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

P1253

[3866] - 101

M.C.A. (Engineering Faculty)

PROBLEM SOLVING AND PROGRAMMING IN C (510901) (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) ***Assume suitable data, if necessary.***
6) ***Steps of Hand running must be shown wherever output of the program is asked.***

SECTION - I

Q1) a) What constraints should be considered for efficiency of algorithms? **[6]**

b) Explain an algorithm development to find a square root of a number. **[6]**

OR

Q2) a) Explain with suitable example: **[6]**

i) Order Notation.

ii) Probabilistic average case analysis.

iii) Computational complexity.

b) Explain an algorithm for generating prime numbers with the "sieve of Eratosthenes" method. **[6]**

Q3) a) Explain types of recursion. **[6]**

b) Explain working and syntax of Control Structures & ternary operator. **[6]**

OR

Q4) a) Write Notes on the following: **[6]**

i) External variables and Scope of variables.

ii) Static and register variables.

b) Write a program to calculate Fibonacci sequence up to 'n' (positive integer) using recursion. **[6]**

P.T.O.

Q5) a) Write a C program to concatenate two strings without using a library function. **[5]**

b) Write a program which reads a string and print "YES" if all the characters are same otherwise print "NO". **[6]**

OR

Q6) a) Write an algorithm to check whether given matrix a_{m*n} symmetric or not? **[6]**

b) Write a C program which will arrange a given list into an ascending order. **[5]**

SECTION - II

Q7) a) Explain Function pointer and Null Pointer with example. **[4]**

b) Write a C program for addition of two matrices A_{m*n} and B_{m*n}. Use Dynamic memory allocation. **[8]**

OR

Q8) a) What is the difference between "const char* p" & "char const* p". **[4]**

b) Explain the Association of Pointers and arrays with example. **[8]**

Q9) a) Write a short note on self-referential structures and its application. **[6]**

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

OR

Q10) a) Write a program to demonstrate conditional compilation of a program. **[6]**

b) What are differences between arrays and structures? **[6]**

Q11) a) Write a program to copy contents one file to another file using Low level-I/O. **[6]**

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

OR

Q12) a) Explain the use of following functions with proper syntax and example.

i) feof()

ii) fread() **[6]**

b) Differentiate between low level & high level I/O. **[5]**

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

P1344

[3866] - 304
S.Y. M.C.A. (Engg.)
COMPUTER COMMUNICATIONS & NETWORKS
(610904) (Sem. - III) (2008 Course)

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

Instructions to the candidates:

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

SECTION - I

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

b) Write a channel characteristics. **[6]**

OR

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

b) Write difference between FDM and WDM. **[6]**

Q3) a) Explain any three network topologies? State which topology is most reliable and why. **[5]**

b) Write difference between OSI Model and TCP/IP model. **[6]**

OR

Q4) a) Explain different framing methods. **[6]**

b) Explain HDLC. **[5]**

Q5) a) Explain fast and gigabyte Ethernet. **[6]**

b) Explain Slotted Aloha. **[6]**

OR

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

b) Explain virtual circuit switching. **[6]**

P.T.O.

SECTION - II

Q7) a) Explain the difference between Interdomain & Interdomain Routing protocols. Justify your answer by taking an example of Each type of protocol. **[6]**

b) What do you mean by congestion? Discuss the open - loop & closed loop congestion control mechanism. **[6]**

OR

Q8) a) What is purpose of ARP & RARP protocols? What is the size of ethernet frame carrying an ARP packet as well as RARP packet? **[6]**

b) For a given class - C network, design 4 equal subnets having minimum 50 nodes in each subnetwork. **[6]**

Q9) a) What is socket? Explain various socket primitives used in client server interaction. **[6]**

b) Explain with suitable diagram, the parameters involved in process to process communication. Give the different types of parts with their ranges. **[6]**

OR

Q10) a) Explain how TCP provides flow control mechanism. **[6]**

b) What is silly window syndrome? How to overcome it? **[6]**

Q11) a) What is FTP? Where & when it is used? Why does it require 2 ports? Explain at least 5 user commands used in FTP? **[6]**

b) Differentiate between persistent & non-persistent HTTP connection. **[5]**

OR

Q12) a) Write a short note on :

i) MIME.

ii) LDAP. **[6]**

b) What is the difference between IMAP & POP 3 protocols? Explain when & where they are used? **[5]**

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

P1342 **[3866]-103**

F.Y. M. C. A.

FOUNDATIONS OF INFORMATION TECHNOLOGY

(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) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***
5) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Why are modern digital computers often refered to as stored program digital computers? **[4]**

b) Define the term 'byte'. What is the difference between a bit and a byte? **[4]**

c) A computer uses ASCII for its internal representation of characters. In which order will this computer sort the strings 23, A1, 1A? **[4]**

OR

Q2) a) Construct a logic diagram for the boolean expression $A \cdot \overline{B} + C \cdot (A + B \cdot D)$ using only NOR gates. **[4]**

b) What is meant by a family of CPUs? When do two CPUs belong to the same family. **[4]**

c) List out the key properties used to characterise and evaluate storage units of computer system. **[4]**

Q3) a) What is a flat panel monitor? Where is it commonly used? **[4]**

b) What is secondary storage? How does it differ from primary storage? **[4]**

c) Write the full forms of the following abbreviations.

i) GUI	ii) UPC
iii) CAD	iv) MICR
v) OCR	vi) VDT
vii) OMR	viii) CRT

[4]

P.T.O.

OR

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

b) What are the applications of magnetic disk. **[4]**

c) List out the main functions of CPU in a computer system. **[4]**

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

i) System software.

ii) System program.

iii) System programmer.

iv) Application software.

v) Application program.

vi) Application programmer.

b) What is firmware and what is its importance to the computer system architect. **[5]**

OR

Q6) a) What are the advantages and limitations of high level languages? **[6]**

b) Hardware and software of a computer system are like two sides of a coin. Discuss. **[5]**

SECTION - II

Q7) a) What are the two primary objectives of having an operating system in a computer system? Explain how an operating system helps in meeting these objectives. **[4]**

b) Differentiate between portrait and landscape modes of printing. **[4]**

c) Write a short note on Graphics package. **[4]**

OR

Q8) a) What is meant by word-wrap feature? How is it useful? **[4]**

b) What is time sharing? What is a time slice? **[4]**

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

Q9) a) Describe the various types of files commonly supported in a typical file management system. **[4]**

b) What is multimedia? Explain with the help of some examples. **[4]**

c) What is a debugger? How does it help a programmer? **[4]**

OR

Q10) a) What are the operations involved in change over process. **[4]**

b) Describe three drawbacks of traditional information processing system that use separate, unrelated files. **[4]**

c) What is a "pixel" ? Explain how an image is composed and displayed on a computer screen. **[4]**

Q11) a) Differentiate between analog and digital transmission of data. Give their advantages and disadvantages. **[6]**

b) What is an electronic mail? Why is it preferred by many to paper mail, telephone and fax services. **[5]**

OR

Q12) a) "A full duplex line is faster since it avoids the delay that occurs in a half duplex circuit" Explain. **[5]**

b) Describe some of the typical uses of Internet. **[6]**

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

P1321 **[3866]-13**

F.Y. M. C. A. (UNDER ENGG.)

FOUNDATIONS OF INFORMATION TECHNOLOGY (115003) (2005 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is data processing? Differentiate between data and information.Which one is more useful? Justify. **[6]**

b) Convert $(4076)_{16} = (???)_{10}$

$(11010111)_2 = (???)_8$ **[6]**

c) Differentiate between the characteristics of primary and secondary storage of computers. **[6]**

OR

Q2) a) Name the technologies used for constructing main memory in the computers of first, second, third and fourth generations. **[6]**

b) What are five basic operations of computer system? Explain in detail. **[6]**

c) Convert $(4773)_8 = (???)_2$

$(1100110111)_2 = (???)_{16}$ **[6]**

Q3) a) Define Terms: Multitasking, multiprocessing and multiprogramming with examples. **[6]**

b) Describe in brief printing mechanism of laser printer. **[5]**

c) What are the different types of processors? Explain the difference between CISC and RISC. **[5]**

P.T.O.

OR

Q4) a) What role do I/O devices play? List examples of I/O devices. **[5]**

b) List out the major steps involved in the execution of instruction. **[6]**

c) Describe in brief printing mechanism of Dot Matrix printer. **[5]**

Q5) a) What is Assembler? What is Compiler? Give the difference between them. **[5]**

b) What is Software Engineering? What are the major phases of Software Engineering? **[6]**

c) What are the different types of Languages? List Examples of each type. **[5]**

OR

Q6) a) Explain the importance of system software for a computers. **[6]**

b) Give the Difference between

i) Macros and Functions.

ii) Compiler and Interpreter. **[6]**

c) Explain Different types of Software's with example of each. **[4]**

SECTION - II

Q7) a) What is operating system? What are its main functionality? **[6]**

b) What is a process control block? Why is it needed? What does it typically contain. **[6]**

c) What are major parameters to measure performance of computer? **[6]**

OR

Q8) a) What is swapping? How does it help in memory management? What are the advantages of using swapping? **[6]**

b) What is Time slicing and Time sharing? Which is more effective? **[6]**

c) What is word processing? Is Word processor a Application software or a system software? Explain. **[6]**

Q9) a) What is data redundancy? Explain with an example. **[4]**

b) What are key roles played by memory management module of Operating system? **[7]**

c) What do you mean by testing and debugging? What is the difference between them? **[5]**

OR

Q10) a) What is multimedia? Explain with the help of example. **[5]**

b) What are the operations involved in the change over process? **[5]**

c) What are the two standard methods used in data processing system for organizing data? **[6]**

Q11) a) Give the pros and cons of Internet. **[5]**

b) Define terms: i) Networking ii) URL iii) TCP/IP

iv)UDP v) Packet **[5]**

c) Explain with examples different modes of Data transmission. **[6]**

OR

Q12) a) Differentiate between analog and digital transmission of data. Give their advantages and disadvantages. **[8]**

b) Differentiate between

i) Leased line ii) Dial up connection

iii) Broadband iv) DSL **[8]**

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

P1169 **[3866] - 15**

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

MANAGEMENT SCIENCE

(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) Discuss the changes in Management Styles required at different levels of an organization with suitable examples. **[8]**

b) Give in brief historical developments in the management philosophy. **[8]**

OR

Q2) a) Discuss the contributions of F.W. Taylor and Gilbreth to the management philosophy. **[8]**

b) Mention any four administrative concepts of effective management and discuss two of them in brief. **[8]**

Q3) Write short notes on any three of the following : **[18]**

a) Peculiarities of Human Wants,

b) Relevance of Chambers of Commerce,

c) Benefits of e-governance,

d) Major provisions of IPR.

OR

Q4) Discuss any three of the following : **[18]**

a) Unique Identification Number and e-governance,

b) Economy of Scale,

c) Law of Demand and Supply,

d) Importance of ERP.

P.T.O.

Q5) a) Differentiate between Co-operative sector and Public Sector Undertakings, mentioning the benefits and limitations of these two types of organizations. **[8]**

b) Which are different forms of organizations? Why are these existing? Mention any two important benefits for each of these forms. **[8]**

OR

Q6) a) Discuss the merits and demerits of Line Organization, Functional Organization and Line and Staff Organization. **[8]**

b) Is the Public Sector relevant in the current situation? Justify. **[8]**

SECTION - II

Q7) Discuss in brief important aspects of the following :

a) Maslows Theory of need hierarchy. **[8]**

b) Mc Gregors Theory X and theory Y. **[8]**

OR

Q8) a) Differentiate between Job Evaluation and Merit Rating. **[8]**

b) What do you mean by Communication? Discuss different methods of communication highlighting their advantages and limitations. **[8]**

Q9) Write short notes on any three of the following : **[18]**

a) Important provisions of the Factories Act, 1948.

b) Purpose of enactment of the Pollution Control Act, 1977.

c) Meaning of the term 'Factory' as per the Factories Act, 1948.

d) Precautions for accident prevention in industry.

OR

Q10) a) Discuss the relevance of the Factories Act, 1948 in the current environment. **[6]**

b) What steps can be taken to avoid pollution in different sectors of economy? **[6]**

c) Discuss the possible causes of accident in industry and how can these be prevented? **[6]**

Q11) a) Mention the provisions relating to traceability in ISO 9000. **[8]**

b) Explain the concepts of Quality Control and Quality Assurance. Do they differ from each other? Justify. **[8]**

OR

Q12) a) Differentiate between Patent and Copy Right. **[6]**

b) Discuss the importance of Quality Assurance. **[5]**

c) What is meant by TQM? How can this be implemented? **[5]**

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

P1171 **[3866] - 205**

First Year M.C.A. (Engineering)

MANAGEMENT INFORMATION SYSTEMS

(2008 Course) (510913)

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

Instructions to the candidates :

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Figures to the right indicate full marks.***
3) ***From Section I, Answer (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) Explain the various functions of the manager in detail. **[6]**

b) What are the major Components of information systems? **[4]**

c) What is infrastructure management? **[2]**

OR

Q2) a) Define Management Information Systems (MIS) and explain the role of the Management Information Systems (MIS). **[6]**

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

Q3) a) Describe the role of Management Information Systems (MIS) in Insurance sector. **[6]**

b) Explain the various applications of Management Information Systems (MIS). **[6]**

OR

Q4) a) Explain the components of Enterprise Collaboration System. **[4]**

b) What is the importance of Change Management? **[3]**

c) Explain in detail Materials Management as an application of Management Information Systems (MIS). **[5]**

P.T.O.

Q5) a) Explain in detail the Enterprise Resource Planning (ERP) solution structure. What are the modules of Enterprise Resource Planning (ERP)? **[6]**

b) What are the steps in Business Process Re-engineering? Explain. **[5]**

OR

Q6) a) What is the scope of Business Process Outsourcing (BPO)? Which factors decide the success of Business Process Outsourcing (BPO) industry? **[5]**

b) What is process and value stream model of organization? Explain. **[4]**

c) What is call center? **[2]**

SECTION - II

Q7) a) What is Customer Relationship Management? How does it change the way companies do their business? **[6]**

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

OR

Q8) a) Explain the role of Supply Chain Management (SCM). **[2]**

b) Explain the various applications of e-Commerce. **[4]**

c) List the components of Supply Chain Management (SCM) and explain them briefly. **[6]**

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

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

i) Data Warehouse.

ii) Data Mining.

OR

Q10) a) Differentiate between Management Information Systems (MIS) and Decision Support Systems (DSS). **[4]**

b) Write a short note on : Artificial Intelligence Systems. **[4]**

c) Explain what-if analysis in Decision Support Systems (DSS). **[4]**

Q11) a) Explain ethical and social aspects concerning the employment of Information Technology. **[6]**

b) Explain the following aspects of security management : **[5]**

i) Encryption

ii) Firewalls

iii) Email monitoring.

