? Define monoid. **[5]**

Q11) a) Define the following terms: **[3]**

i) Right coset.

ii) Normal subgroup.

iii) Sub semigroup.

b) Prove that for any commutative monoid $\langle M, * \rangle$, the set of idempotent element of M forms a submonoid. **[5]**

c) Find the smallest submonoid of (z, +) generated by the set {-4, 6}. Define submonoid. **[5]**

d) Explain the following terms: **[3]**

i) Integral domain.

ii) Field.

iii) Cyclic codes.

OR

Q12) a) Construct DFA that recognizes the regular expression R = (a + b)* ab. **[6]**

b) Define the following : **[4]**

i) Moore machine.

ii) Mealy machine.

c) Given the parity check matrix.

$$H = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Find the minimum distance of the code generated by H. How many errors it can detect & correct. **[6]**

❐❐❐❐

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

P1139 **[3666] - 33**

M.C.A. (Engineering Faculty)

FINANCIAL ACCOUNTING

(Second Year 2005 Pattern) (215003)

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 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) Mr. Kamlesh started his business with the following assets and liabilities :-

	Rs.
Cash in hand	15,000
Goods in hand	25,000
Furniture	6,000
Buildings	20,000
Due by A Raman (Dr.)	6,000
Due to Kameshwaran (Cr.)	8,000
Due to Mohan (Cr.)	12,000

Jan 2009

i) Purchased goods from Mohan subject to trade discount of 5% Rs. 10,000.

ii) Sold goods to Murthy subject to trade discount of 2% Rs. 5,000.

iii) Received from A Raman Rs. 5,800 in full settlement.

iv) Received from Murthy in full settlement Rs. 4,500.

v) Paid Kameshwaran in full settlement Rs. 7,750.

vi) Paid Mohan Rs. 10,000.
Discount allowed Rs. 500.

Journalise the above transactions. **[10]**

b) Explain various accounting concepts & conventions. **[5]**

P.T.O.

OR

From the following ledger balances of a trader, prepare trading, profit & loss a/c and balance sheet as at 31st Dec. 2008.

Opening stock	48,000
Drawings	6,000
Sales	1,25,000
Sundry Debtors	18,000
Capital	25,000
Wages	14,000
Salaries	2,800
Carriage on purchases	2,500
Rent	3,500
Purchases	60,000
Discount on purchases	2,000
Interest on bank loan	100
Bills Receivables	3,000
Plant & Machinery	10,000
Cash	1,000
Building	2,500
Bills payables	2,500
Bank loan	2,000
Reserve for bad debts	2,500
Returns outwards	750
Sundry creditors	11,650

Adjustments :

Rent @ Rs. 100 p.m. is not paid for 2 months. Wages & salaries are unpaid to the extent of Rs. 750 and 225 respectively. Depreciate plant by 10%. Stock at close was Rs. 17,500. Write of Rs. 1,500 as bad debts and maintain a reserve of 5% on debtors.

UNIT - II

Q2) a) What is financial leverage? How does it differ from operating leverage? **[7]**

b) From the following data calculate **[8]**

i) Breakeven point expressed in amount.

ii) No. of units that must be sold to earn a profit of Rs. 1,60,000 per year.

Selling price Rs. 20 p.u.
Variable Manuf. cost Rs. 11 p.u.
Variable selling cost Rs. 3 p.u.
Fixed factory overheads Rs. 5,40,000 p.a.
Fixed selling cost Rs. 2,52,000 p.a.

UNIT - III

Q3) Prepare a cash budget for the three months ended 30th sept 2008 based on the following information :

Cash at bank on 1st July 2008 Rs. 25,000.

Monthly salaries & wages Rs. 10,000.

Interest payable in Aug. 2008 Rs. 5,000.

Estimated	June	July	Aug.	Sept.
Cash sales	1,20,000	1,40,000	1,52,000	1,21,000
Credit sales	1,00,000	80,000	1,40,000	1,20,000
Purchases	1,60,000	1,70,000	2,40,000	1,80,000
Other exp.	18,000	20,000	22,000	21,000

Credit sales are collected 50% in the month of sale and 50% in the month following 10% of the purchases are in cash and balance is paid in next month.

