Total No. of Questions : 12]

SEAT No. : ____

P1291

[Total No. of Pages : 3

[4166] - 21
F.Y. M.C.A. (Engineering Faculty)
OBJECT ORIENTED PROGRAMMING
(2005 Pattern) (115009) (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) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Your answer will be valued as whole.***
5) ***Assume suitable data, if necessary.***
6) ***Answer (Q1 or Q2) and (Q3 or Q4) and (Q5 or Q6) and (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***

SECTION - I

Q1) a) List the features of Object Oriented programming. **[5]**

b) List the applications of Object Oriented Programming. **[5]**

c) Explain the following with example : **[7]**

i) Information Hiding.

ii) Message passing.

iii) Classes and objects.

OR

Q2) a) What is abstraction? Why is it important? Should abstraction be user centric or developer centric? **[5]**

b) Explain Inheritance and Polymorphism with example? **[5]**

c) Explain the following with example. **[7]**

i) Information Hiding.

ii) Message passing.

Q3) a) What is constructor? Explain different types of constructor with example. **[10]**

b) Explain Friend functions with example. **[7]**

P.T.O.

OR

Q4) a) What are constructors and destructors? Explain with example **[6]**

b) Explain inline function with example. **[5]**

c) Write a C++ program to calculate the area of circle and rectangle by implementing function overloading. **[6]**

Q5) 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 an operator. Explain one with example. **[8]**

OR

Q6) a) What is polymorphism? What are its different types? Explain runtime polymorphism with a sample program. **[8]**

b) What is inheritance? Why do we need it? Explain different types of inheritance in C++ with example. **[8]**

SECTION - II

Q7) a) Write a program in C++ to create an array of interger, float or double and sort them using bubble sort technique. Make use of template class and template function. **[9]**

b) Explain with example class templates with multiple parameters. **[8]**

OR

Q8) a) What are the advantages of Generic Programming? **[7]**

b) Make use of templates to create an array of integer and double. Sort the array using any sorting technique. **[10]**

Q9) a) Write a program in C++ to create an patient database and store it in a sequential file named patient. dat. Make use of structures. **[12]**

b) Explain different modes for opening a file in C++. **[5]**

OR

Q10) a) Write short notes on any two of the following : **[12]**

i) Sequential file processing.

ii) I/O Manipulators.

iii) C++ streams.

b) Explain different modes for opening a file in C++. **[5]**

Q11) a) What is exception handling? What are the steps for exception handling in C++? Give examples. **[8]**

b) Explain different uses of keyword Final with example. **[6]**

c) State different access specifiers in Java. **[2]**

OR

Q12) a) What is an Interface? Make use of interface to implement multiple inheritance for any application? **[8]**

b) Explain any four features of Java in detail. **[8]**

♦♦♦♦

Total No. of Questions : 12]

SEAT No. : ____

P1297

[Total No. of Pages : 3

[4166] - 41
S.Y.M.C.A. (Engineering Faculty)
SOFTWARE ENGINEERING
(2005 Pattern) (215009) (Sem. - IV)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Explain with neat diagram the prototyping model for software development what are applied throughout the software process. **[8]**

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 is the importance of principles and practices in software engineering? Explain in detail coding principles and concepts. **[8]**

b) 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]**

OR

Q4) a) With a neat example and diagram explain Hately - Pirbhai modeling. What is the role of architecture flow diagram in developing system flow diagram. **[8]**

b) How system modeling is achieved using UML. What is the purpose of activity diagram? **[9]**

P.T.O.

Q5) a) Explain in detail, Class Responsibilities Collaborator (CRC) modeling? **[8]**

b) What are the goals of Requirement Engineering? What are the tasks performed in requirement engineering? **[8]**

OR

Q6) a) What is Behaviour Modeling? Draw a sequence diagram for atleast two scenarios for account holder Transaction with Bank. Assume suitable scope and indicate it. **[8]**

b) Explain the need of requirement prioritization? How the requirements are prioritized? **[8]**

SECTION - II

Q7) a) Explain modularity, Refinement and Re - factoring in Software design process. **[8]**

b) What is the importance of software design? What is the relation between analysis and design? **[9]**

OR

Q8) a) Define Architectural design. Explain first level factoring and second level factoring in Architectural Designs. **[8]**

b) What are the golden rules of interface design? Explain in detail all the rules. **[9]**

Q9) a) What is fault - Based testing? What is meant by testing surface structure and Deep structure? **[8]**

b) What are strategic issues in software testing? Explain in detail? **[9]**

i) Top-down integration testing.

ii) Bottom-up integration testing.

OR

Q10) a) Compare : **[8]**

i) White Box testing and Black Box testing.

ii) Verification and Validation.

b) What are strategic issues in software testing? **[9]**

Q11) 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. List the metric for analysis and design model. **[8]**

b) What is the importance of conformance, standards and measurements in context of software quality? **[8]**

OR

Q12) a) What are the objectives of software Maintenance? Explain in detail maintenance metrics. **[8]**

b) Explain in detail function point metric. List all the value adjustment factors. What are the metric for specification quality? **[8]**

♦♦♦♦

Total No. of Questions : 12]

SEAT No. :

P1298

[Total No. of Pages : 3

[4166] - 43
S.Y.M.C.A. (Engineering Faculty)
OBJECT ORIENTED MODELING & DESIGN
(Sem. - IV) (2005 Pattern) (215011) (Theory)

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

Instructions to the candidates:-

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

SECTION - I

Q1) Write a short note on

a) Rational Unified Process. **[6]**

b) Limitations of UML 1.3 which were overcome in UML 2.0. **[6]**

c) What is 4 + 1 architecture view? Describe advantages of focusing on each of the view of the system. **[5]**

OR

Q2) a) What is CORBA? What are the basic elements of CORBA? Explain. **[6]**

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

c) Explain the object Oriented Features. **[5]**

Q3) a) Write a short note on UML Metamodel. **[6]**

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

c) Explain with example different types of Relationships in UML. **[5]**

OR

Q4) a) What is the role of Use Case diagram in software development life cycle? **[6]**

b) What is OCL? Explain with relative example. **[6]**

c) Explain stereotypes and tagged values with example. **[5]**

P.T.O.

Q5) a) What do you mean by the following and how to you depict them in class diagram. **[12]**

i) Active classes.

ii) Abstract classes.

iii) Constraints.

iv) Stereotypes.

b) What is use case scenario? Explain with example. **[4]**

OR

Q6) a) Which are the various behavioral diagrams in UML 2.0? Explain role of each diagram in brief. **[8]**

b) Draw a class diagram fragment for a banking system with two classes. Account and customer and the relation that customer opens Account. Further the Account may be of type saving or current. Assume suitable attributes for the classes. **[8]**

SECTION - II

Q7) a) Describe use of frame and lifeline in UML Sequence diagram. **[5]**

b) Draw an Interaction overview diagram for simple sales process. Sales process consist of subprocesses like - Order Item, Search Item, Update, Modify, Cancel, Delete, Ordered Item, Delivery of Item etc. **[12]**

OR

Q8) a) Explain signals and exception with an example. **[5]**

b) Compare sequence and communication diagram in four counts namely visual emphasis, freedom to represent objects information, the way sequencing is shown, the way iteration / looping is shown. **[12]**

Q9) a) List and explain the parts of state machine diagram. **[5]**

b) Explain use of fork and join in activity diagram with an example system. **[12]**

OR

Q10) a) Explain concepts and notation through simple examples for following terms in UML : **[12]**

i) Activity.

ii) Object flow.

iii) Concurrent states.

b) What are the common uses of timing diagram? **[5]**

Q11) a) Describe commercial application of UML. **[8]**

b) What is the use of package diagram? Explain with an example. **[8]**

OR

Q12) a) Write a short note on deployment diagram. **[8]**

b) Explain forward and reverse engineering in component diagram. **[8]**

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Total No. of Questions : 12]

SEAT No. :

P1299

[Total No. of Pages : 3

[4166] - 51

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

PRINCIPLES AND PRACTICES FOR IT MANAGEMENT

(Sem. - V) (2005 Pattern) (315001) (Theory)

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

Instructions to the candidates:-

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

SECTION - I

Unit - I

Q1) a) What is different principles of management? Explain the role of management in any organization. **[10]**

b) Explain different business ethics in any organization? **[7]**

OR

Q2) a) What skill set a manager should possess? What are different functions of manager? **[10]**

b) Explain different business ethics in any organization? **[7]**

Unit - II

Q3) a) What is different factors, which affects, to establish the priorities in an IT project? **[10]**

b) Explain the process of requirement gathering and analysis, with example? **[7]**

OR

Q4) a) How to define project goals in requirement specification? How the requirement gathering helps to define the project goals? **[10]**

b) Explain work break down structure of a project with suitable example? **[7]**

P.T.O.

Unit - III

Q5) Write notes on any four : **[16]**

a) Organization of an IT project.

b) Project constraints.

c) Change control

d) Project network diagram.

e) Resource procurement.

OR

Q6) Write notes on any four : **[16]**

a) Need for revision of project plan.

b) Tracking project progress.

c) Defining project schedule.

d) Managing team issues.

e) Project constraints.

SECTION - II

Unit - IV

Q7) a) Explain theories of group formation with suitable example? **[10]**

b) How it is essential for a manager to manage conflicts in a team? What are suitable ways to handle the conflicts? **[7]**

OR

Q8) a) What are formal groups? Discuss a suitable strategy for the effective utilization of formal groups? **[10]**

b) How energy management and its audit help the organization, explain with suitable example? **[7]**

Unit - V

Q9) a) Which quality aspects are considered under Six - sigma, CMM and PCMM? Explain in detail. **[10]**

b) What is Cyber crime and how different cyber laws help to reduce the crime in an organization? **[7]**

OR

Q10) a) What is Intellectual Property Rights? How it helps an organization? **[10]**

b) Explain Knowledge management and Supply chain management in brief. **[7]**

Unit - VI

Q11) Explain any two with suitable example : **[16]**

a) Features and significance of IT in service industry.

b) Use of IT in Customer relationship management.

c) Applications of IT in Health care.

OR

Q12) Explain any two with suitable example : **[16]**

a) Use of IT in agriculture support system.

b) Role of IT in finance and banking system.

c) Significance of IT in inventory management system.

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Total No. of Questions : 12]

SEAT No. : ____

P1301

[Total No. of Pages : 2

[4166] - 55
T.Y.M.C.A. (Under Faculty of Engineering)
ENTERPRISE RESOURCE PLANNING
(2005 Pattern) (Elective - II) (315005) (Semester - V)

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) Why integrated data model is considered the heart of an ERP system? Explain in detail. **[9]**

b) Discuss the various benefits of an ERP. **[8]**

OR

Q2) a) Discuss a case study to highlight benefits resulting from an ERP implementation. **[8]**

b) What do you understand about the scope of ERP as competitive strategy in enterprise functionality? **[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? What is the necessity of change management? **[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 are the organizational requirements? Explain in detail? **[9]**

Q5) a) Explain the ERP system architecture in detail. **[8]**

b) Enlist and discuss critical success factor for ERP system. **[8]**

P.T.O.

OR

Q6) a) Enlist general problems faced during implementation of ERP and discuss solution for it. **[8]**

b) Explain the ERP implementation strategies? **[8]**

SECTION - II

Q7) a) What is a selection criterion for ERP package? Explain with example? **[9]**

b) Explain various design issues in ERP package. **[8]**

OR

Q8) a) What are the different strategies for development of an ERP solution? **[9]**

b) What do you mean by in - house development? How does it differ from outsourcing? **[8]**

Q9) a) What is E-Business? How it plays important role in ERP systems? **[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) Write short note on : **[8]**

i) Supply Chain Management.

ii) Customer Relationship Management.