OR

Q12) a) Explain the following : **[6]**

i) Cyber theft.

ii) Computer crime.

b) List and briefly explain, the issues involved in global management of information technology. **[5]**

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

P1330 **[3866]-22**

F.Y. MCA (Faculty of Engineering)

DATA STRUCTURES AND FILES

(2005 Course)

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

Instructions to the candidates:

1) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6 from section I.***
   Attempt Q7 or Q8, Q9 or Q10, Q11 or Q12 from section II.
2) ***Answers to the two sections should be written in separate answers 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) Write a 'C' function to create SPARSE matrix from general matrix. Comment on the time analysis. **[8]**

b) Write a pseudo code in 'C' for the multiplication of two single variable polynomial. **[8]**

OR

Q2) a) Write a pseudo 'C' algorithm for Fast Transpose of SPARSE matrix. Also mention the time and space complexity. **[8]**

b) Explain storage representation of an n dimensional array (row-major and column-major) with suitable example. Also write address calculation formula and explain with example. **[8]**

Q3) a) Write a 'C' function to sort Doubly linked list (DLL). Explain with example. **[8]**

b) Define GLL with example and node declaration. With suitable example show how multivariable polynomial can be represented using GLL. **[5]**

c) Write a function in 'C' to delete the node of DLL with data value X. **[5]**

P.T.O.

OR

Q4) a) Write a 'C' function to add two binary numbers using doubly linked list (DLL). **[10]**

b) Write a 'C' function for polynomial multiplication using circular linked list (CLL). **[8]**

Q5) a) Write a pseudo 'C' algorithm to evaluate postfix expression. Explain with example. **[8]**

b) Write a pseudo 'C' algorithm to check well-formedness of parenthesis. Explain with example. **[8]**

OR

Q6) a) Write a pseudo 'C' algorithm to convert an infix expression into postfix expression and explain how stack is used in this conversion. **[8]**

b) Explain array and linked list implementation of Queue. **[8]**

SECTION - II

Q7) a) Find OBST using dynamic programming for n = 4. Set of identifiers are (k1, k2, k3, k4) = (do, if, int, while) **[10]**

p(1....4) = (3, 3,1, 1)

q(0....4) = (2, 3, 1, 1, 1)

b) Write a pseudo 'C' algorithm to delete node from inorder threaded binary tree.Explain all the cases with example. **[8]**

OR

Q8) a) Write a pseudo C code to find minimum spanning tree using Prims's algorithm. Explain all steps to find MST for the graph having the weight matrix as shown below. **[10]**

W =

	X	Y	S	T
X	0	0	3	0
Y	5	0	1	7
S	2	0	0	4
T	0	6	8	0

b) Construct AVL tree for following months. Show stepwise construction with the balance factor generated in each step. **[8]**

MAR, MAY, NOV,AUG, APR, JAN, DEC, JUL, FEB, JUN, OCT,SEP.

Q9) a) Explain Collision resolution with chaining with and without replacement. Explain both the cases with example. **[8]**

b) Write a pseudo 'C' algorithm for Merge sort. Sort the following list of week days using merge sort. Show all passes. **[8]**

SUN, MON, TUE, WED, THU, FRI, SAT

OR

Q10) a) Write a function in 'C' for Quick sort. Sort following months using Quick sort. Show all passes. **[8]**

JAN, FEB, MAR, APR, MAY, JUNE, JULY, AUG, SEPT, OCT, NOV, DEC

b) Explain hashing and explain characteristics of good hash function. Explain different hash functions with example. **[8]**

Q11) a) Explain 0/1 knapsack problem with dynamic programming. **[8]**

b) Compare and contrast between dynamic programming and divide and conquer algorithmic strategy. **[8]**

OR

Q12) a) Find set of feasible solution for following job scheduling problem.

n = 4, Pi = (100 10, 15, 27), Di = (2, 1, 2, 1)

Also find an optimal solution for this problem using Greedy strategy. **[8]**

b) Explain Travelling Salesman Problem (TSP) with randomized algorithm. **[8]**

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

P1323 **[3866]-25**

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

MANAGEMENT INFORMATION SYSTEMS

(110513) (2005 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain the different types of Information Systems. **[12]**

b) Discuss the characteristics of reports produced by an information system. **[6]**

OR

a) Differentiate between tactical and strategic planning system. **[8]**

b) Explain in detail the structure of a functional organization. **[10]**

Q2) a) Describe the role of MIS in Hotel Management. **[8]**

b) Differentiate between a product and a service. **[8]**

OR

a) Explain the factors supporting MIS in service industry. **[8]**

b) Explain the change management process. **[8]**

Q3) a) What is ERP? Describe standard ERP modules. **[8]**

b) Discuss various steps involved in ERP implementation. **[8]**

OR

a) Explain the ERP solution structure. What are the sub-modules of ERP? **[8]**

b) Explain the concept of BPO. State challenges involved in BPO management. **[8]**

P.T.O.

SECTION - II

Q4) a) With a suitable sketch discuss activities performed in different phases of CRM. **[12]**

b) Define SCM. Explain the role of SCM in an organization. **[6]**

OR

a) Explain the different categories of e-commerce. **[12]**

b) State tangible and intangible benefits of e-commerce. **[6]**

Q5) a) Explain the Herbert simon model of decision making. **[8]**

b) Explain briefly **[8]**

i) What if analysis

ii) Goal-seeking analysis

OR

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

b) Explain briefly **[8]**

i) EIS

ii) Artificial Intelligent Systems

Q6) a) Write short notes on: **[8]**

i) Ethical responsibilities of business professionals.

ii) Security measures to be adopted by Internet users.

b) Describe briefly the tools of security management. **[8]**

OR

Explain the following issues involved in global management of IT: **[16]**

a) Cultural Challenges

b) Global IT strategies

c) IT platforms

d) Data access issues

■■■

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

P1172 **[3866] - 305**

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

PRINCIPLES OF MULTIMEDIA

(2008 Course) (610905)

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

Instructions to the candidates :

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

SECTION - I

Q1) a) What are the characteristics of Multimedia Presentation? Explain with the example. **[7]**

b) What do you mean by Multimedia Document Architecture? Explain in brief "SGML". **[4]**

OR

Q2) a) What is Distributed Multimedia? Differentiate between multimedia databases and conventional databases. **[7]**

b) Write short note on "Multimedia Authoring Tools". **[4]**

Q3) a) Explain TIFF file format in detail. **[7]**

b) Explain Shannon Fano algorithm with an example. **[5]**

OR

Q4) a) What is vector quantization? How is it applied to image compression? **[7]**

b) What are different steps of image recognition? Give an example. **[5]**

Q5) a) What is multimedia sound or audio? What are its properties? **[6]**

b) State different audio file formats? Explain AVI file format in brief. **[6]**

P.T.O.

OR

Q6) a) Compare VOC & WAV file formats. **[6]**

b) Explain MIDI message formats with different command names available. **[6]**

SECTION - II

Q7) a) What do you mean by CODEC? Explain the features of H.263. **[8]**

b) Define and explain I, P and B frames with reference to MPEG. **[4]**

OR

Q8) a) What is compression? Compress the string '**ABABBABCABABBA**' using LZW compression technique. Calculate the compression ratio? **[8]**

b) Compare different Television broadcasting standards. **[4]**

Q9) a) Explain the features of VRML with example. Also explain the use of EVENTS and ROUTS with proper examples. **[7]**

b) Write a VRML script for development of dinning table? **[5]**

OR

Q10) a) Explain different forms of virtual reality with one scenario example. **[7]**

b) Why does it take four nodes to make simple object in VRML and which are those? **[5]**

Q11) a) What is rendering? Explain with respect to animation. **[7]**

i) Interpolation &

ii) Motion paths.

b) Explain different steps for development of 2D animation. **[4]**

OR

Q12) a) What do you mean by animation on web? Explain client pull animation by example. **[7]**

b) Write short note on 3D Sound. **[4]**

✦✦✦✦

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

P1170 **[3866] - 35**

S.Y. M.C.A. Engineering

PRINCIPLES OF MULTIMEDIA (215005)

(2005 Course)

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

Instructions to the candidates :

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

SECTION - I

Q1) a) What is multimedia document architecture? Explain what do you mean by MHEG & SGML? **[9]**

b) What is GTK+ and QT? Give the features of QT. **[9]**

OR

Q2) a) Explain with suitable examples multimedia building blocks and its role in development of web based multimedia applications. **[9]**

b) What is Authoring? What are the features of Authoring tools? Explain any one authoring tool? **[9]**

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

b) Explain Shannon Fano algorithm with an example. **[8]**

OR

Q4) a) What is vector quantization? How is it applied to image compression? **[8]**

b) What do you mean by image enhancement? Explain how image enhancement is done using spatial filtering. **[8]**

Q5) a) What is multimedia sound or audio? What are its properties? **[8]**

b) Explain the audio encoding for MPEG. **[8]**

P.T.O.

OR

Q6) a) "The higher the sound quality, the larger your file will be"- Justify your answer. **[8]**

b) What are the different components of the MIDI synthesizer? Explain each in brief. **[8]**

SECTION - II

Q7) a) What do you mean by CODEC? Explain the features of H.263. **[9]**

b) Which are the different layers in MPEG? Define and explain I, P and B frames with reference to MPEG. **[9]**

OR

Q8) a) What is compression? Compress the string '**ABABBABCABABBA**' using LZW compression technique. Calculate the compression ratio? **[9]**

b) Compare different Television broadcasting standards. **[9]**

Q9) a) Explain the features of VRML. How the EVENTS and ROUTS are used in VRML justify with proper example. **[8]**

b) Write a VRML script for development of dinning table? **[8]**

OR

Q10) a) Explain different forms of virtual reality with one scenario example. **[8]**

b) Why does it take four nodes to make simple object in VRML and which are those? **[8]**

Q11) a) What is rendering? Explain different algorithms of rendering in animation. **[8]**

b) Explain different steps for development of 2D animation. **[8]**

OR

Q12) Write short notes on : **[16]**

a) 2D & 3D Animation.

b) Client pull & Server push animation.

c) Uses of Animation.

✦✦✦✦

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

P1327 **[3866]-405**

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

HUMAN COMPUTER INTERFACE

(Elective - I) (Sem.- IV) (610913) (2008 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Discuss human factors related metrics to evaluate any interface. **[5]**

b) Explain following terms related to the human short-term memory. Digital Span, Chunking, Regency Effect, Closure. **[6]**

OR

Q2) a) With example, explain the difference between slips and mistakes. **[4]**

b) Discuss accommodation of human diversity with respect to physical abilities and physical workplaces. **[7]**

Q3 a) How to organize a display. Explain how to get user's attention. **[8]**

b) Explain three techniques to prevent errors. **[4]**

OR

Q4) a) Explain any three interaction styles with advantages and disadvantages. **[6]**

b) Categorized and explain types of users according to task and interface concepts. **[6]**

Q5) Write a short notes on (any two): **[12]**

a) Scenarios.

b) Participatory design.

c) Affordances and Design.

P.T.O.

OR

Q6) Consider a designing of a web-site for Movie library. Users are going to browse and then purchase a 'movie' which allows user to download that movie. Briefly explain how you would test for the success or failure of a design as you get close to the final delivery of this web-site. Discuss the challenges and solutions. **[12]**

SECTION - II

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

OR

Q8) a) What are different issues while designing multiple window interfaces for an application? **[8]**

b) Compare expert reviews and usability testing. **[4]**

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

b) Compare online help and documentation Vs Printed documentation. **[5]**

OR

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

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

Q11) a) Give benefits and problems of touch screens and voice recognition input. **[6]**

b) Write a short note on: Social acceptability of user interface. **[6]**

OR

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

a) Multimedia document searches.

b) Shared Editors.

c) Information visualization.

■■■

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

P1327 **[3866]-405**

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

ORGANIZATION BEHAVIOR

(Elective - I) (610913) (2008 Course)

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

Q1) a) Explain in brief custodial and supportive Model of Organizational Behavior. **[6]**

b) Explain in brief S-O-B-C Model of Organizational Behavior. **[5]**

OR

a) Explain motivation process along with content and process model of motivation. **[6]**

b) Define Organization Behavior and list the key elements in OB. **[5]**

Q2) a) Which are the defence mechanism for interpersonal conflict frustration? Which are the different types of motives? **[8]**

b) Explain Fredrick Herzberg's two factor theory of motivation. **[4]**

OR

a) Explain Douglas McGregor's theory 'X' and 'Y'. **[6]**

b) Explain Vector Vroom's expectancy theory of motivation in detail. **[6]**

Q3) a) Write short note on: **[12]**

i) Team effectiveness.

ii) Conflict management.

OR

P.T.O.

a) Explain how to handle levels of conflicts within an organization. **[6]**

b) Which factors influence the human resource planning in an Organization. **[6]**

SECTION - II

Q4) a) Define Leadership and explain importance of leadership to the organization. **[6]**

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

i) Hersey and Blanchard's theory.

ii) Organizational design.

OR

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

i) Organizational climate.

ii) Organizational structure.

b) Explain Black and Mountain's Theory in brief. **[6]**

Q5) a) Compare traditional Vs Modern view of conflict. **[6]**

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

OR

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

i) Conflict management.

ii) Conflict process.

b) How the change within an organization leads to the effective development of an organization. **[3]**

Q6) a) What is Quality in turn of an organization? Which are the benefits of TQM? **[6]**

b) What is relation of re-engineering with empowerment? **[6]**

OR

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

a) Downsizing.

b) Bench marking.

c) Learning Organization.

d) TQM.

■■■

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

P1324 **[3866]-44**

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

ORGANIZATION BEHAVIOR

(215012) (2005 Course) (Theory)

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) Compare Autocratic model, Custodial Model, Supportive Model and Collegial Model of Organizational Behavior. **[12]**

b) Explain Primary and Secondary motives. **[6]**

OR

a) Explain in brief Content and Process model of motivation. **[10]**

b) In detail explain Goal setting and Reward system. **[8]**

Q2) a) Explain Douglas McGregor's theory 'X and 'Y'. **[8]**

b) Compare Maslow's Model and Herzberg's Model. **[8]**

OR

a) Define stress and explain in detail sources of stress. **[10]**

b) Explain the relationship of Morale to Productivity. **[6]**

Q3) a) Write short note on: **[16]**

i) Types of Groups

ii) Team Effectiveness

iii) Human resource management

iv) Performance appraisal

OR

P.T.O.

b) i) Distinguish between Formal Groups and Informal Groups. **[8]**

ii) Which factors influence the human resource planning in an Organization? **[8]**

SECTION - II

Q4) a) Explain Fielder's Contingency Model of leadership. **[8]**

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

i) Life Cycle Theory.

ii) Leadership style.

OR

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

i) Organizational structure

ii) Organizational design

b) List qualities of a leader. **[6]**

Q5) a) Explain the situation when change is accepted in an organization. **[8]**

b) Which are the forces responsible for change. **[8]**

OR

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

i) Responses to change.

ii) Resistance to change.

b) Which are the constructive conflicts and what are the strategies for conflict resolution. **[8]**

Q6) a) Write short note on: **[16]**

i) Learning Organization

ii) Techniques for TQM

iii) Downsizing

iv) Various quality aspects

OR

b) i) What is TQM? Which are the benefits of TQM. **[8]**

ii) Why 'VRS' is said to be an effective tool of Downsizing of the organization. **[8]**

■■■

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

P1366 **[3866]-505**

T.Y. M. C. A. (Engg.)

SOFTWARE TESTING

(Elective -II) (Sem. - I) (710905) (2008 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is group data and how to collect and define data? **[6]**

b) Explain the four principles of investigation? **[6]**

OR

Q2) a) Define following terms with suitable eg. **[6]**

i) Measurement.

ii) Models.

b) Give the classification of software measures. **[6]**

Q3 a) Draw various common flow graphs as per program structure models. **[6]**

b) Explain importance of reusability with eg. **[6]**

OR

Q4) a) Explain the Healstead software science. **[6]**

b) Explain the need for internal product attributes measurements. **[6]**

Q5) a) Explain the software defect prevention process. **[6]**

b) Define Terms: **[5]**

i) Faults.

ii) Errors.