OR

What do you mean by cash flow statement? How is it important for managerial decisions? Explain with the help of suitable example. **[20]**

SECTION - II

UNIT - IV

Q4) Discuss the concept of working capital? What factors should the finance manager take into consideration while estimating working capital needs of a firm? **[15]**

OR

Shriram Enterprises manufactures a special product 'Zed'. The following particulars were collected for the current year :-

Monthly demand of Zed = 1000 units.

Cost of placing an order Rs. 100.

Annual carrying cost per unit Rs. 15.

Normal usage 50 units per week.

Maximum usage 75 units per week.

Minimum usage 25 units per week.

Reorder point 4 to 6 weeks.

Compute from the above

a) Reorder quantity or EOQ.

b) Reorder level.

c) Minimum level.

d) Maximum level and

e) Average stock level.

UNIT - V

Q5) What is meant by the term capital budgeting? How is capital budgeting technique relevant in investment decisions? What are the steps involved in the evaluation of investment projects? **[15]**

OR

Yama steel company is contemplating to invest in one of the two mutual exclusive projects. Each requires an immediate investment of Rs. 2,000. Project A has a life span of 4 years and project B has 5 years life. Both projects will be depreciated on a straight line basis, assuming no salvage value. The company's tax rate is 50%. Net cash flows before taxes and depreciation expected from each project are as under

Year	1	2	3	4	5
A	Rs. 600	600	800	800	-
B	Rs. 600	600	400	400	400

(Rs. in thousands)

Which project should the company select and why? Use average rate of return method.

UNIT - VI

Q6) Discuss the various concepts of cost of capital. Explain the various approaches for computing the cost of equity capital. Discuss the merits of each. **[20]**

OR

A fast growing foreign company wants to expand its total assets by 50% by the end of the current year. Given below are the company's capital structure which is considers to be optimal.

8% Debentures	Rs. 4,00,000
9% Preference shares	Rs. 1,00,000
Equity shares	Rs. 5,00,000
	Rs. 10,00,000

New debentures would be sold at 11% coupon rate and will be sold at par. Preference shares will have a 12% rate and will also be sold at par. Equity shares currently selling at Rs. 100 can be sold to net the company Rs. 95. The shareholders required rate of return is to be 17% consisting of a dividend yield of 10% and an expected growth rate of 7%. Retained earnings for the year are estimated to be Rs. 50,000. (ignore depreciation) The corporate tax is 35% you are required to calculate following -

a) What is the required amount of capital budget?

b) How much of the capital budget must be financed by external equity. i.e. by issue of new capital, to maintain the optimal capital structure.

c) Calculate the cost of

   i) new issue of equity shares and

   ii) retained earnings

   iii) debentures

   iv) Pref-shares.

d) Calculate the weighted average cost of capital.

Total No. of Questions : 12] **[Total No. of Pages : 7**

P1141

[3666]-102

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

DISCRETE MATHEMATICS

(510902) (2008 Course)

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

Instructions to the candidates :

1) ***In Section-I attempt Q 1 or Q 2, Q 3 or Q 4, Q 5 or Q 6. In Section-II attempt Q 7 or Q 8, Q 9 or Q 10, Q 11 or Q 12.***
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) In a class of 25 students, 12 have taken mathematics, 8 have taken mathematics but not biology, find the no. of students who have taken mathematics & biology and those who have taken biology but not mathematics. **[4]**

b) Prove that $n < 2^n$ for $n > 1$ using mathematical induction. **[5]**

c) Let A = {a, b, c, d, e}, B = {a, b, e, g, h} and C = {b, d, e, g, h, k, m, n}. Verify principle of inclusion & exclusion for the given sets. **[4]**

OR

Q2) a) Prove the following using Venn diagram. **[6]**

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

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

b) Out of integers 1 to 1000. **[5]**

i) How many are not divisible by 3 nor by 5 nor by 7?

ii) How many are not divisible by 5 & 7 but divisible by 3?

c) If A = {1}, B = {a, b}, C = {2, 3}, find $A \times B \times C$, A^2, $B^2 \times A$, C^3. **[2]**

P.T.O.