Q11) a) What is Marketing Management in ERP? Explain in detail. **[8]**

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

i) Quality control.

ii) Human Resources.

OR

Q12) a) Discuss about Materials management in ERP system? **[8]**

b) Explain in detail about Finance management? **[8]**

♦♦♦♦

Total No. of Questions : 12]

SEAT No. :

P1302

[Total No. of Pages : 3

[4166] - 101

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

PROBLEM SOLVING & PROGRAMMING IN 'C'

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

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

Instructions to the candidates:-

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Draw diagrams wherever necessary.***
4) ***Assume suitable data, if necessary.***
5) ***Steps of Hand running must be shown wherever output of the program is asked.***
6) ***Figures to the right indicate full marks.***

SECTION - I

Q1) a) Explain the concept of program verification with suitable example. **[6]**

b) Find the output of following program segment. **[4]**

```
void main()
{
    int x = 0;clrscr();
    for( ; ; )
    {
        if(x++ = = 4)
                break;
                continue;
    }
    printf(" x = %d \n",x);
    getch();
}
```

c) Explain any 2 differences between global and local variable. **[2]**

OR

P.T.O

Q2) a) Explain the difference between getch(), getche() and getchar() with suitable example. **[6]**

b) Find the output of following program segment. **[4]**

```
int i;
void increment(int i)
{
      i++;
}
int main()
{
            for( i = 0 ; i < 10 ; increment(i) )
            {
            }
            printf("i = %d \n", i);
            return 0;
}
```

c) Explain any 2 differences between one and two dimensional array. **[2]**

Q3) a) Write a 'C' program to divide a number and find remainder without using % and /operators. **[6]**

b) Define a concept of function. Explain call by value and call by reference. **[6]**

OR

Q4) a) Write a 'C' program to calculate largest of given n elements without using array. **[6]**

b) Write a 'C' program to find out power of a number by using recursion. **[6]**

Q5) a) Write a 'C' program to accept a number from user and print it as given below. **[6]**

```
5328
328
28
8
```

b) Explain the types of errors and debugging process in 'C' language. **[5]**

OR

Q6) a) Write a 'C' program which converts fibbonacci series in reverse order. **[6]**

b) Explain the process of running and compiling a 'C' program. **[5]**

SECTION - II

Q7) a) Write a 'C' program to define a union, initialize it & display it. **[5]**

b) Explain dynamic memory allocation functions malloc () and reaclloc () in 'C' with suitable example. **[6]**

OR

Q8) a) Write a program to accept a number form user and calculate their factorial by using recursive function. **[5]**

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

Q9) a) What is the use of typedef? Explain with example. **[6]**

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

OR

Q10) a) What is bit-wise operator? Explain 2 bit-wise shift operators with complete example. **[6]**

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

Q11) a) Explain the use of following functions with proper syntax and example. **[6]**

i) feof()

ii) fread()

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

OR

Q12) a) Explain fgetc() and fputc() functions with example. **[6]**

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

Total No. of Questions : 12]

SEAT No. :

P1303

[Total No. of Pages : 4

[4166] - 102

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

DISCRETE MATHEMATICS

(Sem. - I) (2008 Pattern) (510902)

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

Instructions to the candidates:-

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

SECTION - I

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

b) Among the first 500 positive integers : **[5]**

i) Determine the integers which are not divisible by 2, nor by 3, nor by 5.

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

c) For A = { a, b, {a, c} , Φ} determine the following sets : **[3]**

(i) A – {a} (ii) A – {Φ} (iii) A – Φ (iv) A – {a, b}

OR

Q2) a) Show that $1.2 + 2.3 + 3.4 + \ldots + n.(n+1) = n(n+1)(n+2)/3$, $n \geq 1$ by mathematical induction. **[4]**

b) One hundred students were asked whether they had taken course in any of three areas Sociology, anthropology & history. The results were 45 had taken sociology, 38 had taken anthropology, 9 had taken Sociology & history, 4 had taken anthropology & history and 23 had taken no courses in any of the three areas. **[5]**

i) Draw a Venn diagram that will show the result of the survey.

ii) Determine the no. of students who had taken classes in exactly one of the areas.

P.T.O

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

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

Q3) a) Show the implications without constructing truth table.

i) $((P \vee \neg P) \rightarrow Q) \rightarrow ((P \vee \neg P) \rightarrow R) \Rightarrow (Q \rightarrow R)$ **[6]**

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

b) Obtain conjunctive normal Form of the following : **[6]**

i) $(\neg P \rightarrow R) \wedge (P \leftrightarrow Q)$

ii) $(P \wedge Q) \vee (\neg P \wedge Q \wedge R)$

OR

Q4) a) Demonstrate that R is a valid inference from the premises **[6]**

$P \rightarrow Q$, $Q \rightarrow R$, and P

b) There are two restaurants next to each other. One has a sign that says "Good food is not cheap" and the other has a sign that says "Cheap food is not good". Prove that both the statements are logically equivalent. Using truth table. **[6]**

Q5) a) Find the number of distinguishable permutations of letters in **[5]**

i) ASSOCIATlVE

ii) REQUIREMENTS

iii) COMMITTEE

b) There are 21 consonants & 5 vowels in English alphabet. Consider only 8 letter word with 3 different vowels & 5 different consonants. **[6]**

i) How many such words can be formed?

ii) How many such words contain letter a?

iii) How many contain the letter a & b?

OR

Q6) a) 6 boys & 6 girls are to be seated in a row such that. **[6]**

i) All boys sit together & girls sit together

ii) No two girls seat together

iii) Boys & girls seat alternately

Find the number of ways the arrangement is possible in each case.

b) How many seven letter palindromes (A palindrome is a word that reads the same forward & backward) can be made out of the English alphabet? How many 6 letter palindromes? **[5]**

SECTION - II

Q7) a) Given a relation R = { (2,3), (2,1), (3,2), (4, 3) } on A = {1, 2, 3,4}. Find the transitive closure of R by Warshall's algorithm. **[6]**

b) Prove that the relation R " a – b is divisible by 5" for all a & b which are belongs to set of +ve integers is an equivalence relation. **[6]**

OR

Q8) a) Function f, g, h are defined on a set X = {1, 2, 3} as f = { (1, 2), (2, 3), (3, 1) } g = { (1, 2), (2, 1), (3, 3) } , h = { (1, 1), (2, 2), (3, 1) } find f o g, g o f, f o g o h, f o h o g. **[6]**

b) Let R & S be two relations on A = {1,2,3,4}, R = {(1, 1), (1,2), (2,3), (2,4), (3,4), (4,1), (4,2)} S = { (3,1), (4,4), (2,3), (2,4), (3,4), (1,1), (1,4)} Compute the R • S. **[2]**

c) Draw the Hasse diagram representing the partial ordering { (a, b) / a divides b} on {1, 2,3,4,5,6,8, 10, 12 }. **[4]**

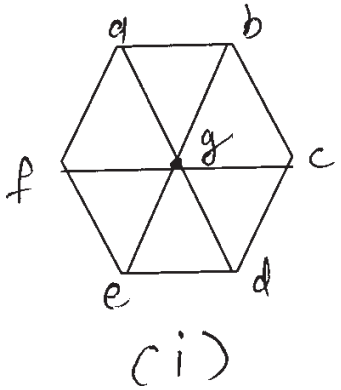
Q9) a) Define the following terms : **[6]**

i) regular graph & bipartite graph. ii) Rooted tree

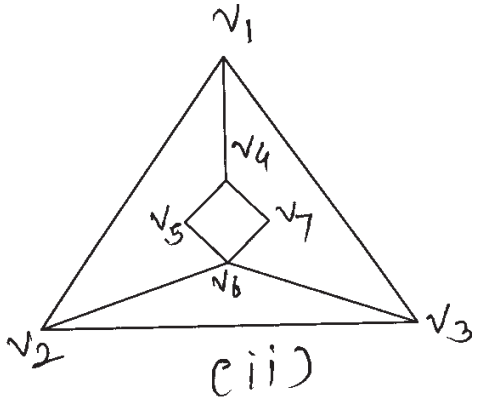
iii) m - ary tree iv) Full binary tree

v) Height of tree vi) Eulerian Path & Circuit

b) Find the complement of the following graphs : **[6]**



(i)

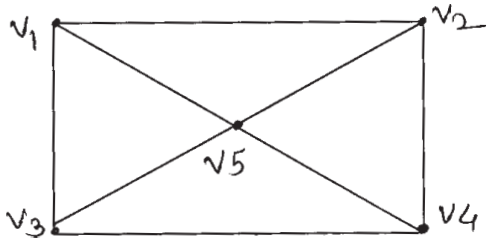


(ii)

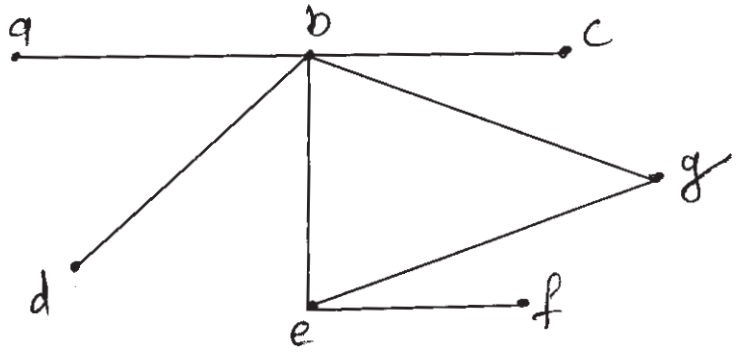
OR

Q10) a) Consider the following graph, Determine the subgraphs. **[6]**

i) $G - V_1$ ii) $G - V_3$ iii) $G - V_5$



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



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

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

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

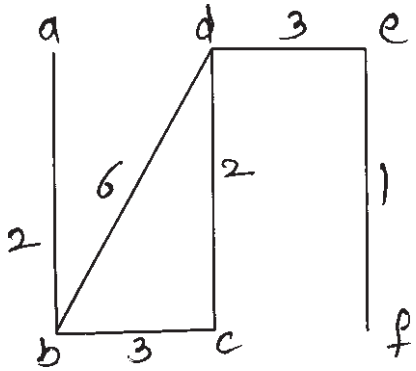
b) Draw the unique binary tree when inorder and preoder traversal of tree is given as follows : **[5]**

Inorder : 3 * a + b * 6 * c + d

preorder : * + * 3 a b + * 6 c d

OR

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



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

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

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Total No. of Questions : 12]

SEAT No. :

P1304

[Total No. of Pages : 3

[4166] - 103

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

FOUNDATIONS OF INFORMATION TECHNOLOGY

(Sem. - I) (2008 Pattern) (510903)

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

Instructions to the candidates:-

1) ***Answer any three questions from each section.***
2) ***Answers to the two sections should be written in separate books.***
3) ***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) Differentiate between the characteristics of primary and secondary storage of a computer system. **[4]**

b) Construct a logic circuit for Boolean expression A · B + C · (A+B · D) using only NAND gates. **[4]**

c) List out the similarities and differences between 7-bit and 8-bit ASCII. **[4]**

OR

Q2) a) Using binary notation, show the BCD coding for the following words-

i) CODE ii) BYTE **[4]**

b) Convert **[4]**

i) $(22.34)_8 = (\ ?\ )_{10}$

ii) $(2AB)_{16} = (\ ?\ )_2$

c) What is an IC? How does it help in reducing the size of computers? **[4]**

Q3) a) What are different registers in processor? Name some of commonly used registers and briefly describe the function of each. **[6]**

b) What is a hard disk? Name three different types of hard disks. Give a typical usage of each type. **[5]**