P.T.O.

OR

Q6) a) Explain Developer/Tester support for defect repository. **[5]**

b) Describe organisation structure for testing teams. **[6]**

SECTION - II

Q7) a) Write short notes on: **[6]**

i) Mutation Testing.

ii) Boundary value Analysis (BVA).

b) Describe Test Adequacy criteria with eg. **[6]**

OR

Q8) a) Write short note on: **[6]**

i) Code complexity Testing.

ii) Requirement based Testing.

b) Describe test case design criteria with suitable eg. **[6]**

Q9) a) Differentiate between verification and validation. **[6]**

b) Explain Ad hoc testing with eg. **[6]**

OR

Q10) Write short note on: **[12]**

i) System and Acceptance Testing.

ii) Usability and Accessibility Testing.

iii) Regression Testing.

Q11) a) Explain typical organisation structure in product organisation. **[6]**

b) Explain logistics and tooling with suitable eg. **[5]**

OR

Q12) a) How can we distribute the Fixation of the problem? **[6]**

b) What is the role of support analyst in problem reporting? **[5]**

■■■

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

P1366 **[3866]-505**

T.Y. M. C. A. (Engg.)

NEURAL NETWORK AND FUZZY LOGIC

(Elective - II) (710905) (2008 Course)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What do you mean by Neural Net learning? Discuss Winner-Take-All learning rule in detail. **[7]**

b) Compare between a Biological Neural Net and Artificial Neural Net. **[5]**

OR

Q2) a) Draw a McCulloch Pitts Neuron model. Define the firing rule and explain how it performs the basic logic operations for NOR Gate. **[7]**

b) Discuss in brief auto-association and hetero-association process used for neural processing. **[5]**

Q3) a) Draw a block diagram of Recognition and Classification system and explain the following terms in brief: **[7]**

i) Feature Extraction.

ii) Pattern Space.

iii) Decision Region.

b) How Perceptron Network can be used for multi-category classification? **[4]**

OR

Q4) a) With algorithmic steps discuss the Single Discrete Perceptron Training Algorithm (SDPTA). **[7]**

b) Illustrate the concept of Linear Discriminant Function. **[4]**

P.T.O.

Q5) a) What do you mean by training Neural Net? What is error back propagation training? Discuss in brief the significance of learning constant, activation function and momentum term in back propagation training. **[7]**

b) What is linearly Non-separable classification problem? Can single Perceptron solve such problem? Define the Delta Learning Rule for multi-perceptron layer. **[5]**

OR

Q6) a) Explain how back propagation training can be used for Handwritten Character Recognition application. **[7]**

b) Draw a 3-layer Fed Forward Neural Net architecture. How we decide the number of neurons in the input and output layer for a particular application? **[5]**

SECTION - II

Q7) a) How Fuzzy Set is different from a Crisp Set? What is the use of a membership function? Give any two examples of membership function. **[7]**

b) What is possibility theory? How it differs from a Fuzzy Set theory? **[5]**

OR

Q8) a) Discuss Fuzzy Complement, Intersection and Union operations with example. **[7]**

b) Define the term linguistic variable. How it is represented? **[5]**

Q9) a) What is Fuzzy relation? How it is represented? How standard composition of binary Fuzzy relation is represented? **[7]**

b) Discuss in brief how Fuzzy rule based model is used for function approximation. **[5]**

OR

Q10) a) Let A and B be two Fuzzy members. With suitable membership function explain the following arithmetic operations:
i) A + B ii) A - B iii) A /B. **[7]**

b) Explain in brief TSK Fuzzy Rule based model. **[5]**

Q11) a) What is approximate reasoning? Define Fuzzy implication and give examples of well-known S-implications (based on the standard Fuzzy complement). **[7]**

b) Discuss in brief the Criteria of Fuzzy implications. **[4]**

OR

Q12) a) Compare between probability theory and possibility theory. **[6]**

b) What is evidence theory? Define probability measure in the context of an evidence theory. **[5]**

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

P1365 **[3866]-55**

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

ARTIFICIAL INTELLIGENCE

(2005 Course) (Sem. - I)

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

Instructions to the candidates:

1) ***Assume suitable data, wherever necessary.***
2) ***Separate answer books must be used for the sections.***
3) ***Draw proper diagrams wherever necessary.***

SECTION - I

Q1) a) Discuss the classification of production systems. **[8]**

b) Define the reasonable heuristic estimates for,

i) 8-Puzzle ii) Chess iii) Bridge iv) Tic-Tac-Toe. **[8]**

OR

Q2) a) What are alpha and beta cut offs? Discuss elaborately. **[8]**

b) Explain Hill Climbing algorithm in detail with proper example. **[8]**

Q3) a) What is Knowledge Representation using propositional logic? Compare propositional and predicate Logic. **[8]**

b) Write a script for having the food in a restaurant. **[8]**

OR

Q4) a) Give the complete procedure to convert wff into clause form. **[8]**

b) Draw the Conceptual Dependency representation for the following statements,

i) As smoking can kill you I stopped.

ii) Bill shot Bob.

[8]

Q5) a) Explain all the steps in Natural Language Processing. **[10]**

b) Write and explain Waltz's algorithm. **[8]**

P.T.O.

OR

Q6) a) Give the complete ATN representation for the statement, "He has printed a long file." **[10]**

b) Detail the Semantic analysis phase of NLP. **[8]**

SECTION - II

Q7) a) What is the significance of Planning? Which are the various components of typical Planning system? **[8]**

b) Explain Non linear planning with goal stack with example. **[8]**

OR

Q8) a) Elaborate least commitment strategy. **[8]**

b) What is Hierarchical planning? Illustrate with example. **[8]**

Q9) a) Explain Learning by Analogy and Learning by Deduction. **[8]**

b) Explain Back Propagation Neural Network in detail? **[10]**

OR

Q10) a) What is Perceptron? Give three applications of ANN. **[8]**

b) Write the note on Rote Learning and Learning by Induction, **[10]**

Q11) a) Explain typical Medical Diagnosis Expert system. **[10]**

b) What are the desirable characteristics of AI language? **[6]**

OR

Q12) a) Explain the typical architecture of Expert System. **[8]**

b) Write a Prolog program to compute the Factorial of a number. **[8]**

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

P1000

[3866]-57
T.Y. 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) ***Use of logarithmic tables, slide rules and electronic pocket calculator is allowed.***
3) ***Neat diagram must be drawn wherever necessary.***
4) ***Figures to the right indicates full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) With the help of Norman's Model of interaction explain the process of execution-evaluation cycle. What do mean by 'gulf of execution' and 'gulf of evaluation' with respect to this model. **[8]**

b) What are different Human Factors that are to be considered while designing the user interface? Explain with the help of suitable examples. **[9]**

OR

Q2) a) Explain the similarities and differences in human memory and computer memory. **[6]**

b) Explain the advantages and disadvantages of Natural Language interaction style. **[6]**

c) What do you mean by GUI? Write types of GUIs. **[5]**

Q3) a) Explain GOMS and keystroke level models. Give suitable example. **[8]**

b) You have to design an interface for vending machine which serves tea or coffee. Considering various user communities, their requirements and tastes, apply object action interface (OAI) modeling technique to design this interface. Sketch the task and interface models. **[9]**

P.T.O.

OR

Q4) a) Explain the linguistic models BNF and Task Action Grammar in brief. **[8]**

b) Explain stages of action model with suitable example. **[9]**

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

b) What different notations are used to specify UI design? Draw a transition diagram to explain interaction design of an interface for an "ATM Machine". **[8]**

OR

Q6) a) Explain different review methods of an UI Design. Why would you choose a particular review method? Justify by giving suitable example. **[8]**

b) Explain how scenarios help in the design process of interactive systems. **[8]**

SECTION - II

Q7) a) Consider an example of form-filling by the user to get name, address, and telephone numbers, fax and e-mail address entry on web page. Explain various elements that are required to be considered for designing user friendly interfaces. **[9]**

b) List and explain the steps of Usability Testing. What are some of the limitations of such testing? **[8]**

OR

Q8) a) Enumerate different usability evaluation and testing techniques. Explain cognitive walkthrough method in detail. **[6]**

b) Explain the challenging-scenario of direct manipulation techniques with respect to the video gaming interfaces. **[6]**

c) List the technologies useful to make a successful virtual environment. **[5]**

Q9) a) Compare and contrast online help with offline help. **[8]**

b) State and explain techniques to design an interface to assure its error free usage. **[9]**

OR

Q10) a) Explain importance of hypertext over linear paper document. List important considerations for creating a good hypertext document. **[8]**

b) Enumerate different error messages encountered by you in while using. C or C++ compiler. How will you categorize those error messages?**[9]**

Q11) a) Discuss important design issues involved in designing a web page.**[8]**

b) Explain Software and Hardware Interface Design for Embedded Systems. **[8]**

OR

Q12) a) What is Information Visualization? Explain IV Mantra. **[8]**

b) Explain i) Multimedia document searches. ii) Hypertext Document Design. **[8]**

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

P1001

[3866]-104
F.Y. M.C.A. (Under Engineering Faculty)
PROBABILITY AND STATISTICS
(2008 Course) (510904)

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

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 town has 3 doctors A, B and C operating separately. The probability that the doctors A, B and C would be available is 0.9, 0.6 and 0.7 respectively. What is the probability that; **[6]**

i) At least one doctor is available.

ii) Exactly 2 doctors are available.

b) A certain firm has plants A, B and C producing 35%, 15% and 50% respectively of the total output. The probabilities of non-defective product from these plants are 0.75, 0.95 and 0.85 respectively. An item is selected from the total output of these plants and found to be defective. What is the probability that it is produced by plant C? **[6]**

OR

a) Box A contains 2000 components of which 5% are defective box B contains 500 components of which 40% are defective and box C and D contains 1000 components each with 10% defective components. A box is selected at random and a component is drawn from it, find the probability that; **[6]**

i) It is defective.

ii) If the component is defective, it is from box B.

b) One bag contains 4 white and 2 black balls; another contains 3 white and 5 black balls. If one ball is drawn from each bag, find the probability that; **[6]**

i) both are white.

ii) both are black.

iii) one is white and one is black.

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

i) Sample space.

ii) Events.

iii) Conditional probability.

b) Verify whether the function $p(x)$ defined by $p(x)=\begin{cases}\frac{3}{4}\left(\frac{1}{4}\right), & \text{for } x=0,1,2,3\\ 0, & \text{otherwise}\end{cases}$

is p.m.f. of a discrete random variable X. **[6]**

OR

a) A continuous random variable has probability density function;

$f(x)=\begin{cases}k\left(2x-x^2\right), & 0<x<2\\ 0, & \text{otherwise}\end{cases}$ find k and $p\ (x>1)$ **[6]**

b) In a certain factory turning out razor blades, there is a small chance of 0.002 for any blade to be defective. The blades are supplied in packets of 100. Using a Poisson distribution calculate the approximate number of packets containing no defective, one defective and two defective blades respectively in a consignment of 10000 packets. (given $e^{-0.2}=0.8187$)**[6]**

Q3) a) The life time of a certain type of battery have mean 300 hours and standard deviation 35 hours. Assuming that the distribution of life time is normal find : **[6]**

i) Probability of batteries having life time between 225 and 335 hours.

ii) The life time in hours above which we will find the best 20% of the batteries.

Z	0.84	1.28	2.14
Area from z = 0	0.30	0.3997	0.4884

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

X \ Y	0	1	2	3
0	K	3k	2k	4k
1	2k	6k	4k	8k
2	3k	9k	6k	12k

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

OR

a) The average daily sale of 500 branch offices was Rs.150 thousand and the standard deviation Rs.15 thousand. Assuming the distribution to be normal, indicate how many branches have sales between Rs.120 thousand and Rs.145 thousand. **[6]**

Z values	0.33	2.0
Area	0.1293	0.4772

b) For a uniform distribution of a random variable X defined on [*a*, *b*], show that $E(X)=\frac{a+b}{2}$ and $Var(X)=\frac{(b-a)^2}{12}$. **[5]**

SECTION - II

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

i) Null hypothesis and research hypothesis.

ii) Type I and type II errors.

iii) Critical region for the test.

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

OR

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

i) Sampling with and without replacement.

ii) Random sample and sample statistic.

iii) Sample mean and sample variance.

b) Let S^2 be a sample variance of a random sample of size n from the distribution of X. Prove that; **[6]**

$$S^2 = \frac{\sum_{i=1}^{n} X_i^2 - \left(\sum_{i=1}^{n} X_i^2\right)^2}{n(n-1)}$$

Q5) a) A random sample of size n is selected from a normal distribution with mean μ and variance σ^2. Prove that the sample mean X is normally distributes with mean μ and variance σ^2/n. **[6]**

b) Show that a random sample of size 100, drawn with replacement, the standard error of sample proportion can not exceed 0.05. **[6]**

OR

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

b) Define : **[6]**

i) Confidence interval for difference and sum.

ii) Confidence interval for variance.

iii) Maximum likelihood estimate.

Q6) a) The mean lifetime of a sample of 100 fluorescent light bulbs produced by a company is computed to be 1570 with standard deviation of 120 hours. If μ is the mean life time of all the bulbs produced by the company, test the hypothesis $\mu = 1600$ hours against alternate hypothesis $\mu \neq 1600$ hours using a level of significance of 0.01. **[6]**

b) Observations on a random variable X are recorded as 306, 295, 300, 350, 290, 310, 315, 301, 308. Find; **[5]**

i) Sample mean.

ii) Sample median.

iii) Sample range.

OR

a) A random sample of size 5 is drawn from a binomial distribution with parameter $n = 20$ and p is unknown. Estimate the value of p for a data given by 18, 17, 15, 19, 20 using method of moment. **[6]**

b) Prove that sample mean is an unbiased estimator of population mean. **[5]**

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

P1002

[3866] - 105
M.C.A. (Engg.) - I
MANAGEMENT SCIENCE
(2008 Course)

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

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) ***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) How do you define management? Explain. **[6]**

b) Explain different levels of management. **[6]**

OR

Q2) a) Enumerate different functions of management? Explain planning function in detail. **[6]**

b) Explain different types of objectives in MBO. (management by objective) **[6]**

Unit - II

Q3) a) Explain the concept, characteristics of wants? Classify the different wants. **[6]**

b) With the help of graph explain the concept of elasticity of Demand. **[6]**

OR

Q4) a) What are the functions of chamber of commerce? Give at least four name of Chamber of Commerce in India. **[6]**

b) What are the main areas of managerial economics? Explain in brief. **[6]**

Unit - III

Q5) a) With the help of block diagram explain matrix organisation. **[6]**

P.T.O.

b) Explain, what are the different factors which decide forms of organisation [Business]. **[5]**

OR

Q6) a) Explain private sector organisation's classification & explain any one with its merits and demerits. **[6]**

b) What are the benefits of sound organisation structure in industry? **[5]**

SECTION - II

Unit - IV

Q7) a) What is job evaluation? How it is carried out? **[6]**

b) What do you understand by time management? Explain. **[6]**

OR

Q8) a) Enumerate different Incentive plans used in industry? Explain any one in detail. **[6]**

b) What is performance appraisal? Explain. **[6]**

Unit - V

Q9) a) Explain, what is importance & necessity of Industrial Act/Labour Legislation? **[6]**

b) Explain different features of "The workers compensation Act". **[6]**

OR

Q10) a) What is the need for industrial safety? What instructions & training is essential for safety? **[6]**

b) Explain the environmental factors which causes the accidents in industry. **[6]**

Unit - VI

Q11) a) Explain the concept & philosophy of TQM. Total Quality Management. **[6]**

b) Write the steps involved to implement ISO 9000 in Industry. **[5]**

OR

Q12) a) What is the purpose of patent? Explain in brief the procedure to get patent. **[6]**

b) Discuss the importance of Quality circles in various organisations. **[5]**

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

P1003

[3866] - 201

F.Y. M.C.A. (Engg.)