Q3) a) Obtain conjective normal form and disjunctive normal form for the following without using truth table. **[4]**

$(p \rightarrow q) \wedge (q \rightarrow p)$

b) Show that $R \rightarrow S$ can be derived from premises $P \rightarrow (Q \rightarrow S)$, $\sim R \vee P$ and Q. **[5]**

c) State law of detachment (Modus Ponens) & law of contraposition (Modus Tollens) that are used to prove a theorem. **[2]**

OR

Q4) a) Prove that $(p \rightarrow (q \rightarrow r)) \Rightarrow ((p \rightarrow q) \rightarrow (p \rightarrow r))$. **[4]**

b) Rewrite the following statements using quantifier variables and predicate symbols. **[7]**

i) All birds can fly.

ii) Not all birds can fly.

iii) Some men are genius.

iv) Some numbers are not rational.

v) There is a student who likes mathematics but not geography.

vi) Each integer is either even or odd.

vii) All prime numbers are not odd.

Q5) a) Find the number of distinguishable permutations of the letters in **[4]**

i) ASSOCIATIVE.

ii) REQUIREMENTS.

b) Five fair coins are tossed & the results are recorded. **[4]**

i) How many different sequences of heads & tails are possible?

ii) How many of the sequences in part i) have exactly one head recorded?

c) In how many ways can we distribute 15 different books among Pun, Khim & Leong so that Pun & Khim together receive twice as many books as Leong? **[3]**

OR

Q6) a) There are 21 consonants & 5 vowels in English alphabet. Consider only 8 letter word with 3 different vowels & 5 different consonants. **[6]**

i) How many such words can be formed?

ii) How many such words contain letter a?

iii) How many contain the letter a & b?

iv) How many contain the letter b & c?

v) How many contain the letter a, b & c?

vi) How many begin with a & end with b?

b) A palindrome is a word that reads the same forward & backward. How many seven letter palindromes can be made out of the English alphabet? How many 6 letter palindromes? **[5]**

SECTION - II

Q7) a) Let $A = \{a_1, a_2, a_3, a_4, a_5\}$ and let R be relation on A whose matrix is

$$M_R = \begin{bmatrix} 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 & 0 \end{bmatrix}$$

Find transitive closure of R using Warshall's algorithm. **[7]**

b) Find the relation determined by the diagraph in fig. 1 & give its matrix. **[4]**

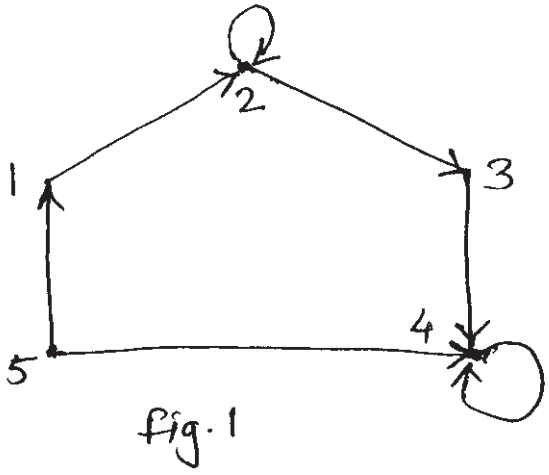


fig. 1

OR

Q8) a) Determine whether the relation R whose digraph given below is an equivalence relation. **[5]**

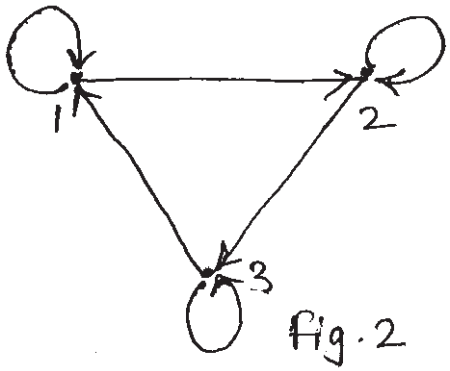
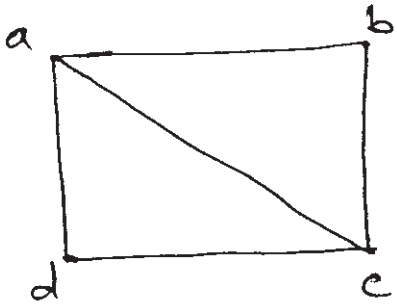


fig. 2

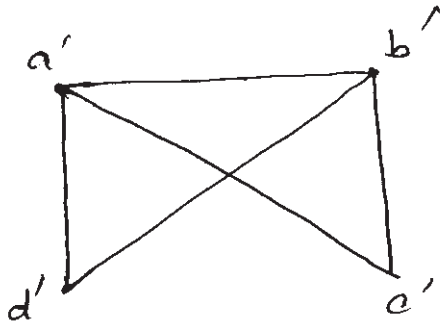
b) Define surjective function, injective function and bijective function with suitable example. **[6]**