P.T.O

OR

Q4) a) Differentiate between : **[6]**

i) PROM and EPROM

ii) RAM and ROM

iii) CISC and RISC Processors.

b) What is a printer? Explain the printing mechanism of inkjet printers. **[5]**

Q5) a) What is firmware and what its importance to the computer system architecture? **[5]**

b) What is a built-in-function? Give few examples of built- in-functions. **[4]**

c) What is an assembler? **[3]**

OR

Q6) a) List out the main characteristic features of high-level-languages. Name five high-level-languages? **[5]**

b) Hardware is normally a onetime expense, whereas software is a continuing expense. Elaborate. **[4]**

c) What is a macro instruction? **[3]**

SECTION - II

Q7) a) Give an application for which a spreadsheet package is useful. Explain with sample spreadsheet. **[6]**

b) What is multiprocessing? Draw the basic organization diagram of a typical multiprocessing system. **[5]**

OR

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

i) User authentication

ii) Access control

iii) Cryptography.

b) What is meant by text, graphics and image importing facility in word-processing package? How is it useful? **[5]**

Q9) a) What is a program bug? What is debugging? **[4]**

b) What is a file management system? **[4]**

c) Give some examples of multimedia applications in education. **[4]**

OR

Q10) a) What is testing of a program? Why should a program be tested? **[4]**

b) What is a database model? Name the four commonly used database models and describe any two? **[4]**

c) What is transducer? Name two devices that can be categorized as a transducer. **[4]**

Q11) a) Describe the layering concepts in the OSI Model of network architecture with the functions of each layer. **[8]**

b) What is a newsgroup? How is it useful? **[4]**

OR

Q12) a) Describe the two basic methods of multiplexing. Give uses of both the methods. **[8]**

b) What is the file transfer protocol (FTP)? List out the steps involved in downloading/uploading a file by using the FTP service? **[4]**

Total No. of Questions : 12]

SEAT No. :

P1305

[Total No. of Pages : 3

[4166] - 104

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

PROBABILITY & STATISTICS

(Sem - I) (2008 Pattern) (510904)

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

Instructions to the candidates:-

1) ***Answers to the two sections is 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 bag contains 5 white, 3 blue balls. Second bag contains 4 white & 5 blue balls. From any one of these bags single draw of 2 balls is made. Find the probability that one of them would be white & other is blue. **[6]**

b) A textile mill produces cloth in three different shades blue, black & brown production of these shades is 30%, 50% & 20%respectively of the total production. It is found from experience that 2%, 3% & 4% of blue, black & brown shades respectively are defective on general inspection of entire production a specimen is selected at random & found to be defective. Find the probability that it is of black shade. **[6]**

OR

Q2) a) State & prove Baye's theorem. **[6]**

b) The results of an investigator by an experiment on fire accident in skyscraper are summarized below. Probability that there would have been short ckt 0.8.probability that LPG cylinder explosion is 0.2 chance of fire accident is 30% given a short ckt & 95% given an LPG explosion. Based on these what do you think is the more probable cause of a fire.statistically? Justify your answer. **[6]**

Q3) a) Verify whether the following function P(x) defined by

P(x) $=1/2^x$, x=0, 1, 2, 3, ... is pmf of discrete random variable X. **[6]**

P.T.O

b) A continuous random variable has probability density function

$F(x) = k(2x - x^2)$ $0 < x < 2$

$= 0$ otherwise find k & $p(x > 1)$ **[6]**

OR

Q4) a) What is Binomial random variable? Derive pdf for BRV. **[6]**

b) The pmf of discrete random variable X is given by, $f(x) = ce^{-x}$, $x = 1,2,3,$ -------- find c that makes this a density find moment generating function for X and thereby find E[X]. **[6]**

Q5) a) Let (X,Y) be a discrete bivariate random variable with following Pmf

X\Y	-2	0	2
-1	0.1	0.2	0.1
0	0.2	0.1	0.1
1	0.1	0.1	0

i) Find P(X+Y<=2)

ii) Conditional probability distribution of X given Y = 0. **[6]**

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

OR

Q6) a) Write mean, variance of pmf of **[5]**

i) Poisson distribution ii) Geometric distribution

b) Out of 60 applicants to a university 40 are from south. If 20 applicants are selected at random find the probability that. **[6]**

i) 10 are from south

ii) Not more than two are from south.

SECTION - II

Q7) a) Obtain 95% confidence interval for the mean of a random variable with variance known. **[6]**

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

c) Find the sample mean and sample variance for the given random sample 4, 8, 7, 6, 2, 9. **[3]**

OR

Q8) a) What is point estimator and point estimate? What properties of estimator will make it a good estimator? **[6]**

b) What is maximum likelihood estimator? Explain the method to obtain maximum likelihood estimate. **[6]**

Q9) a) What is Hypothesis testing? What is significance of alpha and beta? **[6]**

b) Derive point estimator for the proportion of the population with the trait. **[6]**

OR

Q10) a) Explain the following terms : **[8]**

i) Null Hypothesis & Research Hypothesis.

ii) Type I and Type II errors.

iii) Critical region for the test

b) What is significance testing? How does it differ from Hypothesis testing? **[4]**

Q11) a) What are quality control charts? What properties should the chart possess? **[6]**

b) What is acceptance sampling? **[5]**

OR

Q12) a) Explain the term P-chart of SQC. **[5]**

b) Describe the chi-square test as a test of goodness of fit write the steps. **[6]**

Total No. of Questions : 12]

SEAT No. :

P1306

[Total No. of Pages : 2

[4166] - 105

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

MANAGEMENT SCIENCE

(Sem. - I) (2008 Pattern) (511905) (Theory)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Define Management. Discuss in brief the evolution of Management Science. **[6]**

b) Discuss the contribution by Henry Fayol to the Management Science. **[6]**

OR

Q2) a) Define planning. Explain different steps involved in planning. **[6]**

b) Discuss the changes in Management Styles required at different levels of an organization with suitable examples. **[6]**

Q3) a) Write short notes on : **[6]**

i) Relevance of Chambers of Commerce.

ii) Laws of Demand and Supply

b) Explain the concept of E-Commerce. What is the difference in traditional business and E-commerce. **[6]**

OR

Q4) a) What is the meaning of Patent? How can it be obtained? **[6]**

b) What are economies of Scale? Explain internal and external economies of scale. **[6]**

P.T.O.

Q5) a) What is Joint Stock Company? Explain characteristics, advantages and disadvantages associated with Joint stock companies. **[6]**

b) Discuss the merits and demerits of Line Organization, Functional Organization and Line and Staff Organization. **[5]**

OR

Q6) a) With the help of block diagram explain matrix organization. **[6]**

b) What are different types of co-operative sectors? **[5]**

SECTION - II

Q7) a) Which are the factors affecting the manpower planning? How the Job evaluation is carried out? **[6]**

b) Explain the elements of communication. What are the barriers for communication? **[6]**

OR

Q8) a) Explain the different types of communication structures that exist in organizations. Explain what role the motivation plays in communication? **[6]**

b) Explain Mc Gregor's Theory X, and theory Y. **[6]**

Q9) a) What are the causes of accidents? How can one prevent the accidents? **[6]**

b) Explain the salient features of Pollution Control Act. **[6]**

OR

Q10) a) A factory was found to be burning wastage rubber tires in its boiler. Under which act and provisions of act, government officials can take action against the factory management? **[6]**

b) Write a short note on Safety in Industry. Explain the role of government and non governmental organizations in promoting safety in industries. **[6]**

Q11) a) Explain the concept of Quality Circles as it is implemented in a Factory. **[6]**

b) What is the period associated with a patent? Can we compare patent with copyright? **[5]**

OR

Q12) a) Explain the concept of Quality Management as explained by Juran. **[6]**

b) ISO 9000 is related with which concept? How can one organization obtain such certification? **[5]**

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Total No. of Questions : 12]

SEAT No. :

P1307

[Total No. of Pages : 3

[4166] - 201

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

OBJECT ORIENTED PROGRAMMING

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

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.***

SECTION - I

Q1) a) What is object-oriented programming? Compare object oriented programming and Procedure oriented programming. **[5]**

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

i) Object

ii) Polymorphism

iii) Message Passing

OR

Q2) a) Explain the benefits of object oriented programming? **[4]**

b) Write the output for the following C++ programs. **[3]**

```
# include < iostream.h >
 int X = 70;
void main ()
{
      int X = 20;
      cout << X << endl << : : X;
    {
      int X = 10;
      cout<< X<< endl <<: : X;
      {     int X=6;
            cout<<X<<endl<<: :X;
      }
    }
}
```

P.T.O

c) What is Dynamic binding ?Explain with example. **[4]**

Q3) a) What is function overloading? What is difference between function overloading and default argument. **[6]**

b) Write a program using reference variable as argument to swap the values of pair of integer. **[6]**

OR

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

b) Write overloaded function to convert int to ascii string and to convert char to ascii string. **[6]**

Q5) a) Explain Dynamic memory allocation using NEW and DELETE with example and compare with malloc and free function in 'C'. **[8]**

b) What is object? Explain memory allocation for object in c++. **[4]**

OR

Q6) a) What are special characteristics of constructor? Explain copy constructor with example. **[8]**

b) Explain destructor with example. **[4]**

SECTION - II

Q7) a) What is operator overloading? List the operators that cannot be overloaded as member functions. **[4]**

b) Write a C++ program to design a class 'String' and overload the ">>" operator to input character string from user and "<<" operator to display the same string to user. **[8]**

OR

Q8) a) What is Type Conversion? What are different types of Type Conversions? **[4]**

b) Write a C++ program to design a class Time which contains the time in Hrs and Min format. Write a conversion function so that following operation is possible **[8]**

```
Time T1;
int duration= 100;
T1=duration;
```

Q9) a) What is Inheritance? Explain multiple inheritance with suitable example. **[6]**

b) Define the following terms. **[6]**

i) Abstract base class

ii) Virtual destructors

iii) Early and Late binding

OR

Q10) a) What is the difference between private, protected and public inheritance? **[6]**

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

Q11) a) What are stream classes? Explain any two input and output functions with example. **[6]**

b) Write a program in C++ to copy the content of two binary into the third file. **[5]**

OR

Q12) a) What are manipulators? Explain user defined manipulators with example. **[5]**

b) Write a program in C++ that reads a text file and creates another file that is identical except that every sequence of consecutive blank spaces is replaced by a single space. **[6]**

Total No. of Questions : 12]

SEAT No. : ____

P1308

[Total No. of Pages : 3

[4166] - 202

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

DATA STRUCTURES AND FILES

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

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Consider integer array int a [5][4] declared in C program. If the base address is 610. Find the address of the element a [3][2] with the row major and column major representation. **[6]**

b) Write a Pseudo C algorithm for fast transpose of a sparse matrix. **[6]**

OR

Q2) a) Explain the concept of ordered list with suitable example. **[6]**

b) Write definition for the following : **[6]**

i) Linear and non-linear data structure.

ii) Static and dynamic data structure.

iii) Persistent and Ephemeral data structure.

Q3) a) Write the steps in Pseudo C code to insert an element at any position in a doubly linked list. **[6]**

b) Compare linked list and arrays with reference to the following aspects : **[6]**

i) Accessing an element randomly.

ii) Insertion and deletion of an element.

iii) Utilization of computer memory.

OR

P.T.O

Q4) a) Write a function to check whether two singly link list are equal or not. **[6]**

b) Write algorithm for deleting first node, last node and the node from a specified position in a link list. **[6]**

Q5) a) Convert the following infix expression into postfix expression by showing contents of stack for every iteration.