OBJECT ORIENTED PROGRAMMING

(2008 Course) (510909)

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

Instructions to the candidates:

1) ***Answers to the two Sections should be written in separate answer-books.***
2) ***In Section I attempt Questions Nos. 1 or 2, 3 or 4, 5 or 6 and in Section II questions Nos. 7 or 8, 9 or 10, 11 or 12.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain in brief, the various programming paradigms. **[5]**

b) Explain the following with suitable example : **[6]**

i) Data Encapsulation.

ii) Polymorphism.

iii) Classes and Objects.

OR

Q2) a) What are the limitations of procedural programming? **[4]**

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

Q3) a) Answer in short.

i) A constant can be defined using pre-processor directive *#define* or a **const** qualifier. Which one is preferred and Why?

ii) What is the difference between a **&** b and a **&&** b?

iii) What are inline functions? **[6]**

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

OR

Q4) a) What is function overloading? Write a program in C++ to overload a function Area() that Calculates area of Circle, Rectangle and Square.**[6]**

P.T.O.

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

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

ii) Can inline functions be nested?

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

Q5) a) What are constructors and destructors? Explain with suitable example. **[5]**

b) Explain Dynamic Memory Allocation & Write a program to dynamically allocate and deallocate memory for a character array of maximum 10 elements. **[7]**

OR

Q6) a) Write a program to dynamically allocate and deallocate memory for a rXc matrix. **[7]**

b) Explain various access specifiers. **[5]**

SECTION - II

Q7) a) What is operator overloading? Explain its need. **[5]**

b) Write a program to overload the logical negation '!' operator so that the result is 1 if the operand value is 0 and result is 0 if operand value is 1. **[6]**

OR

Q8) a) Explain binary and unary operators in detail. **[5]**

b) Write a program to overload the '&&' operator. **[6]**

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

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

OR

Q10) a) Explain the types of inheritance. **[5]**

b) Write a program to explain early and late binding. **[7]**

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

b) Write a program to maintain student details (rollno, name, total marks) in a file along with error handling. **[7]**

OR

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

a) Error handling

b) Formated I/O

c) C++ Streams

d) File Modes.

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

P1004

[3866] - 203
F.Y. M.C.A. (Under Engg.)
OPERATIONS RESEARCH
(2008 New Course) (510911)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answers 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) An electric company manufactures two models at two different plants. The daily capacity of the first plant is 60 radios and that of second is 75 radios. Each unit of the first model requires 10 pieces of a certain electric component; whereas each unit of the second model requires 8 pieces of the same component. The maximum daily availability of the special component is 800 pieces. The profit per unit of the first model is Rs. 300 and that of second is Rs. 200. Formulate the LPP and solve by graphical method. **[8]**

b) Give general structure of LP model. What are the advantages and limitations of LP model? **[4]**

OR

a) Solve the following LPP by the Simplex method : **[10]**

Minimize : $Z = 80X_1 + 100X_2$

Subject to :

$80X_1 + 60X_2 \geq 1500$

$-20X_1 + 90X_2 \geq 1200$

$X_1, X_2 \geq 0$

b) Discuss the properties of LP model. **[2]**

P.T.O.

Q2) a) Find the optimum solution to the following transportation problem in which the cells contain the transportation cost in rupees. **[7]**

	W1	W2	W3	W4	W5	Available
F1	7	6	4	5	9	40
F2	8	5	6	7	8	30
F3	6	8	9	6	5	20
F4	5	7	7	8	6	10
Required	30	30	15	20	5	100

b) Solve the following assignment problem for maximization. **[5]**

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

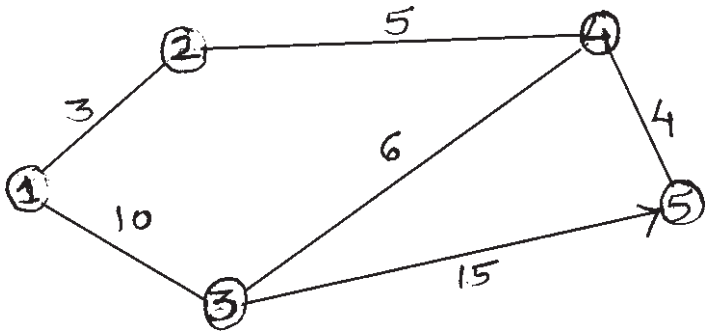
OR

a) A firm has two factories X and Y and three retail stores A, B, and C. The number of units of a product available at factories X and Y are 200 and 300 respectively, while demanded at retail stores are 100, 150, 250 respectively. Rather than shipping directly from sources to destinations, it is decided to investigate the possibility of trans-shipment. Find the optimal shipping schedule. The transportation costs in rupees per unit are given below. **[7]**

		Factory		**Retail Store**		
		X	**Y**	**A**	**B**	**C**
Factory	**X**	0	6	7	8	9
	Y	6	0	5	4	3
Retail store	**A**	7	2	0	5	1
	B	1	5	1	0	4
	C	8	9	7	6	0

b) Explain the Transshipment model with suitable example. **[5]**

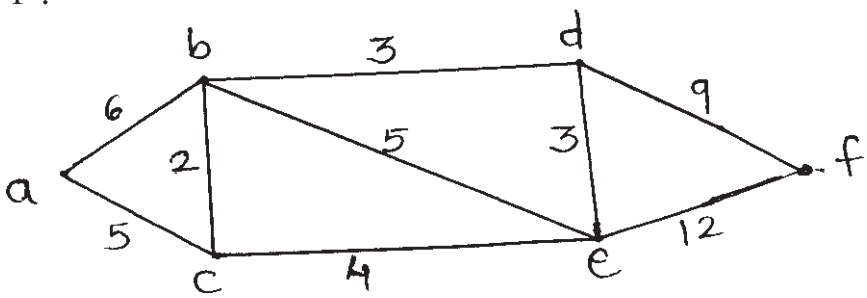
Q3) a) Use Floyd's algorithm to determine the shortest route from node 5 to node 1. **[7]**



b) Define : i) Spanning Tree ii) Non-critical activity. **[4]**

OR

a) Using Dijkstra's algorithm find shortest path from vertex 'a' to vertex 'f'. **[7]**



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

SECTION - II

Q4) a) TopAd, a new advertizing agency with 10 employees, has received a contract to promote a new product. The agency can advertise by radio and television. The following table gives the number of people reached by each type of advertisement and the cost and labour requirements. **[7]**

	Data / min advertisement	
	Radio	**Television**
Exposure (in millions of persons)	4	8
Cost (in thousands of Dollars)	8	24
Assigned employees	1	2

The contract prohibits TopAd from using more than 6 minutes of radio advertisement. Additionally radio and television advertisements need to reach at least 45 million people. TopAd has a budget goal of $100,000 for the project. How many minutes of radio and television advertisement should TopAd use?

b) Discuss the advantages and disadvantages of solving Linear Integer Programming problems by

i) cutting plane method ii) branch and bound method. **[5]**

OR

a) Consider the following two time series : **[7]**

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.

b) Compare Linear Programming and Goal Programming. **[5]**

Q5) a)

Strategies	**Estimated levels of sales (units)**		
	N_1	N_2	N_3
S_1	7,00,000	3,00,000	1,50,000
S_2	5,00,000	4,50,000	0
S_3	3,00,000	3,00,000	3,00,000

Which strategy should the concern executive choose on the basis of :

i) Maximin ii) Minimax iii) Maximax iv) Laplace. **[8]**

b) Give the significance of Decision Analysis. What are the steps of decision making process? **[4]**

OR

a) The research department of Hindustan lever has recommended the marketing department to launch the shampoo of three different types. The marketing manager has to decide one of the types of shampoo to be launched under the following estimated pay-offs for various levels of sales.

Types of Shampoo	**Estimated levels of sales (units)**		
	Rs. 15,000	**Rs. 10,000**	**Rs. 5,000**
Egg Shampoo	30	10	10
Clinic Shampoo	40	15	5
Deluxe Shampoo	55	20	3

What will be the marketing manager's decision?

i) Maximin ii) Minimax iii) Maximax iv) Laplace. **[8]**

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

Q6) a) What conditions must be satisfied by the observations of the simulation experiment? Discuss each of them. **[7]**

b) Explain in brief Generation of Random numbers. **[4]**

OR

a) What is Simulation Experiment? Discuss the factors affecting simulation. **[7]**

b) Write a short note on Monte Carlo Simulation. **[4]**

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

P1005

[3866] - 301

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

OPERATING SYSTEM

(2008 Course) (Sem. - I) (Theory) (610901)

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

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 feature of assembly language makes it mandatory to design a two pass assembler? Explain with suitable example. **[6]**

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

OR

Q2) a) Consider the definition of Macro B nested with Macro A. Comment on the following statement : **[4]**

i) Can a call to Macro B also appear within Macro A.

ii) Can a call to Macro A also appear within Macro B.

b) State True and False. **[2]**

i) MDT contains Macro names.

ii) Keyboard parameter can be used in Macro.

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

Q3) a) Compare top-down and bottom-up parser. **[6]**

b) Explain the functioning of compile-and-go loader scheme. What are the advantages and disadvantages of this scheme? **[6]**

OR

P.T.O.

Q4) a) Define the terms : **[6]**

i) Incremental compiler.

ii) Cross compiler.

iii) Bootstrap compiler.

b) Can the lexical analysis phase of the compiler detect any kind of errors? **[6]**

Q5) a) With the help of suitable example explain the Real Time Operating System. **[5]**

b) Consider the following set of processes :

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

Assume arrival time for all processes is at time 0 in order P_1, P_2, P_3, P_4, P_5.

Draw Gant chart to show execution of these processes using FCFS, SJF.

(Assume small priority number implies higher priority). **[6]**

OR

Q6) a) Consider the following set of processes: **[6]**

Process	Burst Time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

Assume arrival time for all processes is at time 0 in order P_1, P_2, P_3, P_4 and P_5.

Calculate the turn arround time and waiting time for each process using Round Robin and SJF.

b) Write algorithm for non-preemptive priority job scheduling algorithm. **[5]**

SECTION - II

Q7) a) Explain first fit algorithm used for memory allocation. What are the advantages and disadvantages of this algorithm? **[8]**

b) What is swapping? Explain how the space is allocated using swapping. **[4]**

OR

Q8) a) Explain the virtual memory management. **[6]**

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

i) Internal fragmentation.

ii) External fragmentation.

iii) Segment map table.

Q9) a) Explain two level and tree structured directory. **[6]**

b) Write an algorithm for disk scheduling using "shortest service time first" method. **[6]**

OR

Q10) a) Explain SCAN disk scheduling algorithm. What are the advantages and disadvantages of this algorithm? **[6]**

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

i) Programmed I/O.

ii) Interrupt driven I/O.

Q11) a) Explain the user, kernel and hardware interface of linux operating system. **[6]**

b) Explain the process management system calls. **[5]**

OR

Q12) a) What are the kernel's responsibility to facilitate I/O transfer? **[6]**

b) Explain linuxfile system. What are the different file types? **[5]**

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

P1006

[3866] - 303

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

FINANCIAL ACCOUNTING & MANAGEMENT

(2008 Course) (610903)

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

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

Unit - I

Q1) a) Define Accounting. Differentiate Book keeping and Accounting. **[6]**

b) Discuss the various accounting policies and accounting conventions. **[6]**

OR

Q2) a) Elucidate the rules of debit and credit. **[6]**

b) Discuss the assets and liabilities side of the balance sheet. **[6]**

Unit - II

Q3) a) Explain various ratio analysis in brief. **[6]**

b) What are different elements of cost? Explain in brief. **[6]**

OR

Q4) a) Explain break even point with example. **[6]**

b) A factory manufacturing sewing machines has the capacity to produce 500 machines per year. The marginar (variable) cost of each machine is Rs. 200/- and each machine is sold for Rs. 250/-. Fixed overheads are Rs. 12,000/- per year. Calculate the break even points for output and sales and show what profit will result if output is 90% of capacity? **[6]**

Unit - III

Q5) a) What is the relationship between current assets, total assets, ratio and profitability? **[5]**

P.T.O.

b) XYZ cables has a after-tax profit of Rs. 50,000/- and taxation rate is 50%. Its sales are Rs. 2,50,000/-. Its variable cost of production is Rs. 5 per unit and sales price is Rs. 10 per unit. **[6]**

i) Find out fixed and variable costs.

ii) What is its break point of output.

OR

Q6) a) Discuss working capital, sources of working capital, uses of working capital and working capital policy in brief. **[5]**

b) ABC & Co. is desirous to purchase a business and has consulted you with following data : **[6]**

Sales level = Rs. 1,00,000/-

Profit margin = 10% (after taxes)

Fixed capital Investment = Rs. 30,000/-

Current asset = Rs. 20,000/-

Find out followings :

i) Rate of return on total assets before taxes.

ii) Total asset turnover for ABC firm.

SECTION - II

Unit - IV

Q7) a) Explain different limitations of capital budgeting. **[6]**

b) Compute the present value of an investment outlay of Rs. 10,000/- in the present and Rs. 10,000/- after one year. The scrap value of the equipment after 5 years is Rs. 1,000/-. The discount rate is 10%. **[6]**

OR

Q8) a) What is payback criterion of investment decisions? What are its strengths and weaknesses. **[6]**

b) Your bank pays you Rs. 50,000/- at the end of 5 years of your deposit of Rs. 2,500/- a year for 5 years is a recurring deposit account. What is the net present value of your investment, if your required rate of return is 10 percent? **[6]**

Unit - V

Q9) What is cost of capital? Explain composite cost of capital in brief. Give suitable example to explain cost of capital and composite cost of capital.**[12]**

OR

Q10) a) A company's equity share of face value of Rs. 10/- is selling at Rs. 15/- in the market. The divident per share declared this year is Rs. 1.50/- per share. The dividend is expected to grow in future years, at the annual rate of 5%. What is the cost of equity. **[6]**

b) How would you calculate cost of equity capital, debts and preferred stock? Explain with example. **[6]**

Unit - VI

Q11) Explain various accounting functions / features and services of Tally 9.0, which is useful to a finance manager as well as Accountant of any firm. Take suitable example of any service industry and explain all features and services of Tally 9.0. **[11]**

OR

Q12) IT infrastructure (i.e. computer hardware , software and communication devices) has become an integral part of any business unit. As a finance manager, comment on uses of IT infrastructure for finance and accounts management. How the IT infrastructure has given a new dimension to financial sector. Explain, as a finance manager. **[11]**

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

P1007

[3866] - 401
S.Y. M.C.A. (Engg.)
SOFTWARE ENGINEERING
(2008 Course) (610909)

Time : 2 Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

SECTION - I

Q1) a) What are the characteristic of software? Explain following software myths:

i) Management myths ii) Practitioner's myths **[6]**

b) What is software process model? Explain personal and team process models. **[6]**

OR

Q2) a) Explain Waterfall model? Why does the waterfall model fails sometimes? **[6]**

b) Explain the unified process indicating workflows and process phases? **[6]**

Q3) a) With neat diagram compare Business process engineering and product engineering. **[6]**

b) Explain the following elements of analysis model: **[6]**

i) Scenario-based elements ii) behavioral elements

OR

Q4) a) What is the importance of principles and practices in software engineering? **[6]**

b) Explain with suitable example the following: **[6]**

i) Data- flow model ii) Control-flow model.