Q9) a) Define regular graph & bipartite graph. Draw a complete bipartite graph which is not a regular graph. **[4]**

b) Show that the graphs G & G′ are isomorphic. **[5]**

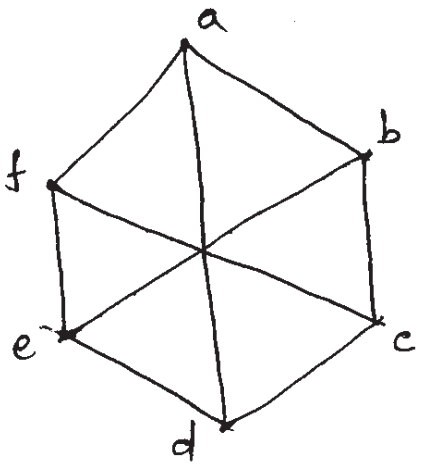


(G)
fig. 3

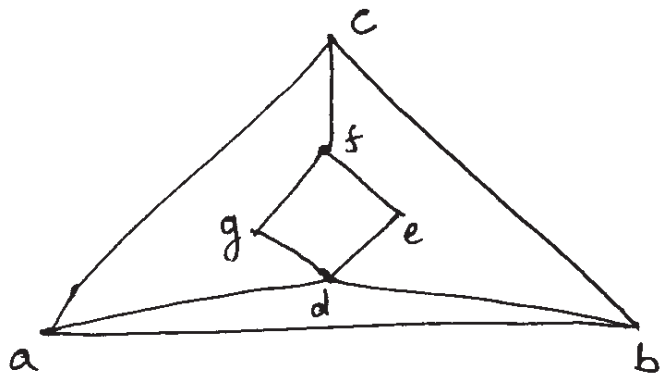


(G′)
fig. 4

c) Find the complement of the following graphs. **[4]**



(i)
fig. 5



(ii)
fig. 6

OR

Q10) a) Define the following with example. **[6]**

i) Spanning subgraph.

ii) Connected graph.

iii) Hamitonian path.

b) Apply shortest path algorithm to determine a shortest path between a & z in the graph shown below in Fig. 7. **[5]**