(((A/(B ^ C))+(D & E)) - (A & C)) **[4]**

b) Describe priority queue. **[3]**

c) What are the applications of stack? **[4]**

OR

Q6) a) Convert following expression from infix to prefix. Show the contents of stack after every pass. **[4]**

A$b*C-C+D/ A/(E+E)

b) Write a note on double ended queue. **[3]**

c) How circular queue is advantageous over sequential queue? Explain with An example. **[4]**

SECTION - II

Q7) a) Define the following terms : **[6]**

i) Complete Graph.

ii) Connected Graph.

iii) Multigraph.

b) What is binary tree? Write a recursive function for inorder , preorder and Postorder traversal in a binary tree. **[5]**

OR

Q8) a) Construct a binary search tree from following numbers : **[6]**

14, 10, 17, 12, 11,20, 18,25,8,22,23,30,7, 13

b) Write recursive 'C' function to find out : **[5]**

i) Height of a given binary tree.

ii) Width (breadth) of a given binary tree.

Q9) a) Write a recursive algorithm for merge sort & explain the procedure using following example : **[6]**

66, 33, 40, 22, 55, 88, 60, 11, 80, 20, 50, 44, 77, 30

b) Describe the following with respect to sorting : **[6]**

i) Sort order.

ii) Sort stability.

OR

Q10) a) Explain index sequential search with example. **[6]**

b) Write a Pseudo code for Insertion sort & calculate its complexity. **[6]**

Q11) a) Describe sequential File with example. **[6]**

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

OR

Q12) a) Describe Direct Access file and write C implementation for Insert and Delete operation of it. **[6]**

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. **[6]**

Total No. of Questions : 6]

SEAT No. :

P1309

[Total No. of Pages : 4

[4166] - 203

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

OPERATIONS RESEARCH

(Sem. - II) (2008 Pattern) (510911)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Old hens can be bought at Rs. 2 each and young ones at Rs. 5 each. The old hens lay 3 eggs per week and young ones lay 5 eggs per week, each egg being worth 30 paise. A hen costs Re. 1 per week to feed. If I have only Rs.80 to spend for hens, how many of each kind should I buy to give a profit of more than Rs. 6 per week, assuming that I cannot house more than 20 hens? Formulate the LPP and Solve it by Graphical method. **[9]**

b) What is LPP? Write its General form? **[3]**

OR

a) Explain the various steps of the simplex method involved in the computation of an optimal solution to a linear programming problem. **[8]**

b) Explain the primal-dual relationship. **[4]**

Q2) a) A cement factory Manager is considering the optimal way to transport cement from his three manufacturing centers P,Q,R to depots A,B,C,D and E. The weekly production and demands along with transportation costs per ton are given below.

P.T.O

	A	B	C	D	E	Supply
Fl	40	10	30	40	40	60
F2	20	30	20	20	30	35
F3	30	50	20	40	40	40
Demand	22	45	20	18	30	

Find the transportation Schedule for the above problem **[7]**

b) Explain the difference between transportation and an assignment problem. **[4]**

OR

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

i) North West corner rule

ii) Vogel approximation method

iii) Degeneracy, related to transportation problem.

b) Explain maximization in an assignment problem with an example. **[5]**

Q3) a) Compare PERT and CPM. **[3]**

b) Draw a network diagram from the following information and calculate. **[9]**

i) EST(Earliest Start Time), EFT(Earliest Finish Time), LST (Latest Start Time), LFT (Latest Finish Time).

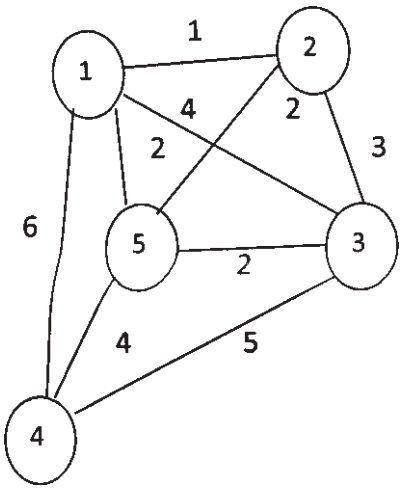
ii) Total float, Independent float, Free float

Name	A	B	C	D	E	F	G	H	I	J	K
Activity	1-2	1-3	1-4	3-5	4-5	2-6	5-6	5-7	6-8	7-8	8-9
Duration (in Hrs)	8	5	13	12	6	6	7	9	8	2	6

OR

a) Write the steps of Floyd's Algorithm. **[4]**

b) The state university campus has five supercomputers. The distance between each pair of computers is given in figure. The computers must be interconnected by underground cable. What is the minimum length of cable required? Note that if no arc is drawn connecting a pair of nodes, this means that no cable can be laid between these two computers. Use Minimum Spanning Tree. **[8]**



SECTION - II

Q4) a) What do you understand by integer programming problem? **[2]**

b) Solve the following by Branch and Bound method. **[9]**

Maximize $z = 5x_1 + 9x_2$

Subject to -

$-x_1 + 5x_3 <= 3$

$5x_1+3x_2 <= 27$

Where x_1, x_2 are non negative integers

OR

a) The demand (in number of units) for an inventory item over the past 12 months is summarized as in table .Use the Exponential Smoothing technique to forecast next two month's demand. Use $\alpha = 0.2$. **[4]**

Month	1	2	3	4	5	6	7	8	9	10	11	12
Demand	46	56	54	43	57	56	67	62	50	56	47	56

b) What is Goal Programming? Explain two methods to solve Goal Programming problem. **[7]**

Q5) a) What are the types of Decision making environment? Explain any one in detail. **[4]**

b) A manufacture of a new detergent powder consisting of three varieties viz Super, Fine and Glow has to decide the appropriate variety of detergent to be launched on the basis of the following estimated payoffs according to sales-levels. **[8]**

Detergent Variety	Estimated Levels of sales(units)		
	50000	25000	15000
Super	45	30	20
Fine	60	45	15
Glow	75	50	10

Determine the optical decision using:

i) Minimax criterion
ii) Regret criterion
iii) Laplace criterion
iv) Hurwicz criterion.

OR

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

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

i) Laplace
ii) Hurwicz
iii) Regret
iv) Maximin

Q6) a) What is multiplicative congruential method? Using that method generate 7 random numbers with b= 16,c= 18,m=23 and the seed is 1. **[5]**

b) Discuss the various methods for gathering statistical observations. **[7]**

OR

a) Write a Short note on : **[5]**

Monte Carlo simulation.

b) In the first year M.Com. Class of a certain commerce college, the first lecture starts at 9 a.m. Following is the probability distribution regarding number of students who are late comers for the first lecture each day. **[7]**

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

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

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

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Total No. of Questions : 12]

SEAT No. :

P1310

[Total No. of Pages : 2

[4166] - 204

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

MICROPROCESSOR APPLICATIONS

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

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Draw Architecture of 8085 microprocessor and explain all the blocks? **[6]**

b) What is buffer? Explain the bidirectional buffer? **[6]**

OR

Q2) a) Draw the Pin diagram 8085 microprocessor and explain all pin functions? **[6]**

b) What is memory map? Design a microprocessor system for the 8085 Microprocessors such that it should contain 8 Kbyte of EPROM and 4 Kbyte of RAM? **[6]**

Q3) a) Draw and Explain a Time diagram of LXI H 2000H? **[6]**

b) Explain the all Addressing Modes in 8085 microprocessor? **[6]**

OR

Q4) a) Write an 8085 Assembly language Program to arrange the number in descending order? **[6]**

b) Explain all assembler directives? **[6]**

Q5) a) Explain : **[6]**

i) I/O mapped I/O

ii) Memory mapped I/O

b) Explain the 4x4 key matrix interfacing. **[5]**

P.T.O

OR

Q6) a) Explain Seven Segment display interfacing? **[5]**

b) Draw and explain the block diagram of 8255 PPI? **[6]**

SECTION - II

Q7) a) Explain various interrupt of 8085 microprocessor? **[6]**

b) Explain mode 0 and mode 1 operations of 8253 with neat diagram? **[6]**

OR

Q8) a) Draw the block diagram of 8253. Explain in Brief? **[6]**

b) Explain the instruction i) SIM ii) RIM **[6]**

Q9) a) Draw a block diagram of 8088 microprocessor? Explain all blocks? **[6]**

b) Explain the addressing mode 8086 with examples? **[6]**

OR

Q10) a) Draw a pin Diagram of 8086 microprocessor? Explain in details? **[6]**

b) Explain the programming models of 8086 microprocessor? **[6]**

Q11) a) Draw the diagram BIOS interact with the system hardware. Showing various components. Explain in detail? **[6]**

b) Explain the INT 21 H function whose calling parameter are given bellow? **[5]**

i) 02H ii) 01H

iii) 09H iv) 4CH

v) 0FH

OR

Q12) a) Write an 8086 assembly language program to convert the hexadecimal number to BCD number? **[6]**

b) Define 1. A resident portion 2. An initialization section 3. A transient section. **[3]**

c) Difference of DOS and BIOS? **[2]**

Total No. of Questions : 12]

SEAT No. :

P1311

[Total No. of Pages : 2

[4166] - 205

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

MANAGEMENT INFORMATION SYSTEMS

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

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

Instructions to the candidates:-

1) ***Answer to the two sections should be written in separate answer books.***
2) ***Figures to the right indicate full marks.***
3) ***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 & relevant.***

SECTION - I

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

b) What is infrastructure management? What are the different hardware acquisition issues? **[6]**

OR

Q2) a) Explain Total Quality Management of Information systems. **[6]**

b) What is strategic planning? Explain its essentiality. **[6]**

Q3) a) Explain the steps in ERP implementation. What are the benefits of ERP solution. **[6]**

b) Explain the importance of MIS in service Industry. **[6]**

OR

Q4) a) Explain the application of management Information System (MIS) in Hospital management. **[6]**

b) Explain cross functional Enterprise system, what are the benefits. **[6]**

Q5) a) What is call center? What are the different activities performed in call center? **[6]**

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

P.T.O

OR

Q6) a) What is Business Process Outsourcing (BPO) & their challenges. **[6]**

b) Explain in Detail the concept of Enterprise Application Integration (EAI). **[5]**

SECTION - II

Q7) a) What is computer crime? Explain various Internet abuses in the workplace. **[6]**

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

OR

Q8) a) What is Decision support system? Explain four basic types of Analytical modeling activities. **[6]**

b) Write short note on (Any 2) :

i) Cyber Theft ii) CRM iii) E-commerce **[6]**

Q9) a) Explain supply chain management. **[6]**

b) Write short note on (Any 2) :

i) Data warehousing

ii) Data mining

iii) Different Hacking Techniques **[6]**

OR

Q10) a) Explain Expert systems. **[6]**

b) What are the steps in BPR? **[6]**

Q11) a) List and briefly explain the issues involved in global management of IT. **[5]**

b) Explain Biometric security and elaborate on faulttolerant systems. **[6]**

OR

Q12) a) Explain following aspects of security management. **[6]**

i) Encryption

ii) Firewalls

iii) Email monitoring

b) What is disaster recovery plan? Explain steps involved in developing a disaster recovery plan. **[5]**

Total No. of Questions : 12]