P.T.O.

Q5) a) Draw level 0, level 1 and level 2 Data flow diagrams for Library Management system. The system incorporates details of users, various sections of library. The system keeps track of transactions on books, journals and reference material. The system generates reports on demand. **[6]**

b) Explain the need of requirement prioritization? How the requirements are prioritized? **[5]**

OR

Q6) a) Consider the scenario of "Issue of a book" for Library Management system. The swimlane diagram for the same. Assume and specify the scope. **[6]**

b) Explain in brief class based modeling with example. **[5]**

SECTION - II

Q7) a) What is the importance of software design? What is the relation between analysis and design? **[6]**

b) Explain Call-return architecture and Layered architecture. **[6]**

OR

Q8) a) Explain the significance of abstraction and refinement in data design. **[6]**

b) What is meant by cohesion and coupling criteria's that address the function Independence. **[6]**

Q9) a) What is the difference between verification and validation? **[6]**

b) What is fault-Based testing? What is meant by testing surface structure and Deep structure? **[6]**

OR

Q10) a) What are strategic issues in software testing? **[6]**

b) In relation with white box testing technique, explain : **[6]**

i) Condition testing

ii) Loop testing.

Q11) a) What is the importance of conformance, standards and measurements in context of software quality? **[5]**

b) Explain the metrics for testing. What is the importance of testing Metrics? **[6]**

OR

Q12) a) What is the difference between Measure and Metric? What are attributes of effective software metric? **[5]**

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

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

P1008

[3866] - 403

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

OBJECT ORIENTED ANALYSIS AND DESIGN

(2008 Course) (610911)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Write a short note on CORBA architecture. **[6]**

b) Write a short note on Rational Unified process. **[6]**

OR

Q2) a) Explain Model Driven Architecture. **[6]**

b) Explain the Object oriented features. **[6]**

Q3) a) Differentiate between <<include>> and <<extend>> with an example. **[6]**

b) Explain in brief the need of class diagram. **[6]**

OR

Q4) a) Write a short note on UML meta model. **[6]**

b) What is generalization? Explain with an example. **[6]**

Q5) Draw class diagram for "Inventory management system". Assume appropriate scope of the system. **[11]**

OR

Q6) Draw Use case diagram for "Online mobile shopping". Assume appropriate scope of the system. **[11]**

P.T.O.

SECTION - II

Q7) a) Draw sequence diagram for "Online Banking system". Assume appropriate scope of the system. **[8]**

b) Which are the various interaction diagrams? Discuss in brief. **[4]**

OR

Q8) a) Compare sequence and communication diagrams. Explain with an example. **[8]**

b) Explain swimlanes with an example. **[4]**

Q9) a) Explain state machine diagrams with an example. **[8]**

b) Explain state generalization with an example. **[4]**

OR

Q10) a) Explain fork and join with an example. **[8]**

b) Draw an activity diagram for "college event management system" such as annual gathering. Assume appropriate scope of the system. **[4]**

Q11) a) What are artifacts? How they are used in deployment diagrams? **[6]**

b) Draw a package diagram for "Engineering college management system" Write the assumptions about the scope of the system. **[5]**

OR

Q12) a) What is the need of component diagram? Explain with example. **[6]**

b) How UML is useful in Embedded applications? **[5]**

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

P1009

[3866] - 404

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

JAVA PROGRAMMING

(2008 Course) (Sem. - IV) (215013)

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

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 whenever necessary.*
4) *Figures to the right indicate full marks.*

SECTION - I

Q1) a) What is multithreading? Explain any four functions of Thread class. **[6]**

b) What is package? Explain the difference between class and a package. **[5]**

OR

Q2) a) What is difference between vector and array? Give suitable example? **[6]**

b) Comment on : Java is a platform independent language. **[5]**

Q3) a) What is Choice control in java. Explain any five methods of it. **[6]**

b) What are different Event classes in Java? **[5]**

OR

Q4) a) Write a program to display a "Hello" message in the window when left mouse button is clicked. **[6]**

b) Write the similarities and dissimilarities between swing and AWT. **[5]**

Q5) a) With example explain HTML applet Tag. **[6]**

b) List various methods in Applet class. Explain in detail all the methods. **[7]**

OR

Q6) a) Write an applet program that accepts two input string using <param> tag and concatenate the strings and display it in window. **[7]**

b) What are the different ways to execute applet? Explain with example. **[6]**

P.T.O.

SECTION - II

Q7) a) Write a program to accept five numbers from the user, find total and average of these numbers and display result on the screen. **[8]**

b) What is string tokenizer class? Explain in detail. **[5]**

OR

Q8) a) Write a program to accept two numbers from user. Also accept a choice to perform various arithmetic operations like addition, subtraction, multiplication and division on them. Display the result. **[8]**

b) Distinguish between. **[5]**

i) Inputstream and Reader classes.

ii) Outputstream and Writer classes.

Q9) a) How to connect a database into Java application? Explain it with simple application. **[6]**

b) Differentiate between JDBC and ODBC. **[5]**

OR

Q10) a) Explain different JDBC drivers. **[6]**

b) Explain Prepared Statement in detail. **[5]**

Q11) a) Explain ServerSocket and DatagramSocket classes. **[6]**

b) Explain different Network Exceptions? **[5]**

OR

Q12) a) What are the difference between TCP and UDP? **[5]**

b) Explain the following classes and methods in detail with example. **[6]**

i) InetAddress.

ii) Inet Address get By Name().

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

P1010

[3866] - 502
T.Y. M.C.A. (Engg.)
COMPUTER GRAPHICS
(2008 Course) (710902)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What are the Major application areas in Computer Graphics. **[2]**

b) Find the no. of colors a frame buffer of 8 bit planes each of red, green, blue and 10 bit wide lookup table can produce? **[4]**

c) Explain Bresenham's Circle drawing algorithm. **[6]**

OR

Q2) a) Write a note on : **[4]**

i) Light pen ii) Tablets

b) Find the amount of memory required by an 8 plane frame buffer each of red, green, blue having 1024 x 768 resolution. **[4]**

c) Compare advantages of Bresenham's line drawing algorithm over the DDA algorithm. **[4]**

Q3) a) Write a pseudo C algorithm for polygon filling by seed fill algorithm. **[5]**

b) Give the 2D transformation matrix for **[6]**

i) Rotation

ii) Scaling

iii) Translation

OR

P.T.O.

Q4) a) Explain the Inverse transformation. Derive the matrix for Inverse transformation. **[5]**

b) What is homogenous transformation? Give the homogeneous coordinates for translation and rotation. **[6]**

Q5) a) What is windowing and clipping? What do you mean by interior and exterior clipping? Explain how exterior clipping is useful in multiple window environments. **[6]**

b) Explain the Cyrus-Beck algorithm for Clipping. **[6]**

OR

Q6) a) Use Cohen-Sutherland out code algorithm to clip two lines P_1 (40,15) - P_2 (75,45) and P_3 (75, 45) – P_4 (100, 10) against a window A (50,10), B (80, 10), C (80, 40), D (50, 40). **[8]**

b) Give the Segment table structure and explain various data structures used to implement the segment table. **[4]**

SECTION - II

Q7) a) Give the 3-D transformation matrix for i) Translation ii) Scaling and iii) Rotation. **[6]**

b) What are the Parallel and perspective projection? Give the classification of both. **[5]**

OR

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

b) Write a short note on Viewing Transformation. **[5]**

Q9) a) Explain Warnock's algorithm with is advantages for removing hidden surface. **[6]**

b) Compare Gourad shading and Phong's shading. **[4]**

c) What is match band effect? **[2]**

OR

Q10) a) Explain z-buffer algorithm with it's advantages and disadvantages for removing hidden surface. **[6]**

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

i) Color Models

ii) Shadow

Q11) a) Explain true curve generation algorithm with its limitation. **[6]**

b) Discuss Various Devices for producing animation. **[3]**

c) Write short note on Fractals. **[3]**

OR

Q12) a) Distinguish between Bezier and B-Spline curves. **[4]**

b) Explain briefly the various real time animation technique used in computer assisted animation. **[4]**

c) Compare NTSL and PAL Video formats. **[4]**

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

P1011

[3866] - 503
T.Y. M.C.A. (Engineering)
ADVANCED DATABASES
(2008 Course) (710903)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) With a suitable example, explain the materialization approach. **[6]**

b) Let the relations r_1 and r_2 have the following properties : **[6]**
r_1 has 20,000 tuples, r_2 has 45,000 tuples 25,000 tuples of r_1 fit on one block and 30 tuples of r_2 fit on one block.
Estimate the number of block accesses required using nested loop join and block nested loop join strategies.

OR

Q2) a) Consider the following query, **[6]**
"Select balance from account where balance < 2500."
Write relational algebra expression for the above query and explain query evaluation plan.

b) Explain the different ways of executing pipelines. **[6]**

Q3) a) Differentiate between centralized and client-server systems. **[6]**

b) Explain the structure of Transaction Server Process. **[6]**

OR

Q4) a) Explain any two Parallel Database Architectures. **[6]**

b) Consider a bank that has a collection of sites, each running a database system. Suppose the only way the databases interact is by electronic transfer of money between one another. Would such a system qualify as Distributed Database. Justify your answer. **[6]**

P.T.O.

Q5) a) What is the difference between object-oriented databases and object-relational databases? **[4]**

b) Explain Persistent C++ systems. **[7]**

OR

Q6) a) What is meant by object Identity? Explain the different degrees of permanence of object Identity. **[8]**

b) How are the multiset-valued attributes are defined in SQL. **[3]**

SECTION - II

Q7) a) What is a Data Warehouse? **[3]**

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

i) Data Transformation ii) Fact constellation

c) Explain in brief : Data cube. **[3]**

OR

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

b) What is meant by materialized view? **[3]**

c) Explain in brief : OLAP. **[3]**

Q9) a) Explain the following with suitable example. **[8]**

i) Data Characterization ii) Data discrimination

b) Explain in brief outlier analysis. **[4]**

OR

Q10) a) Explain with suitable example classification and prediction. **[8]**

b) State K-means algorithm for clustering. **[4]**

Q11) a) Describe the ranking using TF-IDF. **[8]**

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

i) Hub ii) Authority iii) Web crawler

OR

Q12) a) Describe the Popularity ranking. **[8]**

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

i) Ontology ii) Search engine spamming iii) False positive

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

P1254

[3866] - 501

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

PRINCIPLES AND PRACTICES FOR IT PROJECT MANAGEMENT

(New 2008 Course) (710901)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain various phases in the process of management. **[5]**

b) Explain the difference between software development life cycle and project life cycle. **[6]**

OR

What is Strategic Management? Explain techniques of strategic Management in detail. **[11]**

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

OR

What is project management? How information technology plays an important role in project management, explain with suitable example? **[12]**

Q3) Explain how Work Breakdown structure (WBS) is created? What is the role of stakeholders in creation of WBS? **[12]**

OR

Write short note on <u>any two</u> of following: **[12]**

a) Gantt charts.

b) Project budgeting.

c) Requirement Analysis.

P.T.O.

SECTION - II

Q4) Explain how project team is created and team issues managed? **[11]**

OR

Explain the process of revision of project plan. What is the need for project plan revision? **[11]**

Q5) What are the strategies for resolving destructive conflicts? Explain in detail. **[12]**

OR

Distinguish between: **[12]**

a) Formal and Informal Groups.

b) Traditional Vs modern view of conflict.

Q6) What is CMM? Explain its different levels in details. **[12]**

OR

a) What is IPR? Explain different types of IPR in brief. **[8]**

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

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

P1322

[3866]-21

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

OBJECT ORIENTED PROGRAMMING

(2005 Course)

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

Instructions to the candidates :

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

SECTION - I

Q1) a) What are the limitations of procedural programming? **[5]**

b) Explain the following with example : **[12]**

i) Information Hiding.

ii) Inheritance.

iii) Polymorphism.

iv) Data encapsulation.

v) Message passing.

vi) Classes and objects.

OR

Q2) a) Compare Procedural Programming and Object Oriented Programming. **[7]**

b) Explain the following with example : **[10]**

i) Data encapsulation.

ii) Data abstraction.

iii) Message passing.

iv) Polymorphism.

v) Methods.

P.T.O.

Q3) a) Explain function overloading with example. **[6]**

b) Explain inline function with example. **[6]**

c) Explain different types of constructors. **[5]**

OR

Q4) a) Explain friend functions with example. **[5]**

b) Explain static member functions with example. **[5]**

c) Write a program in C++ to create a database for student mark sheet using array of objects. **[7]**

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 student of Engineering & Medical. **[8]**

OR

Q6) a) What is polymorphism? What are its different types? Explain runtime polymorphism with a sample program. **[8]**

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

SECTION - II

Q7) a) Explain with example overloading of template functions. **[7]**

b) Make use of templates to create an array of integer and double. Sort the array using any sorting technique. **[10]**

OR

Q8) a) Explain with example class templates with multiple parameters. **[9]**

b) Explain with example function templates with multiple parameters. **[8]**

Q9) a) What is exception handling? What are the steps for exception handling in C++? Give examples. **[7]**

b) Write a program in C++ to create an patient database and store it in a sequential file named emp.dat. make use of structures. **[10]**

OR

Q10) a) What are the different modes for opening a file in C++. **[6]**

b) Explain various file error handling functions in C++. **[4]**

c) Write a program in C++ for reading and writing a class object into a file. **[7]**

Q11) a) What is exception handling? Compare exception handling mechanism in C++ and Java. **[8]**

b) What is inheritance? State different types of inheritances in Java. Is multiple inheritances supported in Java. Justify. **[8]**

OR

Q12) a) What is the difference between class and interface? Give example for use of interfaces in inheritance. **[6]**

b) State and explain different access specifiers in Java. **[4]**

c) Explain different uses of keyword Final with example. **[6]**

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

P1325

[3866]-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) ***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) ***You are advised to attempt not more than three questions from each section.***
5) ***Your answers will be valued as a whole.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Among 120 mathematics students at a college concerning the languages French, German and Russian : 65 Study French, 45 Study German, 42 Study Russian, 20 Study French and German 25 Study French and Russian, 15 Study German and Russian, 8 Study all the three languages. Find the number of students who study :

i) Atleast one language

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

b) Show that :
$1^2 + 2^2 + 3^2 + ... + n^2 = n(n+1)(2n+1)/6, n \geq 1$ by mathematical induction. **[5]**

OR

Q2) a) Given that $P \cap Q = P \cap R$, is it necessary that Q = R ? Justify your answer. **[4]**

b) 40 computer programmers interviewed for a job 25 knew JAVA, 28 knew ORACLE, and 7 knew neither language. How many knew both the languages. **[4]**

c) Show that $2^n \times 2^n - 1$ is divisible by 3 for all $n \geq 1$ by induction. **[5]**

P.T.O.