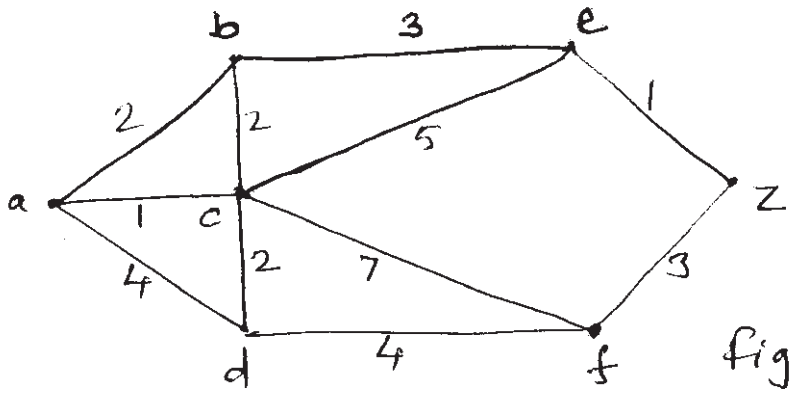


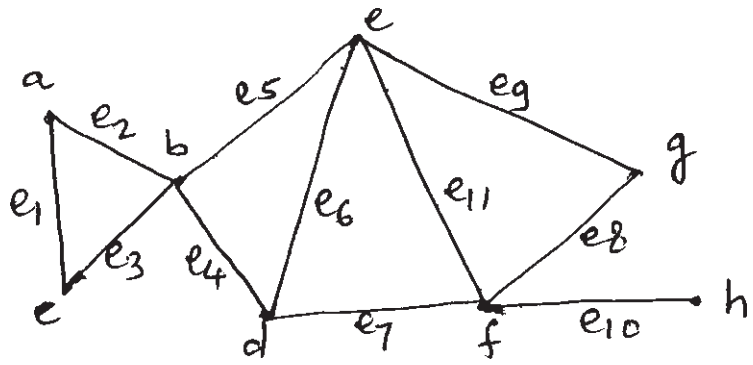
fig. 7

c) Define planar graph with suitable example. **[2]**

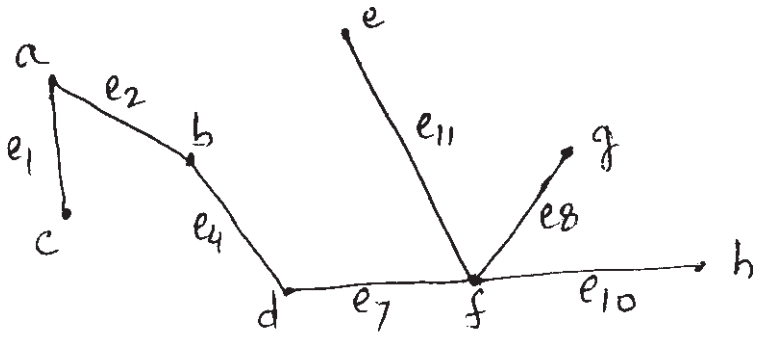
Q11) a) For the following set of weights, construct an optimal binary prefix code. For each weight in the set give corresponding code word : **[5]**

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

b) Find the fundamental circuits of the following graph G with respect to the given spanning tree T shown below in fig. 8 & fig. 9 respectively.**[4]**



(G) fig. 8



(T) fig. 9

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

OR

Q12) a) Use Prim's algorithm to construct a minimal spanning tree for the weighted graph in fig. 10 starting from the vertex a. **[6]**

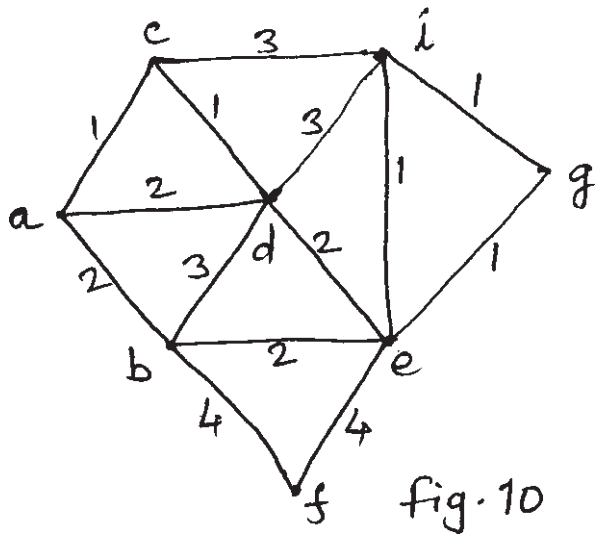


fig. 10

b) Define prefix code. Justify whether given set of codes are prefix codes or not. **[5]**

i) {000, 001, 01, 10, 11}

ii) {1, 00, 01, 000, 0001}

iii) {00, 010, 011, 10, 110, 111}

❐❐❐❐

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

P1142 **[3666] - 202**

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

DATA STRUCTURES & FILES

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

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.***

SECTION - I

Q1) a) Define the following with example. **[6]**
   i) Data type.
   ii) Data structure.
   iii) ADT.

b) What is the purpose of sparse matrix? **[2]**

c) Write a C function to generate Fibonacci series using arrays. **[4]**

OR

Q2) a) Explain the Z-D arrays in detail with column & row major implementations & address calculation in both the cases. **[6]**

b) Write and explain each step of fast transpose algorithm using sparse matrix. **[6]**

Q3) a) List advantages of representing linear data structures using linked over sequential organization. **[2]**

b) Write a 'C' program to delete a node at a position from a singly linked list. The data items are of character type. **[6]**

c) Give the structure definition to represent doubly linked list to store numbers. Compare doubly linked list with singly linked list. **[4]**

OR

Q4) a) Discuss insertion and deletion of an element in the singly, doubly and circular linked list. (Give supporting C code and pictorial representation). **[8]**

b) Represent following polynomial in the form of a singly linked list. Clearly show the node structure used for each polynomial
   i) $x^3 - 5x^2 - 10$ ii) $2.2x^4 - 8.1x^2 + 5.6$ **[4]**

Q5) a) Write a program for stack in C by using the array implementation. **[6]**

b) What is circular queue? Explain type of queue? **[5]**

P.T.O.