SEAT No. : ____

P1312

[Total No. of Pages : 3

[4166] - 301

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

OPERATING SYSTEMS

(Sem. - III) (2008 Pattern) (610901)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Explain language processing activities with necessary diagrams. **[5]**

b) Differentiate between lexical analysis and syntax analysis. **[4]**

c) What is a single pass assembler? **[3]**

OR

Q2) a) Explain fundamentals of language processing with necessary diagrams. **[5]**

b) Describe the design of a Two Pass Assembler. **[4]**

c) Compare Application Software and System Software. **[3]**

Q3) a) Explain the phases of a compiler. **[6]**

b) Explain direct linking loader. **[5]**

OR

Q4) a) Explain the terms macro and macro processors with an example. **[6]**

b) Discuss the loader schemes. **[5]**

Q5) a) Explain any 4 functions of an operating system in detail. **[7]**

P.T.O

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

i) Process

ii) Context Switch

iii) DOM

iv) Multitasking

v) Dispatch Latency

OR

Q6) a) Consider the following set of processes, with the length of the CPU burst given in milliseconds. **[7]**

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order PI, P2, P3, P4, P5 all at time 0.

i) Draw Gantt charts that illustrate the execution of these processes using the following scheduling algorithms: SJF, non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum = 1).

ii) Calculate the turnaround time of each process for each of the scheduling algorithms in part a?

iii) Which of the algorithms of part *a* results in the minimum average waiting time (over all processes)?

b) What are the different types of schedulers? Explain with suitable diagram. **[5]**

SECTION - II

Q7) a) Consider page referencing string given as 1, 2, 3, 4, 1, 2, 5. 1, 2, 3, 4, 5. Number of page frames are three. Show the page trace & calculate no of page faults for the following page reference schemes

i) LRU

ii) Optimal Page Replacement. **[7]**

b) Differentiate between Internal and External Fragmentation. **[5]**

OR

Q8) a) Explain demand paging & Steps in handling a page fault. **[8]**

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

Q9) a) Explain Acyclic - Graph Directory structure? **[4]**

b) Differentiate between Linked Allocation & Index allocation of disk space. **[8]**

OR

Q10) a) Consider a disk system with 100 cylinders. The request to access the cylinders occurs in the sequence: 44, 20, 95, 4, 50, 52, 47, 61, 87, 25. Assuming that head is at cylinder 50, what is the total distance the disk arm moves to satisfy all the pending requests for the following disk scheduling algorithms: **[7]**

i) FCFS

ii) SSTF

iii) SCAN

b) Describe the structure of disk. **[5]**

Q11) a) List process management system calls & explain any two? **[6]**

b) Explain linking process in execution of user programs in Linux. **[5]**

OR

Q12) a) Explain Linux file system. What are different file types? **[5]**

b) Explain components of a Linux system with diagram. **[6]**

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

P1313 **[Total No. of Pages : 4**

[4166] - 302

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

DATABASES : CONCEPTS AND SYSTEMS

(Sem. - III) (2008 Pattern) (610902)

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

Instructions to the candidates:-

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

SECTION - I

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

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

OR

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

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

Q3) a) The company is organized into departments. Each department has a unique name & number and a particular employee who manages the department. A department may have several locations. A department controls a no. of projects, each of which has a unique name & number, single location. One employee can work in only one department at one time. One employee will manage one department. One employee can work on more than one project. Design an E-R diagram. **[7]**

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

OR

P.T.O

Q4) a) Drivers (identified by DRIVER-NO, with each driver having a NAME, HOME-ADDRESS, and a DATE-OF-BIRTH) take out vehicles to make deliveries. A vehicle (identified by VEHICLE-NO, with each vehicle being of a particular MAKE and YEAR-OF-MANUFACTURE) may be taken out of a depot whenever available and kept out for any length of time (ranging from one or two hours to a number of days). It is possible for a vehicle to be taken out more than once on a given day. There is only one depot. Each time a driver takes out a vehicle, he or she takes out a load made up of any QTY of any of a number of item types (identified by an ITEM-NO and having a COLOR, WEIGHT, and DESCRIPTION). Every time a vehicle is taken out, the driver can incur expenses of allowed types (e.g. fuel costs). Each expense type has a CODE-NO. The AMOUNT and CODE-NO are recorded each time an expense is incurred. One or more expenses of the same type may be incurred during the same trip. Any number of stops can be made during the trip. An ADDRESS of the stop is recorded for each stop, together with the QTY-LEFT of each item type left at the stop. A driver stops at an ADDRESS only once during every trip. However, stops can be made at the same ADDRESS on different trips. **[7]**

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

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

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

OR

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

a) Strong entity set and Weak entity Set.

b) Codd's Rules

c) Mapping Constraints.

SECTION - II

Q7) a) Consider the following Relations. It defines the schema of the database application for a bank. **[6]**

Employee(Empno, Ename,job, mgr,hiredate,sal,comm,deptno)

Department(deptno,deptname,loc)

Answer the following queries in each of the query language that you know :

i) List of department no and number of employees in each department.

ii) List name of employees who are more than 5 years old in the organization.

iii) List of job with highest average salary.

iv) List employee details who earn salary greater than the average salary for their department

b) Explain following statements with examples : **[6]**

Declare Cursor.

Open

Fetch

Close.

OR

Q8) a) Explain with example Indexes and Sequence in SQL. **[6]**

b) Explain stored Procedure and stored function in PL/SQL. **[6]**

Q9) a) What is Normalization? Explain up to 4^{th} Normal Form with suitable Example. **[6]**

b) The closure set F of functional dependencies for relation schema **[5]**

R=(A,B,C,D,E) is

A - > BC

CD - > E

B - > D

E - > A List Candidate key for R.

OR

Q10) a) Write short note on Prototyping in database application design. **[5]**

b) Explain why 4NF is more desirable than BCNF. Rewrite the definition of 4NF and BCNF using notions of domain constraints and general constraints. **[6]**

Q11) a) Explain two phase locking protocols with example. **[6]**

b) What is a dead lock? How it can be prevented? How to recover if a dead lock occurs? **[6]**

OR

Q12) a) Explain ACID properties. Describe recovery with concurrent transactions. **[6]**

b) Describe Multi-version Concurrency Control Methods. **[6]**

Total No. of Questions : 12]

SEAT No. :

P1314

[Total No. of Pages : 3

[4166] - 303

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

FINANCIAL ACCOUNTING & MANAGEMENT

(Sem. - III) (2008 Pattern) (610903) (Theory)

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) What is different principles of accounting? Explain the conventions used in accounting. **[6]**

b) What is balance sheet and what information does it convey to outsider? **[6]**

OR

Q2) a) Discuss the significance of accountancy in modern business organization. **[6]**

b) What is profit & loss account and what information does it convey to outsider? **[6]**

Unit - II

Q3) a) Differentiate between variable overhead cost and fixed overhead cost. **[6]**

b) Explain the limitations of ratio analysis. **[5]**

OR

Q4) a) What are different types of financial ratios? Explain each in brief. **[6]**

b) Explain the limitations of break-even analysis? **[5]**

Unit - III

Q5) Explain the following determinants for the needs of working capital : **[12]**

a) Operating cycle

b) Sales

c) Manufacturing cycle

d) Current assets and liabilities

P.T.O

OR

Q6) Elaborate the following factors affecting the requirements of working capital : **[12]**

a) Nature of business

b) Business fluctuations

c) Operating cycle

d) Economies of scale

SECTION - II

Unit - IV

Q7) a) Explain different kinds of investment with suitable example? **[6]**

b) Compute the present value of cash inflows at the rate of Rs. 1,000/- per year for five years, at the discount rate or the required rate of return of 10 per cent. **[6]**

OR

Q8) a) How are different investment decisions are made? Explain with suitable example. **[6]**

b) Your bank pays you Rs. 10,000/- at the end of 5 years of your deposit of Rs. 1,500/- a year for 5 years in a recurring deposit account. What is the net present value of your investment? **[6]**

Unit - V

Q9) The capital structure of ABC Co., as on 31/03/2011 was as follows : **[11]**

Capital types	**Details of capital**	**Value (Rs.)**
Equity Capital	8,00,000 share of Rs. 10/- each	80,00,000/-
Debentures 6 per cent	4,00,000 debentures of Rs. 10/- each	40,00,000/-
Preference shares 10 per cent	2,00,000 shares of Rs. 10/- each	20,00,000/-
Retained earnings		60,00,000/-
		2,00,00,000/-

The cost of various funds is as follows: debt 3 per cent; preference shares 10 per cent, equity capital 12 per cent, and retained earnings 12 per cent. What is its weighted average cost of capital?

OR

Q10) The ABC Co., wants to finance a product diversification program involving a capital outlay of Rs. 50 lakhs. It proposes to raise the financial resources for this capital projects in the following manner : **[11]**

Capital types	**Details of capital**	**Value (Rs.)**
Equity Capital	1,00,000 share of Rs. 10/- each	15,00,000/-
Debentures 9 per cent	1,00,000 debentures of Rs. 10/- each	10,00,000/-
Preference shares 10 per cent	1,00,000 shares of Rs. 10/- each	10,00,000/-
Retained earnings		18,00,000/-

The cost of equity capital is 15 per cent and cost of floatation of all kinds of securities is Rs. 1 per unit. Corporate tax rate is 50 per cent. What is its weighted average cost of capital?

Unit - VI

Q11) Explain following with suitable example : **[12]**

a) Features and significance of computers or IT in accounting.

b) Components of Tally useful for debit and credit purpose.

OR

Q12) Explain following with suitable example : **[12]**

a) Commercial use of Tally in purchase, sales and related management system.

b) Role of IT in finance and accounts system.

Total No. of Questions : 12]

SEAT No. :

P1315

[Total No. of Pages : 2

[4166] - 304

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

COMPUTER COMMUNICATIONS & NETWORKS

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

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Write difference between Synchronous and Asynchronous transmission with example. **[6]**

b) Explain Fiber Optic media. **[6]**

OR

Q2) a) List the different categories of multiplexing and also explain Synchronous TDM. **[6]**

b) Explain different types of Transmission modes. **[6]**

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

b) Explain Sliding Window protocol. **[6]**

OR

Q4) a) Write difference between OSI model and TCP/IP model. **[6]**

b) Explain Piggybacking in a Go-back-N ARQ. **[5]**

Q5) a) Explain Bluetooth Architecture with neat diagram. **[6]**

b) Explain CSMA with CSMA/CD technique. **[6]**

OR

Q6) a) Explain fast and gigabyte Ethernet. **[6]**

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

P.T.O

SECTION - II

Q7) a) What do you mean by congestion? Discuss the open-loop and closed-loop Congestion control mechanism. **[6]**

b) Explain Leaky bucket algorithm. **[5]**

OR

Q8) a) Given three IP addresses are 32.46.7.3, 200.132.110.35 and 140.75.8.92. Find their classes, network addresses, broadcast address and their subnet mask. **[6]**

b) Explain Multicast Routing. **[5]**

Q9) a) Explain difference between TCP and UDP. **[6]**

b) How is connection established in TCP? Explain two army problem. **[6]**

OR

Q10) a) What is socket? Explain various socket primitives used in client server interaction. **[6]**

b) Explain Remote Procedure Call (RPC). **[6]**

Q11) a) Explain Email Architecture with protocol. **[6]**

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

i) IMAP ii) HTTP

OR

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

b) Explain DNS with different type of Domain. **[6]**

Total No. of Questions : 12]

SEAT No. :

P1316

[Total No. of Pages : 2

[4166] - 305

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

PRINCIPLES OF MULTIMEDIA

(Sem. - III) (2008 Pattern) (610905)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Explain the characteristics of Multimedia database management system. **[6]**

b) Explain with suitable examples Multimedia building blocks. **[6]**

OR

Q2) a) What is Multimedia Authoring? Explain any one Multimedia Authoring tool in detail. **[6]**

b) Explain features of GTK+ and QT. **[6]**

Q3) a) What is image enhancement? How it is achieved by spatial filtering? **[6]**

b) Explain Vector Quantization technique. **[6]**

OR

Q4) a) What is Compression? Explain RLE and Shanon Fano algorithm in detail. **[8]**

b) Explain GIF file format. **[4]**

Q5) a) Explain different elements of Audio system. **[8]**

b) Explain WAV file format. **[3]**

OR

Q6) a) Explain MIDI and use of MIDI in Multimedia applications. **[6]**

b) Explain psychoacoustics in detail. **[5]**

P.T.O

SECTION - II

Q7) a) What do you mean by CODEC? Explain the features of H.263. **[6]**

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

OR

Q8) a) What is compression? Compress the string **'ABABBABCABABBA'** using LZW compression technique. Calculate the compression ratio? **[6]**

b) Compare different Television broadcasting standards. **[6]**

Q9) a) Explain the features ofVRML with example. Also explain the use of EVENTS and ROUTS with proper examples. **[6]**

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

OR

Q10) a) Define Virtual Reality? Explain the construction of Head Mounted Displays. **[6]**

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. **[5]**

OR

Q12) Answer the following : **[12]**

a) Compare 2D and 3D Animation.

b) Compare Client pull and Server Push in Web Animation.

c) Compare Rendering and Morphing.