Q3) a) Prove that the argument $p \to q, q \to r, r \to s, \sim s, Pvt \vdash t$ is valid without using truth table. **[6]**

b) Obtain CNF and DNF for the following without Truth table $(p \to q) \wedge (q \to p)$. **[5]**

OR

Q4) a) Determine whether the following is a tautology contingency and a contradiction.

i) $p \to (p \to q)$

ii) $p \to (q \to p)$

iii) $p \wedge \sim p$ **[6]**

b) Rewrite the negation for each of the following. Determine whether the resulting statement is true or false. Assume U = R.

i) $\forall x \exists m (x^2 < m)$

ii) $\exists m \forall x (x^2 < m)$ **[5]**

Q5) a) A box contains 6 white balls and 5 block balls. Find the number of ways, 4 balls can be drawn from the box, if

i) two must be white

ii) all of them must have the same color. **[5]**

b) In how many ways can the 4 walls of a room be painted with 3 colours, so that no two adjucent walls have the same colour. **[6]**

OR

Q6) a) In a class of 100 students 40 are boys. **[6]**

i) In how many ways can a 10 person committee is formed.

ii) Repeat (i) if there must be an equal number of boys and girls in the committee.

iii) Repeat (ii) if the committee must consist of either 6 boys and 4 girls or 4 girls and 6 boys.

b) How many different necklaces can be designed from 6 different colours, using one bead of each colour? **[5]**

SECTION - II

Q7) a) Let A = {4, 6, 8, 10} and R = {(4, 4), (4, 10), (6, 6), (6, 8), (8, 10)} is a relation on set A. Determine transitive closure of R. **[6]**

b) Use Warshalls algorithm to find the transitive clouse of the relation R = {(1, 2), (1, 3), (1, 4), (2, 3), (2, 4), (3, 4)} on A = {1, 2, 3, 4}. **[5]**

OR

Q8) a) Let S be the set of all points in a plane. Let R be a relation such that for any two points a and b; (a, b) ∈ R if b is within two centimeter from A. Show that R is an equivalence relation. **[5]**

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

Q9) a) What are multigraphs and weighted graphs? Explain with examples. **[5]**

b) Determine the number of regions defined by a connected planer graph with 6 nodes and 10 edges. Draw the graph. **[5]**

c) Define Regular and bipartite graph. **[3]**

OR

Q10) a) Define the following terms : **[6]**

i) rooted tree.

ii) m-ary tree.

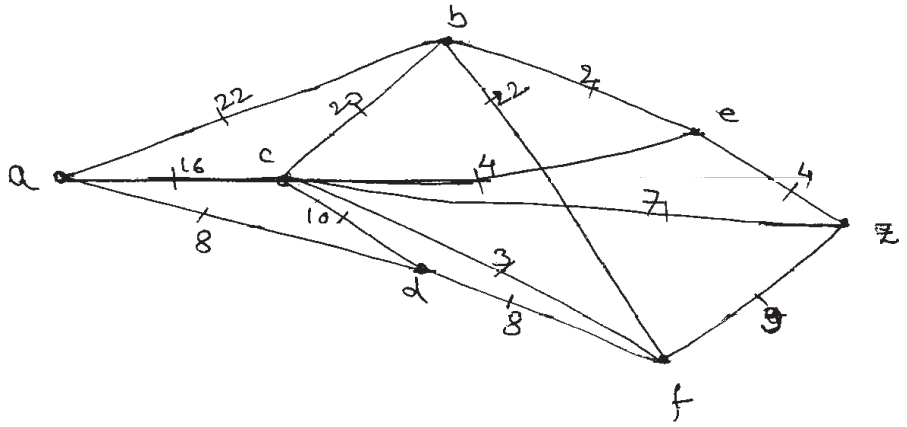
iii) full binary tree.

iv) height of tree

v) isomorphic tree.

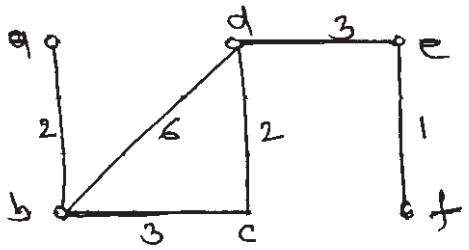
vi) regular tree.

b) Apply the shortest path algorithm and find shortest path between a – z in the graph given below. **[7]**



Q11) a) How will you differentiate between a general tree and a binary tree? **[5]**

b) Find all the spanning tree of graph G and find which is the minimal spanning tree of G shown in figure. **[6]**



OR

Q12) Write short notes on (any 3) : **[11]**

a) Hamiltonain Paths and circuits.

b) Eulerian Paths and circuits.

c) Pigeonhole Principle.

d) Prefix codes.

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

P1326

[3866]-202

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

DATA STRUCTURES & FILES

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

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

Instructions to the candidates :

1) ***Answer 3 questions from Section I and 3 questions from Section II.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Consider integer array int arr [3] [4] declared in 'C' program. If the base address is 1050, find the address of the element arr [2] [3] with row major & column major representation of the array. **[6]**

b) Explain the concept of ordered list with suitable example. **[2]**

c) Write a function in 'C' to get a transpose of matrix of size M × N, using simple transpose method. Derive the time & space complexity of your algorithm. **[4]**

OR

Q2) a) How a polynomial having max. 3 variables can be represented in computer memory using array data structure? Represent the following polynomial in computer memory using the structure defined by you :

$5x^3y^3z + 3x^2y^2z^2 + 6xyz^3 + 10$ **[6]**

b) What is sparse matrix? Give the structure declaration to represent a sparse matrix. What are the advantages of writing the sparse matrix representation over the conventional representation of any matrix as 2D array of size M × N? **[6]**

Q3) a) Write Pseudo 'C' code to reverse linked list. **[8]**

b) Write advantages & disadvantages of doubly linked list. **[4]**

OR

P.T.O.

Q4) a) Write Pseudo 'C' code to insert the item in the circular linked list. **[6]**

i) At end

ii) At mid

iii) At beginning

b) Write Pseudo 'C' code to merge two singly linked lists. **[6]**

Q5) a) Write the ADT for stack. **[2]**

b) Use stack for expression conversion (from infix to post fix), for the following example and show the contents of stack after every pass.

A – B / (C * D $ E) **[9]**

OR

Q6) a) Write the difference between linear queue and circular queue. **[3]**

b) What is queue? Give array implementation of queue. Write Pseudo code for insertion & deletion in queue. **[8]**

SECTION - II

Q7) a) Define a binary tree. List down some application of trees. Define the following terms with respect to tree. **[6]**

i) Degree of node.

ii) Complete binary tree.

iii) Forest.

iv) Skewed binary tree.

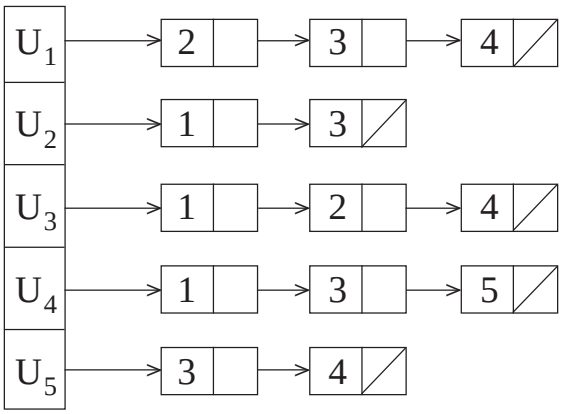
b) Write Dijkstras Algorithm to find the shortest path in a graph. **[6]**

OR

Q8) a) Explain the different representation of graphs. For the adjancent matrix given below, draw the corresponding graph. **[8]**

	A	B	C	D
A	0	1	1	1
B	0	0	0	1
C	0	0	0	0
D	0	0	0	0

for the adjancy list given below, draw the corresponding graph.



b) Write a function for post order traversal in a binary tree. **[4]**

Q9) a) Write Pseudo 'C' code to sort 'n' nos. stored in array in non decreasing order using merge sort. Obtain its time & space complexity. **[8]**

b) Write recursive 'C' function for binary search with suitable example. **[4]**

OR

Q10) a) What is basic step of quick sort? Write a Pseudo 'C' code or 'C' program for quick sort to sort an array A[n]. Show the contents of the array after every iteration of your algorithm. Start from the following status of the array :

27, 76, 17,9, 57, 90, 45, 100, 79 **[8]**

b) Explain indexed sequential search with example. **[4]**

Q11) a) Write characteristics of a good hash function. **[3]**

b) Write a 'C' program using command line arguments to copy contents of one file into other file. The output file will contain the data in upper case while the input file will have contents in lower case. **[8]**

OR

Q12) a) Write a program for sequential organization file to delete a record. **[8]**

b) Write short note on liner probing. **[3]**

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

P1328

[3866]-504

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

ENTERPRISE RESOURCE PLANNING

(2008 Course) (710904)

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

Instructions to the candidates :

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

SECTION - I

Q1) Can we compare ERP system in business with Core Banking System* used by a bank? Explain the importance of integrated system in business and bank.

*A Core Banking System is a centralized information system implemented by the bank to provide multiple service delivery channels of ATM, Mobile banking, Internet Banking, Point of Sale, Tele-banking to their customers. **[12]**

OR

Q2) a) Explain the scope of an ERP system and the business value of an ERP system. **[6]**

b) Explain the importance of an Integrated System. Also explain the usefulness of ERP in competitive strategy formulation. **[6]**

Q3) Does the ERP implementation in an organization improve its overall performance across entire organization? Explain what changes in organization structure are necessary for ERP implementation. **[12]**

OR

Q4) a) Explain the concept of Business Process Reengineering in the context of ERP system. **[6]**

b) Does the ERP implementation in an organization makes it more process oriented? Explain what difference it makes to end users in organization. **[6]**

P.T.O.

Q5) a) Explain ERP system architecture. What are the Critical Success Factors (CSF) for ERP? **[6]**

b) What are the Infrastructure requirements for implementing ERP? What are the various ERP implementation strategies? **[5]**

OR

Q6) a) Explain the Critical Success Factors (CSF) for ERP. What are the reasons for ERP failures? **[6]**

b) Compare the currently available ERP packages in market. Explain why an ERP implementation fails. **[5]**

SECTION - II

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

b) Explain the concept of outsourcing in the context of ERP. **[5]**

OR

Q8) a) Explain the Design and Customization issues for ERP software. **[6]**

b) Explain the selection criteria for ERP software. **[5]**

Q9) a) What are the issues in Global ERP implementation? How can the E-business can be integrated with ERP? **[6]**

b) How the Business Process Reengineering (BPR) impacts the ERP implementation? **[6]**

OR

Q10) a) Explain the differences between domestic and global ERP implementation. **[6]**

b) Explain the concept of data warehousing in the context of ERP. How the data from ERP can be integrated with Corporate data warehouse solution? **[6]**

Q11) Explain the typical ERP system modules with a brief explanation of each module. **[12]**

OR

Q12) a) Explain the relationship among Production, Scheduling, Manufacturing and Sales and Marketing modules of ERP. **[6]**

b) Explain the Finance and Production, Scheduling modules of ERP. **[6]**

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

P1341

[3866]-24

F.Y. M.C.A. (Engg.)

MICROPROCESSOR APPLICATIONS

(2005 Course) (Sem. - II)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is purpose of sharing the functionality on AD pins of 8085? What is the disadvantage of it? Draw and explain the internals of a typical octal Latch. **[8]**

b) Draw and explain the functional block diagram of 8085? **[10]**

OR

Q2) a) What is the utility of Buffers and Decoders? Elaborate. **[8]**

b) Design an interface for interfacing 32KB SRAM to 8085. Capacity of the available SRAM Chips is 8KB. **[10]**

Q3) a) Write an assembly language program to convert 4-digit hex number into equivalent BCD. **[8]**

b) What is a 'wait state'? Explain with example. **[8]**

OR

Q4) a) Draw and explain the timing diagram for the instruction MOV A,M. **[8]**

b) Explain all available addressing modes of 8085. **[8]**

Q5) a) Draw an Interfacing diagram to interface 2 digit 7-segment display using 8255. **[8]**

b) Explain mode 0 and 1of 8255 in detail. **[8]**

OR

P.T.O.

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

b) Draw and explain functional block diagram of 8255. **[8]**

c) Write a note on polled I/O **[4]**

SECTION - II

Q7) a) What are vectored interrupts? Give the interrupt support of 8085 in detail. What is the use of EI and DI instructions? **[10]**

b) Draw and explain the functional block diagram of 8259. **[8]**

OR

Q8) a) Draw and explain the functional block diagram of 8279. Explain Mode 0, 1 and 4 in detail. **[10]**

b) What is NMI? How does it deffer from other Hardware interrupts? **[4]**

c) Explain Mode 1of 8253 in detail. **[4]**

Q9) a) Explain asynchronous mode operation of 8251. **[8]**

b) What is DMA? Explain the concept with neat diagram. **[8]**

OR

Q10) a) Give the details of the usage of SID and SOD instructions. **[6]**

b) Write a note on RS232C interface. **[6]**

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

Q11) a) Explain the details of generating the clock signal for 8086 using 8284. **[8]**

b) What is the difference between minimum and maximum mode operation of 8086? How does the lost control signals are regenerated in Maximum mode operation? **[8]**

OR

Q12) a) Draw the programmers model of 8086. Explain in detail. **[10]**

b) Write 8086 assembly language program to reverse a 4 digit number. **[6]**

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

P1343

[3866]-204
F.Y. M.C.A. (Engg.)
MICROPROCESSOR APPLICATIONS
(2008 Course) (Sem. - II)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What is the utility of Buffers and Decoders? Elaborate. **[5]**

b) Design an interface for interfacing 32KB SRAM to 8085. **[7]**

OR

Q2) a) What is purpose of sharing the functionality on AD pins of 8085? What is the disadvantage of it? Draw and explain the internals of a typical octal Latch. **[6]**

b) Draw and explain the functional block diagram of 8085. **[6]**

Q3) a) Draw and explain the timing diagram for the instruction MOV A,M. **[6]**

b) Explain all available addressing modes of 8085. **[6]**

OR

Q4) a) Write an assembly language program to convert 2-digit hex number into equivalent BCD. **[6]**

b) What is a 'wait state'? Explain with example. **[6]**

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

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

OR

Q6) a) Draw an Interfacing diagram to interface 2 digit 7-Segment display using 8255. **[7]**

b) Explain mode 1 of 8255 in detail. **[4]**

P.T.O.

SECTION - II

Q7) a) What is NMI? How does it differ from other Hardware interrupts? **[5]**

b) Explain Mode 1 and 4 of 8253 in detail. **[6]**

OR

Q8) a) What are vectored interrupts? Give the interrupt support of 8085 in detail. What is the use of EI and DI instructions? **[7]**

b) Draw the functional block diagram of 8253. **[4]**

Q9) a) Draw the programmers model of 8086. Explain in detail. **[8]**

b) Detail all flags of 8086. **[4]**

OR

Q10) a) Explain the details of generating the clock signal for 8086 using 8284. **[6]**

b) What is the difference between Minimum and Maximum mode operation of 8086? How does the lost control signals are regenerated in Maximum mode operation? **[6]**

Q11) a) Explain all the addressing modes of 8086 with examples. **[7]**

b) Explain DB,DW,DD,DQ and DT 8086 assembly language directives in detail. **[5]**

OR

Q12) a) Write an 8086 assembly language program to convert 4 digit hex number into equivalent BCD. **[8]**

b) Explain a DOS call to display the string of characters at current cursor position. **[4]**

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

P1367

[3866]-402

Second Year M.C.A. (Engineering)

WEB TECHNOLOGY

(2008 Course) (610910)

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

Instructions to the candidates :

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

SECTION - I

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

i) "The web typically sends multiple objects in a web page within a multipart MIME message."

ii) "All web servers use port 80 to listen for client requests."