OR

Q6) a) Write a program for linear queue using array implementation. **[6]**

b) Convert following infix expression to postfix **[5]**

i) (a + b) ∗ (c + d) ii) a% (c – d) + b ∗ c

iii) a – (b + c) ∗ d/e

SECTION - II

Q7) a) Construct Binary Search Tree from these numbers : 90, 36, 58, 96, 32, 12, 93, 24, 97, 38, 60, 98. **[5]**

b) Draw Binary Search Tree from inorder & preorder traversal. **[6]**

INORDER : B, E, F, D, A, C, H, F, G.

PREORDER : A, B, D, E, E, C, F, G, H.

OR

Q8) a) Define Graph? Explain their basic terminology. **[5]**

b) How do represent graph using adjacency matrix? **[6]**

Q9) a) Write a C function for interative binary search to search given number in an array. **[6]**

b) Explain the following with respect to sorting : **[6]**

i) Sort stability

ii) Sort passes

iii) Sort efficiency.

OR

Q10)a) Write a pseudo 'C' routine to sort the following numbers using quick sort. Show all the passes to sort the values in ascending order :

56, 12, 84, 56, 28, 0, –13, 47, 94, 31, 12, –2. **[8]**

b) Compare sequential & binary search methods. **[4]**

Q11)a) Write short note on Hashing. **[6]**

b) Explain direct access file organization & indexed sequential file organization. **[6]**

OR

Q12)a) Given a set of values 10, 100, 32, 45, 58, 126, 3, 29, 200, 400, 0. Create a Hash table & resolve collision if any using probing, chaining with & without replacement. **[8]**

b) What do you mean by collision resolution? **[4]**

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

P1302 **[3666] - 11**

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

PROBLEM SOLVING & PROGRAMMING IN C

(2005 Course) (115001)

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 must be written on separate answer books.***
3) ***Draw sketches 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) Explain the points to be considered while designing and implementation of algorithm. **[9]**

b) Design an algorithm to compute the average of n numbers. **[9]**

OR

Q2) a) What do you mean by program verification? How program verification is done for different types of program segments? **[9]**

b) Design an algorithm to generate the first n terms of the following sequence.

1 2 4 7 11 16 ..... **[9]**

Q3) a) i) What is purpose of *if* statement? Describe different forms of if statement. **[4]**

ii) What is function prototype? Explain with example. **[4]**

b) Write a C program to add odd & even location integer numbers from an array separately using recursion. **[8]**

OR

Q4) a) Explain following functions used in C with suitable example. **[8]**

i) gets()
ii) getchar()
iii) getche()
iv) getch()

b) Write a C program to multiply two given matrices and display the result. **[8]**

P.T.O.

Q5) a) Find the output of the following code as displayed on the screen. **[8]**

```
main()
{
  display(4);
}
void display(int a)
{
  if (a>0)
  { printf("%d\n", a);
    display(a-1);
    printf("%d\n", a);
  } }
```

b) Write a program using pointers to read an array of integers and print its elements in ascending order. **[8]**

OR

Q6) a) i) What will be the output of following code? Justify your answer. **[4]**

```
char* myfunc(char *ptr)
{ ptr + = 3; return(ptr);}
main()
{  char*x, *y;
   x = "HELLO";
   y = myfunc(x);
   printf("y=%s\n", y);
}
```

ii) `int x[] = {1, 2, 3, 4, 5}` **[4]**

`int *ptr = x;`

Read the above code carefully and write the value of ptr and array elements after execution of each statement given below. (Assume ptr = 4000 initial value).

1) `*ptr + 3 = 10`
2) `*ptr[3] = 10`
3) `*(ptr + 3) = 10`
4) `(*ptr)[3] = 10.`

b) Write a C program using dynamic memory allocation to allocate memory to a given matrix. Initialize the matrix and display the contents of the matrix. **[8]**

SECTION - II

Q7) a) Create a structure containing one integer element. Perform basic arithmetic operations on two structure variables of the said structure. **[9]**

b) Explain with suitable examples self referencing structures. **[9]**

OR

Q8) a) i) Explain structures and union with suitable example. **[5]**

ii) Explain at which conditions structure should be used and at which conditions union should be used. **[4]**

b) Define a Structure called cricket that will describe the following information

i) Player Name.

ii) Team Name.

iii) Batting average.