Total No. of Questions : 12]

SEAT No. :

P1317

[Total No. of Pages : 2

[4166] - 401

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

SOFTWARE ENGINEERING

(Sem. - IV) (2008 Pattern) (610909) (Theory)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Explain process patterns & process assessment? **[6]**

b) Explain the process models? **[5]**

OR

Q2) a) Explain the Unified Process Model? **[6]**

b) Explain the Process Framework? **[5]**

Q3) a) Explain the core principles? **[6]**

b) Explain the principles used in the planning practices? **[6]**

OR

Q4) a) Write note on system modeling & system simulation? **[6]**

b) Explain the elements of computer based system? **[6]**

Q5) a) Explain the steps used in developing use cases? **[6]**

b) Write note on Initiating the process? **[6]**

OR

Q6) a) Write note on class based modeling? **[6]**

b) Explain the process used for creating Behavioral modeling? **[6]**

P.T.O

SECTION - II

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

b) What are the golden rules of Interface design? Explain in detail all the rules. **[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) Explain the difference between White box testing and black box Testing. **[6]**

b) What are the strategic issues in Software Testing? **[6]**

OR

Q10) a) What are the Objectives of Testing? What are the testing strategies for conventional and object oriented software? **[6]**

b) Explain Condition testing and loop testing with reference to white box testing. **[6]**

Q11) a) What is software Quality? What are the factors affecting the software quality? How the quality software can be addressed? **[5]**

b) What are objectives of Software Maintenance? Explain in-Detail Maintenance metrics. **[6]**

OR

Q12) a) What are the attributes of effective software metric? Explain measure, measurement and metrics. **[5]**

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

Total No. of Questions : 12]

SEAT No. :

P1318

[Total No. of Pages : 3

[4166] - 402

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

WEB TECHNOLOGY

(Sem. - IV) (2008 Pattern) (610910) (Theory)

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

Instructions to the candidates:-

1) ***Answer 3 questions from Section - I & Section - II.***
2) ***Answers to the sections should be written in separate books.***
3) ***Figures to the right indicate full marks.***

SECTION - I

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

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

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

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

i) "Byte serving is another concept introduced in HTTP/1.l to improve the performance of HTTP."

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

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

OR

Q2) a) What is a bridge? Explain its functions and their types. Explain simple bridge. **[6]**

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

P.T.O

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

i) Servlet and CGI.

ii) ASP and JSP.

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

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

SECTION - II

Q7) a) Explain with syntax and use of alert(), prompt() and confirm() functions of JavaScript. **[6]**

b) Write short note on event handling in JavaScript. **[6]**

OR

Q8) Write a JavaScript code to check the password strength when user is typing his password. (Don't write code on Submit). **[12]**

Password length >= 10	Strong
Password length < 10 and >= 5	Medium
Password length <	Weak

Q9) a) Write a short note on JSP Architecture. **[6]**

b) Explain the "onreadystatechange" event of AJAX model. **[5]**

OR

Q10) a) Write a JSP program to find prime no using HTML tags. **[6]**

b) What is AJAX? Explain the AJAX model and explain how it works? **[5]**

Q11) a) Explain the .net framework. Explain how it is platform independent. **[6]**

b) Explain the server controls in ASP .net **[6]**

OR

Q12) a) Explain CLR and CLS of .net framework in detail. **[6]**

b) List and explain all validation controls in ASP.net. **[6]**

Total No. of Questions : 12]

SEAT No. :

P1319

[Total No. of Pages : 2

[4166] - 403

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

OBJECT ORIENTED ANALYSIS AND DESIGN

(Sem. - IV) (2008 Pattern) (610911)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) What is the significance of Inception, Elaboration, Construction and Transition? **[6]**

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

OR

Q2) a) Explain new features of UML 2.0. **[4]**

b) What is Architecture? Explain 4+ 1 view Architecture. **[4]**

c) Explain Object Oriented features with examples. **[4]**

Q3) a) What is Conceptual Model of UML? What is the basic building blocks of UML? Explain things building blocks? **[6]**

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

OR

Q4) a) Explain any three Extensibility mechanism with example. **[6]**

b) Write short note on UML Profile and OCL? **[6]**

Q5) Draw the use case diagram & class diagram for a placement agency site who provides the facility for candidates to register with their academic details, personal details & skill set, Site also gives provision to update their profiles. Organizations can also register with their requirements. Search facility is provided to search job & suitable candidates. **[11]**

P.T.O

OR

Q6) Draw the Use Case Diagram and class Diagram for a customer order from a retail catalog. The payment can be done by either cash, cheque or credit card. The order contains order details with its associated items. Pending order reports are generated periodically. Rejected or damaged goods are returned with GRN. **[11]**

SECTION - II

Q7) a) Draw the sequence diagram for sending an e-mail. **[8]**

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

OR

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

b) Explain signal, exceptions with examples? **[4]**

Q9) a) Draw the Activity Diagram for the following bank transaction : **[8]**

i) Money Deposit

ii) Amount Withdrawal

iii) Request for Debit/Credit Card

iv) Checking the balance.

b) What is a Sub state? Explain types of Sub states. **[4]**

OR

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

b) Draw the state transition diagram for the fully automated washing machine. **[4]**

Q11) a) List & explain notations used in deployment diagram. **[6]**

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

OR

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

b) Draw a package diagram for "Engineering college management system". **[5]**

Total No. of Questions : 12]

SEAT No. :

P1320

[Total No. of Pages : 2

[4166] - 404

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

JAVA PROGRAMMING

(Sem. - IV) (2008 Pattern) (610912)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) What is meant by multithreading? Explain different ways of creating thread in Java. **[6]**

b) What is meant by package? How they are created? Explain with example. **[6]**

OR

Q2) a) List out different features of Java. **[4]**

b) Write a program to create your own Exception – Antivirus, which takes the Input string, if input is - "Newfolder.exe" or "TorjanHorse" or "Happydays" display error message "Virus detected" otherwise "No Virus found". **[8]**

Q3) a) Write down interfaces available in awt to handle different events. **[6]**

b) Explain Layout manager with example. **[5]**

OR

Q4) a) Explain different types of containers in AWT. **[5]**

b) Write a difference between AWT & Swing. **[6]**

Q5) a) Write a program to display image & play audio within an applet. **[7]**

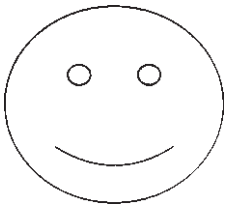
b) Write down steps involved in developing & running a local applet. Explain with example. **[5]**

P.T.O

OR

Q6) a) Write down attributes of applet tag. Explain with example. **[5]**

b) Write a program to draw the following shape within applet. **[7]**



SECTION - II

Q7) a) Explain the difference between text & binary file format. **[5]**

b) Write down a program to accept 10 numbers from the user & display the summation of these numbers. **[6]**

OR

Q8) a) What is String Tokenizer class? Explain in detail. **[6]**

b) Explain the concept of creation of ZIP file stream in Java. **[5]**

Q9) a) Differentiate between JDBC & ODBC. **[6]**

b) What is the use of statement class & how to retrieve data from the result set. **[6]**

OR

Q10) a) Explain transaction management in Java. **[6]**

b) How to connect database into Java application? Explain with example. **[6]**

Q11) a) Explain different Network Exceptions. **[7]**

b) What are differences between TCP & UDP. Explain methods in both the classes. **[5]**

OR

Q12) a) Explain different Socket classes in Java. **[6]**

b) Write a program to create Chat server in Java. **[6]**

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

P1321 **[Total No. of Pages : 2**

[4166] - 405

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

HUMAN COMPUTER INTERFACE

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

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

Instructions to the candidates:-

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

SECTION - I

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

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

OR

Q2) a) Compare motivating factors between Life critical systems and those for home, office or entertainment. **[6]**

b) Describe four important differences between Short Term Memory and Long Term Memory. **[4]**

c) What do you mean by direct-control pointing devices? **[2]**

Q3) a) Explain Eight Golden rules of interface design. Give suitable examples to justify your answer. **[8]**

b) Explain the HCI design process with respect to Guidelines and principles. **[3]**

OR

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

b) Explain the guidelines for data entry and data display. **[5]**

P.T.O

Q5) a) Explain the different tools for screen layout with example. **[6]**

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

OR

Q6) Write a short note on : (any three) **[12]**

a) Scenarios

b) Participatory Design

c) Affordance and design

d) Development methodologies (LUCID)

SECTION - II

Q7) a) Explain the concept of "Visual thinking and locus". **[6]**

b) What is the concept of "expert review" for Usability? **[6]**

OR

Q8) a) Explain the "item representation sequence". **[6]**

b) Explain the command organization strategies with reference to command menus. **[6]**

Q9) a) Explain the O-AI model for website designing. **[6]**

b) Explain the concept of Groupware with the help of an example. **[6]**

OR

Q10) a) What are the requirements for printed manuals (documentation) of software? **[6]**

b) How can one use CSCW in education? What are the issues associated with it? **[6]**

Q11) a) Explain the preferred interactive devices for web based systems. **[6]**

b) Explain the concept of Information visualization. **[5]**

OR

Q12) a) Explain the design criteria for designing a website for teaching mathematical tables to children. **[6]**

b) Explain Social Acceptability of web based systems. **[5]**

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Total No. of Questions : 12]

P1321 **[Total No. of Pages : 2**

[4166] - 405

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

ORGANISATION BEHAVIOR

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

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

Instructions to the candidates:-

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

SECTION - I

Q1) What is organizational behavior? Discuss various challenges and opportunities available in this field? **[11]**

OR

Q2) a) Write a note on competency. **[6]**

b) What is the role of self efficiency in Goal setting? **[5]**

Q3) a) Explain stress management in brief. **[7]**

b) Does motivation come from within a person or is it a result of the situation. **[5]**

OR

Q4) a) Compare and contrast Maslow's theory of need hierarchy with Herzberg's two factor theory. **[6]**

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

Q5) a) Explain in brief "Human Resource Management" function in an organization. **[6]**

b) Explain the growing popularity of teams in an organization. **[6]**

OR

P.T.O

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

i) Conflict Management.

ii) Performance Appraisal.

iii) Types of Groups.

b) Contrast self managed and cross-functional teams. **[4]**

SECTION - II

Q7) a) What is Leadership? Explain the importance and approaches of Leadership. **[8]**

b) Write a short note on : **[4]**

i) Organizational Development

ii) Organizational Culture

OR

Q8) a) Discuss spiritual work culture with respect to need for such culture characteristics of such culture and its criticism. **[8]**

b) Explain briefly about "Hersey and Blanchard's theory". **[4]**

Q9) a) What are the basic features of traditional cooperation vis-à-vis modern cooperatives? **[6]**

b) What makes organizations effective? **[3]**

c) List out the characteristics of Organization Development aimed at increasing Organization effectiveness. **[2]**