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

i) "HTTP requests using GET should not have the significance of taking an action other than retrieval."

ii) "Telnet is a client-server protocol, based on a reliable connection-oriented transport."

c) Discuss the 3-tier architecture for any modern web application. **[4]**

OR

Q2) a) What are the three approaches for e-commerce application development? **[4]**

P.T.O.

b) Write a code in HTML that displays the HTML form as shown in Fig. 1 below : (When user enters the data in the text boxes and click the submit button, he/she should be redirected to another page with any of the submission method.) **[8]**

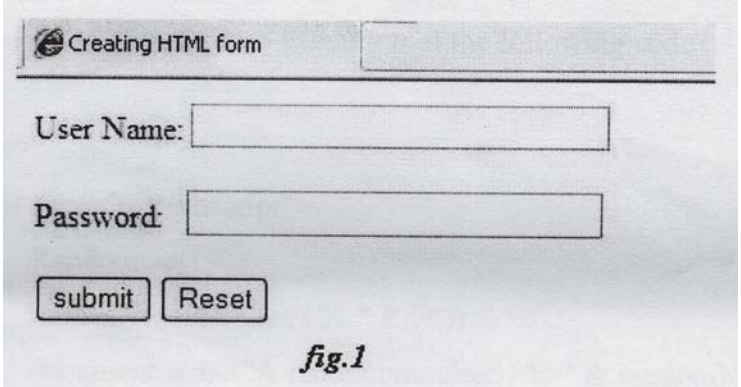

fig.1

Q3) a) Explain in details the stepwise execution of Dynamic Web Pages with suitable example and appropriate flow diagram. **[6]**

b) Name the various ways to apply a CSS to an HTML document. Write a code to link an HTML Document to an External Style Sheet. **[5]**

OR

Q4) Create an HTML document that describes nested ordered lists of cars. The outer list must have three entries : compact, midsize and sports. Inside each of these lists there must be two sub-lists of body styles. The compact and midsize car sub-lists are two doors and four doors; the sports car sub-lists are coupe and convertible. Each body style sub-list must have at least three entries, each of which is the make and model of a particular car that fits the category. The outer list must use uppercase Roman numerals, the middle lists must use uppercase letters, and the inner lists must use Arabic numerals. The background color for the compact car list must be pink; for the mid size car list, it must be blue; for the sports car list, it must be red. **All of the styles must be in a document style sheet.** **[11]**

Q5) a) Describe how a web server can be made dynamic. **[4]**

b) Explain in details, the program execution of the following code. **[4]**

```
<html>
  <body>
  <script type="text/vbscript">
    Randomize()
    randomNumber=Int(100 * Rnd())
    document.write("A random number:<b>" & randomNumber &
    "</b>")
  </script>
  </body>
</html>
```

c) Explain with example primitive data types of VBScript. **[4]**

OR

Q6) a) Compare : **[4]**

i) JavaScript and VBScript.

ii) Cookie and Session.

b) Explain in details, the program execution of the following code : **[4]**

```
<html>
    <body>
    <script type="text/vbscript">
        fname="Bill"
        document.write("Hello" & Trim(fname) & "Gates<br/>")
        document.write("Hello" & RTrim(fname) & "Gates<br/>")
        document.write("Hello" & LTrim(fname) & "Gates<br/>")
    </script>
    </body>
</html>
```

c) Explain the two kinds of procedures in VBScript. **[4]**

SECTION - II

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

b) What are functions in JavaScript? Write a function to calculate average of variables a, b and c. Also embed this script in a web page. **[6]**

OR

Q8) a) Describe the click, focus, load and submit events with their Attributes and Tags in JavaScript. **[6]**

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

Q9) a) Why was JSP required? Describe various stages of JSP life cycle. **[5]**

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

OR

Q10) a) Discuss any two client-server communication Ajax techniques in details. **[6]**

b) Explain the features of implicit objects in JSP. Describe any 4 types of implicit objects. **[5]**

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

i) HTML Server Controls.

ii) Web Controls.

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

OR

Q12) a) Compare : **[6]**

i) ADO and ADO.net

ii) ASP and ASP.net

b) Explain the term “Server Controls” in ASP.net. Discuss HTML Server Controls and Web Controls. **[6]**

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

P1709

[3866]-45

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

JAVA PROGRAMMING

(2005 Course) (Sem. - IV) (215013)

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 books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Explain with example the use of 'this' keyword. Also explain stack class in Java. **[8]**

b) Explain the concept of threads in Java. Explain the difference methods of thread class. **[8]**

OR

Q2) a) What is inheritance? With example explain use of super keyword in it. **[8]**

b) Explain hash table. Also explain method of hash table. **[8]**

Q3) a) Explain with example various layout managers used in Java. **[8]**

b) Explain how AWT helps GUI development. **[8]**

OR

Q4) a) What is interface? Explain different interface used in Java. **[8]**

b) List the methods of choice control. Also give difference between choice and list. **[8]**

Q5) a) What are the different ways to view the applet? **[6]**

b) Explain various HTML Applet tag. **[6]**

c) Why it is necessary to declare the subclass of an Applet class as public? **[6]**

OR

P.T.O.

Q6) a) What is the difference between application and applet? **[6]**

b) What is the difference between stop( ) and destroy( ), init( ) and start method? **[6]**

c) What is the order of method invocation in an applet? **[6]**

SECTION - II

Q7) a) Explain the concept of creation of ZIP file stream in Java. **[8]**

b) What are various stream classes in Java? **[8]**

OR

Q8) a) Explain the different methods of random access file class. **[8]**

b) What is exception handling? What are different types of exception which can be handled during input? **[8]**

Q9) a) What is the use of statement class and how to retrieve data from resultset? **[8]**

b) What are different JDBC drivers? **[8]**

OR

Q10) a) Write a program to establish a connection with a database using JDBC. **[8]**

b) Explain two & three tier architecture. **[8]**

Q11) a) Give the meaning and purpose of proxy server. **[6]**

b) What is network socket? Also give use of server socket and client socket? **[6]**

c) Write a program to print the Inetaddress of local system. **[6]**

OR

Q12) a) Explain datagram packet class. **[6]**

b) Write a program to establish a connection between client and server. **[6]**

c) Describe : **[6]**

i) Getport( )

ii) Getdata( )

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

P988

[3866]-23
F.Y. M.C.A. (Under Engineering)
OPERATIONS RESEARCH
(Old 2005 Course) (115011)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Solve the following LPP by big M method in simplex. **[10]**

Minimize $z = 2x + 3y$

Subject to $x + y \geq 5$

$x + 2y \geq 6$

$x, y \geq 0$

b) A toy company manufactures two types of dolls; ordinary doll-A and delux doll-B. Each doll of type B takes twice as long to produce one of the types-A and the company would have time to make maximum of 2000 per day if it produce only the ordinary dolls. The supply of the plastics is as sufficient to produce 1500 dolls per day (both A & B combined).

The delux version requires a fancy dress of which there are only 600 per day available. If the company makes the profit of Rs.3 and Rs.5 per doll respectively on dolls A & B, how many of each be produced per day in order to maximise the profit? **[8]**

OR

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

Minimize $z = 2x_1 + 3x_2$

Subject to $x_1 + x_2 \geq 5$

$x_1 + 2x_2 \geq 6$

$x_1, x_2 \geq 0$

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

P.T.O.

Q2) a) Find the IBFS by VAM of the following transportation problem and solve it for optimum transportation cost. **[8]**

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

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

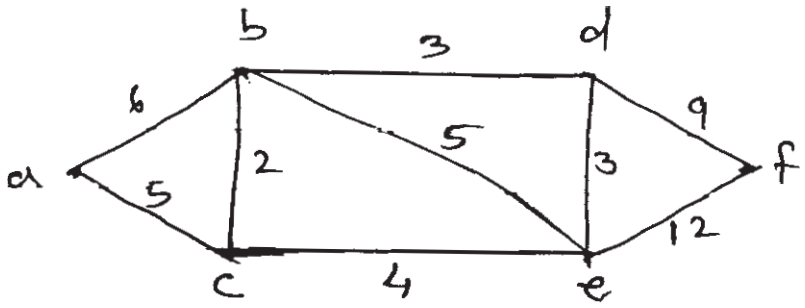
OR

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

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

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

Q3) a) For the given network, determine the shortest route from vertex '*a*' to '*f*'. Using Dijkstra's algorithm. **[10]**



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

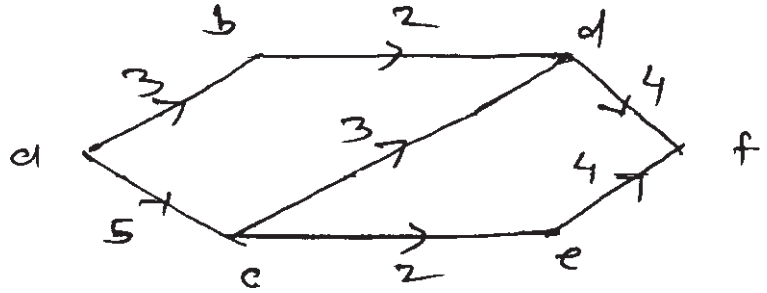
i) Spanning tree.

ii) Total float.

iii) Critical activity.

OR

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



b) What is PERT? How does it differs from CPM? **[8]**

SECTION - II

Q4) a) Use branch and bound technique to solve the following integer programming problem : **[10]**

Maximize $z = 7x_1 + 9x_2$

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

$7x_1 + x_2 \leq 35$

$x_1 \geq 0,$

$x_2 \leq 7$

$x_1\ x_2$ integers

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

OR

a) What is Integer Linear Programming? Explain branch and Bound Algorithm. **[10]**

b) Consider the following 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.

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

Types of shampoo	Estimated levels of sales (units)		
	Rs.15,000	Rs.10,000	Rs.5000
Egg Shampoo	30	10	10
Clinic Shampoo	40	15	5
Delux Shampoo	55	20	3

What will be the marketing manager's decision?

i) Maximin.

ii) Minimax.

iii) Maximax.

iv) Laplace.

b) Explain four criterion to analyse the decision making under uncertainty. **[8]**

OR

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

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

Q6) a) What is Simulation Experiment? Discuss the factors affecting simulation. **[8]**

b) Explain the three most common methods for collecting observations in simulation. **[8]**

OR

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

i) Monte carlo simulation.

ii) Pseudo-random numbers.

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

$r_{i+1} = (ari + b)$ (modulo m) where,

a, b, and m are constants generate 10 Random numbers, taking $r_0 = 11$, $a = 9$, $b = 5$, $m = 12$.

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

P992

[3866]-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 three questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) What are the characteristic of software? Explain in detail following software myths : **[8]**

i) Management myths.

ii) Practitioner's myths.

b) Explain in detail all the levels of CMMI with key process area. What is Process Assessment? Explain with suitable diagram? **[9]**

OR

Q2) a) What are the advantages of iterative development? Compare iterative development with Incremental delivery approach. **[8]**

b) What is software component? What is component based software development? What are the issues to be considered in selection and usage of components? **[9]**

Q3) a) What are the factors considered while performing system modeling? Explain with a suitable example how systems simulation is useful aspect while designing the system. **[9]**

b) Explain the following elements of analysis model : **[8]**

i) Scenario-based elements.

ii) Behavioral elements.

P.T.O.

OR

Q4) a) What is the importance of principles and practices in software engineering? Explain in detail coding principles and concepts. **[8]**

b) With a neat example and diagram explain Hately-Pirbhai modeling. What is the role of architecture flow diagram in developing system flow diagram. **[9]**

Q5) a) Explain the need of requirement prioritization? How the requirements are prioritized? **[8]**

b) Explain the following UML diagrams stating purpose and applicability:

i) Use-case diagrams. **[8]**

ii) Activity diagrams.

OR

Q6) a) Explain in detail, Class Responsibilities Collaborator (CRC) modeling? **[8]**

b) List all Analysis Rules of thumb. Explain domain analysis. **[8]**

SECTION - II

Q7) a) Explain with a suitable example along with all the steps : **[8]**

i) Transform - flow mapping to software architecture.

ii) Transaction - flow mapping to software architecture.

b) What is meant by cohesion and coupling criteria's that address the function Independence. List all the types of cohesion. **[9]**

OR

Q8) a) Explain in detail the following : **[9]**

i) Architectural design elements.

ii) Component - level design elements.

iii) Deployment - level design elements.

b) What are the golden rules of interface design? Explain in detail all the rules. **[8]**

Q9) a) Explain the following testing strategies for conventional software :**[9]**

i) Regression Testing.

ii) Smoke Testing.

b) What are strategic issues in software testing? Explain in detail? **[8]**

i) Top-down integration testing.

ii) Bottom-up integration testing.

OR

Q10) a) Explain in detail basis path testing with following details : **[9]**

i) Flow-graph notation.

ii) Cyclomatic complexity.

iii) Test case derivation.

b) What is the difference between verification and validation? Explain in detail testing principles and deployment issues. **[8]**

Q11) a) What is software quality? What are the mechanisms to address quality software? **[8]**

b) What are the objectives of software Maintenance? Explain in detail maintenance metrics. **[8]**

OR

Q12) a) What do you mean by the term : measure, measurement and metrics. List and measurement process activities. What are the attributes of effective software metric. **[8]**

b) Explain the metrics for source code. What are the factors affecting source code metric investigation? **[8]**

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

P993

[3866]-42
Second Year M.C.A. (Engineering Faculty)
WEB TECHNOLOGY
(2005 Course) (215010)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) In the OSI model : **[6]**

i) How does the data link layer works?

ii) Discuss the role of network layer.

iii) Explain the role played by the presentation layer in handling different data.

b) Explain the following : **[12]**

i) Relation between TCP and IP.

ii) Trivial File Transfer Protocol.

iii) Internal architecture of ISP.

iv) Internal architecture of Web Browser.

OR

Q2) a) State whether the following are ***True*** or ***False*** : **[4]**

i) "Data link layer enables communication between two applications residing on different computers".

ii) "It is the transport layer which decides whether both users can send as well as receive data at the same time, or whether only one host can send and the other can receive".

iii) The application layer provides an abstracted view of the layers underneath.

iv) A bridge is a computer that has its own processor, memory and two NIC cards to connect to two portions of a network.

P.T.O.

b) Discuss the hardware and software incompatibility issues in the formation of an Internet? **[6]**

c) Explain the differences between : TCP and UDP, FTP and TFTP. **[8]**

Q3) a) Create a static HTML page that displays the following list of items : **[8]**

Item Code	Item Name	Price	Discount
01	Pencil	05	1.0%
02	Pen	20	1.5%
03	Notebook	40	2.0%
04	Diary	80	2.25%

b) Explain in details, stepwise execution of Dynamic Web Pages with suitable example and appropriate flow diagram. **[8]**

OR

Q4) a) Write short notes on : FRAMES and Cascading Style Sheet (CSS). **[6]**

b) Discuss the 3-tier architecture for any modern web application. **[6]**

c) What is plug-in? What is its significance? **[4]**

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

a) Object orientation and JavaScript.

b) Object creation and modification.

c) Constructors.

d) Errors in Scripts.