Using cricket declare an array of players and write a program to read the information about all the players and print a team-wise list containing names of players as per the batting average given by the user. **[9]**

Q9) a) Explain the use of files in C? Differentiate between text file and binary file. Also explain the file opening modes used in C. **[8]**

b) Write a C program that reads a file containing text and convert it into uppercase. **[8]**

OR

Q10)a) Write a program to read data from the keyboard, write it to a file, again read the same data from a file and display it on the screen. **[8]**

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

i) *fflush()*

ii) *rewind()*

iii) *feof()*

iv) *fseek()*

Q11)a) Determine the real roots of $f(x) = 9.34 - 21.97x + 16.3x^2 - 3.704x^3$ using Newton Raphson method with a value of error corresponding to two significant figures to determine the lowest root. **[8]**

b) Explain the steps of Gauss elimination method. **[8]**

OR

Q12)a) Explain with suitable example direct methods and iterative methods. **[8]**

b) Use a simple application of Simpson's 1/3rd rule to evaluate the integral of the following equation.

$$\int_0^{10} \left(10 + 2x - 6x^2 + 5x^4\right) dx$$ **[8]**

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

P1303

[3666] - 56

Third Year M.C.A. (Engineering)

ENTERPRISE RESOURCE PLANNING

(2005 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is ERP? What are the facilities, which form multi-facility environment of ERP? Explain it with suitable example. **[9]**

b) Enlist tangible and non-tangible benefits that ERP can provide. **[8]**

OR

Q2) a) Discuss about various resources that ERP needs to manage. Explain the related resources with respect to any application domain of choice. **[9]**

b) Is ERP an asset? Why? **[8]**

Q3) a) What is organizational structure? How can it affect the development of ERP system? **[9]**

b) Why are users reluctant for implementation of ERP system? How should one deal with such user resistance? **[8]**

OR

Q4) a) How are organizational requirements vital in development of ERP system? **[9]**

b) What is change management? How are the major challenges related with change management handled while developing ERP system? **[8]**

Q5) a) What are major infrastructure requirements for implementation of ERP system for an academic institution? **[8]**

b) Compare any two available ERP products in details. **[8]**

OR

P.T.O.

Q6) a) Enlist and discuss the critical success factors for ERP system. **[8]**

b) Why do ERP systems fail? Are there any remedies on failures? **[8]**

SECTION - II

Q7) a) Evaluate the ERP development strategies :- Off the shelf vs. Development of ERP solution. **[9]**

b) Enlist and discuss various selection criteria for ERP packages. **[8]**

OR

Q8) a) Evaluate the ERP development strategies :-In-house development vs. Outsourcing. **[9]**

b) What are different design and customization issues which may be addressed during development of ERP solution? **[8]**

Q9) a) How are ERP systems differentiated in global contexts? Discuss it with suitable examples. **[9]**

b) What is business process engineering? Explain role of IT in implementation of it. **[8]**

OR

Q10)a) How can CRM, SCM and data warehousing be integrated with ERP systems? **[9]**

b) Discuss the service orientated architecture of ERP solutions. **[8]**

Q11)Write short notes on :-

a) Human Capital Management. **[8]**

b) Quality Control and ERP. **[8]**

OR

Q12)Write short notes on :-

a) Technology Management and ERP. **[8]**

b) Material Management. **[8]**

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

P1304 **[3666] - 101**

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

PROBLEM SOLVING & PROGRAMMING IN C

(2008 Course) (510901)

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

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Draw sketches 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 do you mean by Top-Down stepwise refinement in problem solving? **[6]**

b) Develop an algorithm to compute the sum of the first n terms (n>=1) of series s = 1 - 3 + 5 - 7 + 9..... **[6]**

OR

Q2) a) Explain the steps to be taken while implementation of algorithm. **[6]**

b) Develop an algorithm to compute the sum of squares of n numbers. **[6]**

Q3) a) Distinguish between "switch-case" and "if" statement used in C with suitable example. **[6]**

b) Write a 'C' program to find prime factors of a given integer. **[6]**

OR

Q4) a) Find the output of the following code as displayed on the screen. **[6]**

```
main()
{
  display(4);
}
void display(int a)
{
  if(a>0)
  {
    display(a-1);
    printf("%d\n", a);
  }
}
```

P.T.O.

b) Write a 'C' program to print given integer number in reverse order. **[6]**

Q5) a) Explain string library functions used in C. **[5]**

b) Write a 'C' program to search an element from given array. **[6]**

OR

Q6) a) How single and two dimensional arrays are stored in memory? Show graphical structure assuming any address values with suitable example.**[5]**

b) Write a 'C' program to calculate the largest of given n elements using array. **[6]**