OR

Q10) a) What is conflict process? What are the strategies for conflict resolution? **[6]**

b) How do you see the collapse of the present system occurring? A Forces responsible for change is work to avoid such problems? **[5]**

Q11) a) How Quality is turn of an Organization? Is Total Quality Management is helpful in it? What are the benefits of TQM? **[6]**

b) What is Learning Organization? Why a Learning Organization? What are the limits of Learning Organization? **[6]**

OR

Q12) a) Is there any relation between re-engineering with empowerment? Justify your answer with suitable example. **[6]**

b) What are the risk factors in implementing TQM in any Organizations? How to measure a TQM implementation and success? **[6]**

Total No. of Questions : 6]

SEAT No. :

P1322

[Total No. of Pages : 2

[4166] - 501

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

PRINCIPLES AND PRACTICES FOR IT PROJECT MANAGEMENT

(Sem. - V) (2008 Pattern) (710901)

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

Instructions to the candidates:-

1) ***Answers to the two sections should be written in separate answer books.***
2) ***Neat 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 the difference between software development life cycle and project life cycle. **[6]**

b) Write a note on business ethics & social responsibility. **[5]**

OR

a) What is strategic management? Explain the techniques used for strategic management. **[6]**

b) Explain the phases in the process of management. **[5]**

Q2) How information technology can be applied Stores and Purchase departments? Justify your answer by giving suitable examples. **[12]**

OR

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

Q3) What is 8/80 Rule? What is zero based budgeting? Explain the process and types of budgeting a project. **[12]**

OR

What are Gantt charts? How are they utilized in the planning of any IT project? **[12]**

P.T.O.

SECTION - II

Q4) Write a note on :

a) Project Network Diagram with suitable diagram. **[6]**

b) Managing team issues. **[5]**

OR

Explain the process of revision of a project plan. Also explain why there is a need for Project plan revision. **[11]**

Q5) What are the strategies for resolving destructive conflicts? Explain in detail. **[12]**

OR

Explain how the interview process is carried out while deciding appropriate candidate while forming a team structure. **[12]**

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

OR

Write a note on PSP and TSP. **[12]**

Total No. of Questions : 12]

SEAT No. :

P1323

[Total No. of Pages : 3

[4166] - 502

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

COMPUTER GRAPHICS

(Sem. - V) (2008 Pattern) (710902) (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) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Describe the midpoint circle generation algorithm. State its advantages and disadvantages over DDA circle generation algorithm. **[6]**

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

OR

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

i) Cathode-Ray tubes

ii) Display Processors

b) Using Brasenham's line drawing algorithm, find out which pixels would be turned on for the line with end points (5,5) to (14,10). **[6]**

Q3) a) A point(3,5) is rotated anticlockwise by an angle of 45. Find the rotation matrix and resultant point. **[6]**

b) With respect to 2D transformations explain Translation, Rotation and Scaling. **[6]**

OR

P.T.O

Q4) a) Explain scanline algorithm for polygon filling and compare it with boundry fill algorithm. **[6]**

b) Consider square A(0,0), B(0,12), C(12,12) and D(12,0). Rotate the square about fixed point R(12,12) by an angle of 45° counter clockwise followed by uniform scaling of 2 units. **[6]**

Q5) a) What is segment? Explain segment table and how to perform rename operation on segment. **[6]**

b) Explain windowing and clipping in detail. **[5]**

OR

Q6) a) Explain cohen-sutherland algorithm in detail. **[6]**

b) Write short note on text clipping. **[5]**

SECTION - II

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

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

OR

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

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

i) Translation

ii) Scaling

iii) Mirror Reflection.

Q9) a) Explain RGB and HSI color models with the help of diagrams. **[6]**

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

OR

Q10) a) Explain Warnock agorithm. Why this algorithm is also called as area subdivision algorithm ? **[6]**

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

i) Ray Tracing

ii) Diffuse illumination

Q11) a) Define Fractals & Fractal Lines. Explain how fractals are used to generate fractal surfaces. **[6]**

b) What is interpolation? Explain Lagrangian interpolation method. **[5]**

OR

Q12) a) Compare Bezier and B-spline curves. **[6]**

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

i) Frame by Frame animation

ii) Methods for controlling animation

Total No. of Questions : 12]

SEAT No. :

P1324

[Total No. of Pages : 3

[4166] - 503

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

ADVANCED DATABASE

(Sem. - V) (2008 Pattern) (710903) (Theory)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) With suitable diagram explain the steps in query processing. **[5]**

b) Explain the external sort merge algorithm with suitable example. **[6]**

OR

Q2) a) Why we need query optimization? Explain with suitable example. **[5]**

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

i) Materialized Evaluation.

ii) Pipelined Evaluation.

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

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

OR

Q4) a) Why distributed database architecture is required? Explain with example. **[6]**

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

P.T.O

Q5) a) Explain the need of complex data type with example. **[6]**

b) A company maintains a database for employees. A database schema is as given below. **[6]**

name: f_name, m_init, 1_name

address: street_no, city, state, zipcode

person: name, address, date _ of birth

employee: person, designation, date_of_joining

manager: employee

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

OR

Q6) a) Why OODBMS is needed? Differentiate between DBMS, RDBMS and OODBMS. **[6]**

b) What do you mean by object-identity and reference type? Illustrate. **[6]**

SECTION - II

Q7) a) Explain star schema for the multidimensional databases in detail. **[6]**

b) While analyzing the data, it was found that many tuples have no recorded values for several attributes. How this problem of missing values can be solved? **[5]**

OR

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

b) What are the different OLAP operations? Explain with examples. **[5]**

Q9) a) Write an Apriori algorithm for association. **[8]**

b) What is outlier analysis? **[4]**

OR

Q10) a) Write k-means algorithm for clustering. **[8]**

b) Write a note on text mining. **[4]**

Q11) a) Write short note on : **[6]**

i) synonym

ii) homonym

b) Explain characteristics and architecture of web search engines. **[6]**

OR

Q12) a) Explain in detail popularity ranking. **[6]**

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

i) Web crawling

ii) Inverse Document frequency

Total No. of Questions : 12]

SEAT No. :

P1325

[Total No. of Pages : 2

[4166] - 504

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

ENTERPRISE RESOURCE PLANNING

(Sem. - V) (2008 Pattern) (710904)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Explain how ERP is useful in competitive strategy formulation. **[5]**

b) Explain scope of ERP system, giving a real life example. **[6]**

OR

Q2) a) What is the importance of integrated system in service industry like airlines. **[7]**

b) List various advantages of ERP. **[4]**

Q3) a) Explain how change management process is necessary for success of ERP system. Mention different steps taken to overcome user resistance. **[8]**

b) Explain how organizational requirement affects ERP development. **[4]**

OR

Q4) a) What is Organizational Structure? How can it affect the development of ERP? **[8]**

b) Discuss factors based on which ERP development & implementation is dependent. **[4]**

P.T.O

Q5) a) Explain critical success factors (CSF) for ERP. What are the reasons for ERP failure. **[8]**

b) What are the infrastructure requirements for implementing ERP. **[4]**

OR

Q6) Compare various ERP implementation strategies. Justify which is best with an Example. **[12]**

SECTION - II

Q7) a) Explain the selection criterion for ERP system. **[5]**

b) Explain the concept of outsourcing in the context of ERP. **[6]**

OR

Q8) a) Explain the ERP design and customization issues. **[5]**

b) What is the difference between CRM and SCM systems? **[6]**

Q9) a) What is Business Process Re-engineering and its use in ERP. **[6]**

b) What is Data Warehouse? Explain it in the context of ERP and its data integration with ERP. **[6]**

OR

Q10) a) Explain the use of ERP in context with global business. **[6]**

b) How the Business Process Reengineering (BPR) impacts the ERP implementation? **[6]**

Q11) a) Explain the relationship among Production, Scheduling, Manufacturing and Sales modules of ERP. **[6]**

b) Explain the Finance and Costing module of ERP. **[6]**

OR

Q12) a) Explain the typical ERP system module structure for a manufacturing company with a brief explanation of their inter relationship. **[6]**

b) Explain the HRM and Quality Control of an ERP. **[6]**

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

P1326 **[Total No. of Pages : 2**

[4166] - 505

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

SOFTWARE TESTING

(Sem. - V) (2008 Pattern) (710905) (Elective - II)

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

Instructions to the candidates:-

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

SECTION - I

Q1) a) Define Data. How to collect, store and extract data. Explain with suitable example. **[6]**

b) Explain four principles of investigation. **[6]**

OR

Q2) a) Explain measurement scales and different scale types. **[8]**

b) Give the classification of software measures. **[4]**

Q3) a) What are the object oriented metrics? **[6]**

b) What are the notations used in control flow structure for various programming constructs. Draw control flow graph for any search algorithm. **[6]**

OR

Q4) a) Which are the difficulties with general complexity measures? **[6]**

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

Q5) a) Explain in detail different functions/responsibilities to be handled in a testing life cycle. **[7]**

b) Define terms : **[4]**

i) Faults

ii) Errors

OR

P.T.O

Q6) a) What is defect? State the defect classes with examples. **[6]**

b) Enumerate all components of a test plan. Explain the execution of test plan in detail. **[5]**

SECTION - II

Q7) a) State and explain test adequacy criteria for white box testing methodology. **[8]**

b) Write a short note on code complexity testing. **[4]**

OR

Q8) a) Describe test case design criteria with suitable example. **[6]**

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

i) Boundary value analysis

ii) State based testing

Q9) a) What is Automation Testing? What is difference between Manual Testing and Automation Testing? **[6]**

b) Explain in detail what is accepting testing, necessity of acceptance testing. **[6]**

OR

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

a) System and Acceptance Testing

b) Usability and Accessibility Testing

Q11) a) What do you mean by problem fixing? Explain process of problem fixing and reporting. **[6]**

b) Write a note on "Fixdistribution" in software maintenance. **[5]**

OR

Q12) a) Explain best practices for problem resolution for customer satisfaction. **[6]**

b) Write a short note on "Testing the Shipment Unit". **[5]**

Total No. of Questions : 12]

P1326 **[Total No. of Pages : 2**

[4166] - 505

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

NEURAL NETWORKS AND FUZZY LOGIC

(Sem. - V) (2008 Pattern) (710905) (Elective - II)

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

Instructions to the candidates:-

1) ***Answers to the two sections should be written in separate books.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Assume suitable data if necessary.***
4) ***Attempt Q1 or Q2, Q3 or Q4, Q5 or Q6 from Section-I and Q7 or Q8, Q9 or Q10, Q11 or Q12 from Section-II.***

SECTION - I

Q1) a) What do you mean by Neural Net learning? Discuss Widrow-Hoff learning rule in detail **[7]**

b) How Artificial Neural Net differs from Biological Neural Net? **[5]**

OR

Q2) a) Define the firing rule for a McCulloch Pitts Neuron and implement AND function using the same for a binary input. **[7]**

b) Define the terms Classification and Clustering. Compare between Supervised and Unsupervised learning. **[5]**

Q3) a) With algorithmic steps, discuss the Single Continuous Perceptron Training Algorithm (SCPTA). **[7]**

b) Compare between linearly seperable and nonlinearly seperable classification with suitable example. **[5]**

OR

Q4) a) Explain the R-category Discrete Perceptron Training Algorithm (RDPTA) with algorithmic steps. **[7]**

b) What is an Activation Function? State and define any two activation functions. **[5]**