OR

Q6) a) Write/define a function to find largest of the three input numbers. **[6]**

b) Explain in details, the program execution of the following code? **[6]**

```
<P ID = bgchange STYLE = "background-color : 0000ff">
The output of this program is .....
</P>
<SCRIPT LANGUAGE = "JavaScript">
    function turn _ red ( )
    {
        bgchange.style.background Color = "ff8080";
        greenTimer = setTimeout ("turn _ green ( )", 500);
    }
    function turn _ green ( )
    {
        bgchange.style.backgroundColor = "80ff80";
        blueTimer = setTimeout ("turn _ blue ( )", 500);
    }
    function turn _ blue ( )
    {
        bgchange.style.backgroundColor = "8080ff";
        redTimer = setTimeout ("turn _ red ( )", 500);
    }
    turn _ red ( );
    </SCRIPT>
```

c) What is the difference between : **[4]**

i) ==and ===

ii) Constructor in Java and one in JavaScript?

SECTION - II

Q7) a) Discuss all three approaches to addressing an HTML form element in JavaScript. Also state the disadvantages of first two approaches. **[10]**

b) Describe all of the differences between the three possible values of the position property. **[6]**

OR

Q8) a) Describe the click, focus, load and submit events with their Attributes and Tags. **[8]**

b) Explain the three phases of event processing in the DOM2 event model. **[8]**

Q9) a) What are the purposes of ServerName, ServerRoot, ServerAdmin, DocumentRoot, Alias, Redirect, DirectoryIndex and UserDir directives? **[8]**

b) Explain the two ways by which server can store information about client on clients themselves? **[8]**

OR

Q10) a) Explain the doGet and doPost methods of abstract class HttpServlet with their protocols? **[8]**

b) What are the document root and the server root of a web server? What are three subdirectories of a server root? **[8]**

Q11) Write short notes on all three : **[18]**

a) How to do socket programming?

b) IP addressing for subnetting.

c) tcpip port, serversocket and host.

OR

Q12) What do you understand by following concepts : **[18]**

a) Distributed applications.

b) .nio package.

c) Server in the context of sockets.

d) Client in the context of sockets.

e) Computer Network applications.

f) Well known ports.

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

P994

[3866]-43
S.Y. M.C.A. (Engineering)
OBJECT ORIENTED MODELING AND DESIGN
(2005 Course) (215011)

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 should be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***
5) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Write a short note on 4+1 view architecture of UML. **[8]**

b) Write a short note on Rational Unified process. **[5]**

c) Which are the new features in UML 2.0. **[4]**

OR

Q2) a) Explain Model Driven Architecture. **[8]**

b) Explain the object oriented concepts. **[5]**

c) Explain the inception, elaboration, construction and transition phase. **[4]**

Q3) a) Explain extensibility mechanisms with examples. **[6]**

b) Explain in brief the need of Use case diagram. **[6]**

c) Describe and discuss the types of UML diagrams. **[5]**

OR

Q4) a) Write a short note on UML meta model. **[6]**

b) Explain the need of UML diagrams. **[6]**

c) What is OCL? Explain in brief. **[5]**

Q5) a) What are the object diagrams? Explain with an example. **[6]**

b) Draw class diagram for "Hotel management system". Assume appropriate scope of the system. **[10]**

OR

P.T.O.

Q6) a) Explain interfaces and ports in detail. **[6]**

b) Draw use case diagram for "Online shopping" Assume appropriate scope of the system. **[10]**

SECTION - II

Q7) a) Draw sequence diagrams for "purchase of items" for an "inventory management system". **[12]**

b) Which are the various interaction diagrams? Discuss in brief. **[5]**

OR

Q8) a) Compare sequence and communication diagrams. Explain with an example. **[12]**

b) Explain signals and exceptions with an example. **[5]**

Q9) a) Compare state machine diagrams and the activity diagram with an example. **[6]**

b) Explain state generalization with an example. **[6]**

c) Explain in brief Timing diagrams. **[5]**

OR

Q10) a) Explain fork and join with an example. **[6]**

b) Draw an activity diagram for "Online Book Shopee". Assume appropriate scope of the system. **[11]**

Q11) a) What are artifacts? How they are used in deployment diagrams? **[6]**

b) Draw a package diagram for "Engineering college management system". Write the assumptions about the scope of the system. **[10]**

OR

Q12) a) What is the need of component diagram? Explain with example. **[6]**

b) How UML is useful in Web applications? **[5]**

c) Write a note on deployment diagrams. **[5]**

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Total No. of Questions : 10] **[Total No. of Pages : 2**

P995

[3866]-51
T.Y. M.C.A. (Engineering)
PRINCIPLES & PRACTICES FOR IT MANAGEMENT
(2005 Course) (Theory) (315001)

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

Instructions to the candidates:

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

SECTION - I
UNIT - 1

Q1) a) Explain the fundamental functions of management. **[8]**

b) Distinguish between administration and management. **[8]**

OR

Q2) a) Who is a manager? What are functions of a manager? **[8]**

b) Give brief idea about business ethics in IT industry. **[8]**

UNIT - 2

Q3) a) Explain in detail, the steps for cost and effort estimation of an IT project. **[8]**

b) How to decide and set/establish project priorities? **[8]**

OR

Q4) a) Explain work breakdown structure of any project in detail. **[8]**

b) Explain the significance of Risk Management in detail. **[8]**

UNIT - 3

Q5) Write short notes on any three : **[18]**

a) Organizing an IT project.

b) Establishing and Implementing the project changes.

c) Project schedule approaches.

d) Tracking the project progress.

P.T.O.

SECTION - II
UNIT - 4

Q6) a) Explain conflict management and stress management in IT industries. **[8]**

b) What is the role of team leader in IT project? **[8]**

OR

Q7) a) Highlight the features and importance of Group Dynamics in IT project. **[8]**

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

i) Energy Management and Energy Audit.

ii) Formal and Informal Groups formation.

UNIT - 5

Q8) a) Explain different standards for determining quality in process involved in IT projects. **[8]**

b) Explain in brief the process of supply chain management. **[8]**

OR

Q9) a) What are different Intellectual Property Rights? Explain in detail. **[8]**

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

i) Knowledge Management.

ii) Cyber Laws.

UNIT - 6

Q10) Explain the application of IT in any two of the following. Give proper justification in regards to schedule, estimation, operation, quality standards etc. **[18]**

a) Inventory Management.

b) Production Management.

c) Finance Management.

d) Advertising Management.

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

P996

[3866]-52
T.Y. M.C.A. (Engineering)
COMPUTER GRAPHICS
(2005 Course) (315002)

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

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***In Section - I attempt Questions Nos. 1 or 2, 3 or 4, 5 or 6 and in Section - II questions Nos. 7 or 8, 9 or 10, 11 or 12.***
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) State & Explain the different methods of character generation. **[6]**

b) Explain Bresenham's line drawing algorithm. **[5]**

c) Write short note on following : **[6]**

i) Touch screen.

ii) Raster Scan Display.

OR

Q2) a) Derive the expression for decision parameter used in Bresenham's circle drawing algorithm. Also explain Bresenham's circle algorithm. **[9]**

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

i) Frame buffer.

ii) Trackball

iii) Commands used in Display File Interpreter.

iv) Digitizers.

Q3) a) Explain the different methods for testing a pixel inside of polygon. **[6]**

b) Explain cell encoding. **[3]**

c) Perform a 45 degree rotation of triangle A(0, 0), B(1, 1), C(5,2). **[8]**

i) about the origin.

ii) about P(-1, –1).

P.T.O.

OR

Q4) a) Explain and compare seed-fill and edge-fill algorithm for polygon. **[9]**

b) What is homogeneous coordinate system? Explain need of homogeneous coordinates. Compare homogeneous and normalized coordinates. **[8]**

Q5) a) Explain Cohen-Sutherland outcode algorithm in detail. **[8]**

b) Write short note on text clipping technique. **[4]**

c) Explain various data structures used to implement the segment table. **[4]**

OR

Q6) a) What is Segment? Explain Segment Table and how to perform Rename operation on segment. **[8]**

b) Explain viewing transformation in detail. **[8]**

SECTION - II

Q7) a) Derive transformation matrix for perspective projection. **[9]**

b) Explain with example, 3D viewing transformation. **[8]**

OR

Q8) a) Explain any one 3D clipping algorithm. **[9]**

b) Explain classification of parallel projection in detail. **[8]**

Q9) a) Explain backface removal algorithm. **[9]**

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

i) Z-buffer Algorithm.

ii) Binary Space partitioning trees.

OR

Q10) a) Explain Warnock's algorithm in detail. **[9]**

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

i) Point source illumination.

ii) Painters Algorithm.

Q11) a) Compare Bezier & B-Spline curves. **[8]**

b) Define Fractals & Fractal Lines. Explain how fractals are used to generate fractal surfaces. **[8]**

OR

Q12) Write a short note for the following : **[16]**

a) Hilbert's Curve.

b) Koch's Curve.

c) Conventional Animation.

d) Computer based Animation.

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

P997

[3866]-53
T.Y. 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) Why we need query optimization? **[4]**

b) Explain the handling of Hash-Table overflow. **[6]**

c) How an expression can be evaluated by means of materialization? **[7]**

OR

Q2) a) Explain producer-driven pipeline. **[6]**

b) What is meant by an indexed nested-loop join? **[5]**

c) With suitable example, explain the query evaluation plan. **[6]**

Q3) a) Explain the different interconnection networks used in parallel systems. **[6]**

b) Explain the following terms with respect to data servers : **[8]**

i) Page shipping. ii) Item shipping.

iii) Data caching. iv) Lock caching.

c) How WANs can be classified? **[3]**

OR

Q4) a) Explain the following terms with respect to centralized systems : **[6]**

i) Coarse-granularity parallelism.

ii) Fine - granularity parallelism.

b) Explain with suitable diagram storage-area network (SAN). **[8]**

c) What is meant by Transaction-server systems? **[3]**

Q5) a) With suitable example, explain the Nesting and unnesting. **[8]**

b) Explain the different approaches to make objects persistent. **[8]**

P.T.O.

OR

Q6) a) Explain the following terms : **[8]**

i) Table inheritance. ii) Type inheritance.

b) Explain in detail Persistent Java Systems. **[8]**

SECTION - II

Q7) a) Explain snowflake schema for multidimensional database in detail. **[9]**

b) Explain with suitable examples the data smoothing techniques. **[8]**

OR

Q8) a) Explain in detail the dimensional data modelling. **[9]**

b) Compare OLTP and OLAP. **[8]**

Q9) a) Give any four applications of data mining. **[4]**

b) State and explain the algorithm to generate a decision tree from training tuples. **[8]**

c) Write short note on : Bayesian classifiers. **[5]**

OR

Q10) a) Explain in brief machine learning. **[5]**

b) Explain k-means algorithm for clustering in detail. **[9]**

c) What is meant by Text Mining? **[3]**

Q11) a) What is relevance feedback? **[4]**

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

i) Indexing of documents.

ii) Web Crawlers.

iii) Directories.

OR

Q12) a) What is meant by popularity Ranking? **[4]**

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

i) Synonyms and Homonyms.

ii) Measuring Retrieval effectiveness.

iii) Search engine spamming.

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

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[3866]-54
T.Y. M.C.A. (Engineering)
SOFTWARE TESTING
(2005 Course) (Elective - I) (315004) (Sem. - I) (Theory)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain measurement scales and different scale types. **[8]**

b) Define i) Measurement ii) Entity iii) Attribute **[4]**

c) Give the classification of software measures. **[4]**

OR

Q2) a) Explain the four principles of investigation. **[8]**

b) What is a good data? How to store and extract data. **[8]**

Q3) a) Which are the difficulties with general complexity measures. **[8]**

b) Which are the object oriented metrics? **[8]**

OR

Q4) a) Explain following terms :

i) Modularity. **[3]**

ii) Morphology. **[3]**

iii) Information flow. **[2]**

b) What are the notations used in control flow structure for various programming constructs. Draw control flow graph for any search algorithm. **[8]**

Q5) a) Define the term 'Defect'. What are the origins of defects? State the defect classes with examples. **[10]**

b) Enumerate all components of a test plan. Explain the execution of test plan in detail. **[8]**

P.T.O.

OR

Q6) a) Explain developer / tester support for defect repository. **[8]**

b) Differentiate between fault, defect, bug, failure, anomaly and error. **[6]**

c) Explain people and organizational issues in testing. **[4]**

SECTION - II

Q7) Write a short note on (any three) : **[18]**

a) Requirement based testing.

b) State base testing.

c) Mutation testing.

d) Code Walk through.

OR

Q8) a) Explain equivalence partioning and boundary value analysis with suitable example. **[10]**

b) State and explain the test case adequacy criteria. **[8]**

Q9) a) Explain in detail what is accepting testing, necessary of acceptance testing, explain if required. **[8]**

b) Explain with example GUI Testing. **[8]**

OR

Q10) Write a short note on : **[16]**

a) Integration Testing.

b) Regression Testing.

c) Scenario Testing.

d) Software Test automation.

Q11) a) What do you mean of "problem reporting"? What are various problems and best practices context to this. **[10]**

b) Write a short note on "Testing the Shipment Unit". **[6]**

OR

Q12) a) How one chose the method of fix distribution. **[8]**

b) Explain best practices for problem resolution for customer satisfaction. **[8]**

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

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[3866]-56

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

ENTERPRISE RESOURCE PLANNING

(2005 Course) (Elective - II) (Sem. - I)

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

Instructions to the candidates:

1) ***Maximum marks for the questions are given on the write hand side.***
2) ***Answers to two sections should be written separately.***
3) ***Answer any three questions from each section.***
4) ***Assume suitable data, wherever necessary.***

SECTION - I

Q1) a) Why integrated data model is considered the heart of an ERP system? Explain in detail? **[8]**

b) What are the various resources an ERP has to optimize? How does intelligence resource planning help this? **[9]**

OR

Q2) a) Discuss a case study to highlight benefits resulting from an ERP implementation. **[8]**

b) What do you understand by integrated functionality in enterprise and cross enterprise functionality? How each one of them achieved? **[9]**

Q3) a) What do you understand by the term competitive advantage? How should an organization go about achieving it? **[8]**

b) What is change management? Elaborate in detail. **[9]**

OR

Q4) a) What are the basic reasons for the reluctance of the user in implementing the ERP system in an organization? **[8]**

b) What is the organizational structure? How can it affect the development of ERP system? **[9]**

P.T.O.

Q5) a) What are the steps involved in an ERP implementation? Is ERP implementation same as ERP package implementation? Justify? **[8]**

b) Enlist and discuss critical success factor for ERP system. **[8]**

OR

Q6) a) Enlist general problems faced during implementation of ERP and discuss solution for it. **[8]**

b) Explain the steps in ERP implementation? What is to be done during post implementation phase? **[8]**

SECTION - II

Q7) a) On what basis ERP package is selected? Explain with example? **[9]**

b) Explain in detail ERP strategies. **[8]**

OR

Q8) a) Explain design issues in ERP package. **[9]**

b) What do you mean by In-house development? How does it differ from outsourcing? **[8]**

Q9) a) Illustrate with relevant case study as to how ERP solutions have led to business re-engineering and creation of better business practices. **[9]**

b) Explain relevance between BPR, IT and ERP. **[8]**

OR

Q10) a) Explain how ERP plays an important role in global business. **[9]**

b) What is SCM? Explain it with example. **[8]**

Q11) a) What are the different ERP system contents? Explain any two. **[8]**

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

i) Quality control.

ii) Plant maintenance.

OR

Q12) a) Discuss about sales and marketing in ERP system. **[8]**

b) Explain in detail about Finance Management. **[8]**

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