SECTION - II

Q7) a) Explain the concept of local and global variables with suitable example. **[4]**

b) What is the output of following program segment? **[8]**

```
main()
{
  int a, b, *p1, *p2, x, y, z;
  a = 12;
  b = 4;
  p1 = &a;
  p2 = &b;
  x = *p1 * *p2 - 6;
  y = 4* - *p2/*p1 + 10;
  printf("Address of a = %u\n", p1);
  printf("Address of b = %u\n", p2);
  printf("a = %d, b = %d\n", a, b);
  printf("x = %d, y = %d\n", x, y);
  *p2 = *p2+3;
  *p1 = *p2-5;
  z = *p1* *p2-6;
  printf("a = %d, b = %d\n", a, b);
  printf("z = %d\n", z);
}
```

OR

Q8) a) Explain Static and dynamic memory allocation with suitable example. **[4]**

b) Write a function using pointers that receives a sorted array of integers, an integer value, and inserts the value in its correct place in the array.**[8]**

Q9) a) Explain functions and macros with example. **[6]**

b) State with reasons whether the following statements are true or false. **[6]**

i) A *struct* type in C is a built-in data type.

ii) It is legal to copy the content of structure variable to another structure variable of the same type.

iii) Structures are always passed to functions by pointers.

iv) Pointers can be used to access the members of structure variable.

v) A union can have another union as one of the members.

vi) The keyword *typedef* is used to define a new data type.

OR

Q10)a) What is union? Create a union with three data elements initialize it and display it. **[6]**

b) Define a macro to compute volume of a cube. Write a program using this macro to compute the volume of cube. **[6]**

Q11)a) Explain use of following functions in 'C'. **[6]**

i) *ftell()*

ii) *fread()*

iii) *fflush()*

b) What is output of the following program? **[5]**

```
#include < stdio.h >
main()
{  static char str[] = "ZEBRA";
   char ch = 'Z';
   putc(ch, stdout);
   fprintf(stdout, "%s", str);
   fwrite(str, 5, 1, stdout);
   fputs(str, stdout);
}
```

OR

Q12)a) Distinguish between *fprintf()* and *fwrite()* functions. **[3]**

b) Write a program to remove all comments from a C program. **[8]**

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

P 1356 **[3666] - 45**

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

JAVA PROGRAMMING

(2005 Course) (Sem. - IV) (215013)

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) Explain concept of a Iterator. Explain methods in Iterator interface. **[8]**

b) Explain the concept of Threads in Java. Explain the different methods of Threads class? **[8]**

OR

Q2) a) Explain Hash table. Also explain methods of Hash table. **[8]**

b) What is inheritance? With example explain use of super keyword in it. **[8]**

Q3) a) Explain with example various layout managers used in JAVA. **[8]**

b) Write a program using swing to display a message in a window on left mouse button click event. **[8]**

OR

Q4) a) What are different interfaces available in JAVA? **[8]**

b) Explain how AWT helps GUI development. **[8]**

Q5) a) What are the different ways to view the applet? **[6]**

b) Explain init, start, stop, paint, destroy, and update methods of Applet? **[6]**

c) What is an Applet? Should applets have constructors? **[6]**

OR

Q6) a) Explain various HTML Applet tags. **[6]**

b) What is the difference between application and applet? **[6]**

c) What is the order of method invocation in an Applet? **[6]**

P.T.O.

SECTION - II

Q7) a) What is Object Output Stream and Object Input Stream class? Explain any five methods of these two classes. **[8]**

b) Write a program to accept two integer numbers from user (make use of streams), perform its addition and display the result. **[8]**

OR

Q8) a) What are various stream classes in JAVA? **[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) What are different JDBC drivers? **[8]**

OR

Q10)a) Compare JDBC and ODBC. **[8]**

b) Write a program to establish a connection with a database using JDBC. **[8]**

Q11)a) Explain Server Socket and Socket class available in JAVA. Explain important methods in both the classes. **[6]**

b) Write a program (both client and server side) to establish a connection between client and server. **[6]**

c) Explain datagram packet class? **[6]**

OR

Q12)a) Explain the use of Inet Address class and its methods. **[6]**

b) Explain concept of proxy server. **[6]**

c) Write a program to print the Inet Address of local system. **[6]**