P.T.O

Q5) a) What do you mean by error back propagation? How weights are updated during training process? Discuss the significance of learning constant and momentum term in back propagation training. **[7]**

b) State the generalized delta learning Rule for Fed Forward Neural Network. **[4]**

OR

Q6) a) Write the algorithmic steps for Multicategory Continuous Perceptron Training Algorithm (MCPTA). **[7]**

b) How back propagation training can be used to develop an expert system? **[4]**

SECTION - II

Q7) a) How Fuzzy Set is represented? Discuss any 4 properties of Fuzzy Set in brief. **[7]**

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

OR

Q8) a) What is the significance of a membership function in Fuzzy system? How it is defined? Discuss its important features in brief. **[7]**

b) Compare between Classical Set and Fuzzy Set. **[5]**

Q9) a) How Fuzzy If-Then rule is expressed? Discuss 2 types of Fuzzy rules in brief. **[7]**

b) Explain in brief Mamdani Fuzzy rule based Model. **[5]**

OR

Q10) a) With example discuss the various arithmetic operations performed on Fuzzy numbers. **[7]**

b) What is Fuzzy relation? State the operations on Fuzzy Relation. **[5]**

Q11) a) What is approximate reasoning? Define Fuzzy implication and state different criteria for the same. **[7]**

b) Compare between probability theory and possibility theory **[4]**

OR

Q12) a) Discuss major Fuzzy implication functions in brief. **[7]**

b) What is evidence theory? Define probability measure in the context of an evidence theory. **[4]**

Total No. of Questions : 6]

SEAT No. :

P1292

[Total No. of Pages : 2

[4166] - 44
S.Y. M.C.A. (Engineering Faculty)
ORGANIZATION BEHAVIOUR
(2005 Pattern) (215012) (Theory) (Sem. - IV)

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

Instructions to candidates:

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

SECTION - I

Q1) A) a) Explain in brief SOBC Model of Organizational Behaviour. **[8]**

b) Explain in brief Autocratic Model of Organizational Behaviour. **[8]**

OR

B) a) Explain in brief primary dependent and independent variables in general model of OB, Presented by Robbins. **[10]**

b) Define Organization Behaviour and list the key elements in OB. List the different models in OB. **[6]**

Q2) A) a) Explain in detail motivation process. Explain Fredrick Herzberg's two factor theory of motivation. **[10]**

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

OR

B) a) Explain in detail sources of stress and management of stress. **[8]**

b) In an organization which are the measurement of morale. How morale is related with productivity of organization. **[10]**

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

a) Handling Conflicts.

b) Formal and Informal Groups.

c) Levels of conflict.

d) Managing Human Resources.

OR

P.T.O

B) a) How the team effectiveness helps in overall development of an organization. **[8]**

b) Which factors influence the human resource planning in an Organization. How effective training to employees helps in performance improvement in an organization. **[8]**

SECTION - II

Q4) A) a) Explain Black and Mountan's Theory of Leadership. **[8]**

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

i) Path and Goal Theory.

ii) Organizational Climate.

OR

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

i) Life cycle Theory.

ii) Organizational structure.

b) Explain the importance of leadership to the organization. **[6]**

Q5) A) a) How the organizational development and effectiveness is related with the change within an organization. **[8]**

b) Explain in brief Traditional vs Modern view of conflict. **[8]**

OR

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

i) Conflict process.

ii) Resistance to change.

b) Explain strategies for conflict resolution in detail. **[8]**

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

a) Downsizing.

b) Re-engineering-empowerment.

c) Techniques of TQM.

d) Learning organization.

OR

B) a) How TQM helps in effective quality control within an Organization? What are the benefits of TQM? **[8]**

b) Explain in detail benchmarking with suitable example. **[8]**

Total No. of Questions : 6]

SEAT No. :

P1293

[Total No. of Pages : 2

[4166] - 25

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

MANAGEMENT INFORMATION SYSTEMS

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

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

Instructions to candidates:

1) ***All questions are compulsory.***
2) ***Answers to the two sections should be writtten 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) Explain characteristics of an information system report. **[6]**

OR

a) State and explain various roles of a manager. **[12]**

b) Differentiate between a tactical plan and an operational plan. **[6]**

Q2) a) Explain how MIS can be employed in materials department of a manufacturing firm. **[8]**

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

OR

a) Discuss the role of MIS in managing a hospital. **[10]**

b) Explain in brief challenges involved in implementing IT strategy. **[6]**

Q3) a) Explain different types of ERP Architecture. **[8]**

b) Explain BPR. State the basic elements of BPR. **[8]**

OR

a) State the functions of a call center. Explain the types of training required for call center employees. **[8]**

b) Discuss challenges involved in BPO management. **[8]**

P.T.O

SECTION - II

Q4) a) Define CRM. Explain the activities performed in different phases of CRM. **[12]**

b) Define SCM. State the objectives of SCM. **[6]**

OR

a) Explain the role of SCM in an organization. List the benefits and challenges of SCM. **[9]**

b) Explain the scope of e-commerce. State the potential benefits of e-commerce. **[9]**

Q5) a) Explain 'What - if' analysis and 'Goal - seeking' analysis in decision making process. **[8]**

b) Explain the three layer Data warehouse architecture. **[8]**

OR

a) Differentiate between MIS and DSS. **[8]**

b) With the help of a diagram, explain the components of an expert system. State the applications of expert system. **[8]**

Q6) a) Explain the principles of technology ethics. **[4]**

b) Explain hacking. List the common hacking tactics. **[4]**

c) Explain the following in brief: **[8]**

i) Encryption.

ii) Firewalls.

OR

a) Explain various security measures to be adopted by internet users. **[8]**

b) Explain in brief various issues involved in global management of IT. **[8]**

Total No. of Questions : 12]

SEAT No. :

P1294

[Total No. of Pages : 3

[4166] - 32
S.Y. M.C.A. (Engineering Faculty)
DATABASE MANAGEMENT SYSTEMS
(215002) (2005 Pattern) (Sem. - III)

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

Instructions to candidates:

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

SECTION - I

Q1) a) Describe advantages and disadvantages of a database system. **[8]**

b) What are the three levels of abstraction? **[6]**

c) What do you mean by instances and schemas? **[3]**

OR

Q2) a) Draw and explain the overall structure of a DBMS. **[8]**

b) Define data model and data Languages with example. **[5]**

c) Write a note on System Catalog. **[4]**

Q3) a) Consider the database for A university office that maintains data about the following entities: **[8]**

i) Subjects, including number, title, Marks, syllabus, and prerequisites;

ii) Subject offerings, including Subject number, year, semester, instructor(s), timings, and classroom;

iii) Students, including student-id, name, and Course; and

iv) Instructors, including identification number, name, department, and designation. Further, the enrollment of students in various subjects of the course and marks awarded to students in each subject they have enrolled for must be appropriately modeled. Construct an E-R diagram to model this application. State all assumptions that you make about the mapping constraints.

b) Explain the concept of generalization and aggregation with suitable example. **[6]**

c) What are the basic notations available in E-R model? **[3]**

P.T.O

OR

Q4) a) Explain the different types of attributes with suitable example. **[6]**

b) What is meant by a weak and a strong entity set. **[6]**

c) What is the difference between a primary key and a candidate key? Explain what is mean by a foreign key? How do foreign key of relation relate to candidate keys? **[5]**

Q5) a) What are the advantages and disadvantages of SQL? **[8]**

b) Explain the CREATE TABLE statement in SQL. **[8]**

OR

Q6) a) How to perform database updates using SQL INSERT, UPDATE and DELETE statements with suitable examples. **[6]**

b) Explain how the GROUP BY clause works. What is the difference between the WHERE and HAVING clauses? **[6]**

c) What is the basic structure of SQL expression of retrieval? **[4]**

SECTION - II

Q7) a) Explain following statements: **[10]**

i) Declare cursor.

ii) Open.

iii) Fetch.

iv) Close.

v) Rowtype.

b) What is a view? What are problems encountered in updating a view? Explain with suitable example. **[7]**

OR

Q8) a) Person (Person-id, name, address) **[10]**

Car (Car-no, model, year)

Accident (report-number, date, location)

Owns (Person-id, car-no)

Participated (Person-id, car-no, report-number, damage-amount)

Consider the above database scheme. Write SQL queries for the following

i) Find number of people who owned cars that were involved in accidents in the year 2011.

ii) Find the number of accidents in which the cars belonging to person "Sunil Kishor" were involved.

iii) Add a new accident to the database; assume any values for required attributes.

iv) Delete the "Maruti 800" car belonging to "Sunil Kishor".

v) Update the damage amount for the car with license number "ABCD2000" in the accident with report number "AR1234" to Rs. 20000.

b) Write a short note on (ANY TWO): **[5]**

i) EMBEDDED SQL.

ii) DYANAMIC SQL.

iii) PL / SQL.

c) What is stored procedure? **[2]**

Q9) a) Explain the Purpose of Normalization with suitable examples. **[9]**

b) What are the desirable properties of decomposition? Explain. **[8]**

OR

Q10) a) What are the main characteristics of functional dependencies that are used when normalizing a relation? **[9]**

b) Define BCNF. How does it differ from 3NF. Why is it considered a stronger form of 3NF? **[8]**

Q11) a) What is a transaction? Explain ACID property in details. **[8]**

b) What is the difference between conflict serializability and view serializability? Discuss in brief. **[8]**

OR

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

i) Concurrency control protocols.

ii) Recovery techniques.

b) What is dead lock? How it can be prevented? How a system can recover from a deadlock, if it occurs? **[8]**

Total No. of Questions : 12]

SEAT No. :

P1295

[Total No. of Pages : 2

[4166] - 34

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

DATA COMMUNICATION AND COMPUTER NETWORKS

(2005 Pattern) (215004) (Sem. - III)

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

Instructions to 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 marks.***
4) ***Assume suitable data, if necessary.***
5) ***Neat diagrams must be drawn wherever necessary.***

SECTION - I

Q1) a) Differentiate between Synchronous and asynchronous transmission with suitable example. **[8]**

b) What is the difference between guided and unguided transmission media? Give an example of each with brief description. **[9]**

OR

Q2) a) Explain the working of Frequency Division Multiplexing and Time Division Multiplexing with example. **[9]**

b) Explain the working of any two types of satellites with neat diagram. **[8]**

Q3) a) Explain the working of OSI Model. **[8]**

b) Define Protocol. Explain the sliding window protocol in detail. **[9]**

OR

Q4) a) Explain the working of TCP/IP protocol. **[8]**

b) Differentiate between peer-to-peer and client-server network. **[9]**

Q5) a) Explain the working of pure ALOHA Protocol. How it is different from slotted ALOHA? **[8]**

b) Explain the working of Flooding algorithm. **[8]**

OR

Q6) a) Explain the Bluetooth architecture with diagram. **[8]**

b) What factors are considered in dynamic channel allocation? **[8]**

P.T.O

SECTION - II

Q7) a) Explain the concept and working of shortest path algorithm. **[8]**

b) Differentiate between Virtual Circuit and Datagram Subnets. **[9]**

OR

Q8) a) Explain the principle of leaky Bucket algorithm. **[8]**

b) What is load shedding with respect to congestion control? **[9]**

Q9) a) What is transmission policy and congestion control concepts with respect to TCP protocol? **[8]**

b) Explain the wireless TCP and UDP. **[9]**

OR

Q10) a) Explain the logic of TCP connection establishment, connection release, connection management. **[8]**

b) Explain multiplexing, cash recovery and flow control and buffering elements of transport layer. **[9]**

Q11) a) Explain the working of SMTP. **[8]**

b) Briefly discuss the important functions of the e-mail system. **[8]**

OR

Q12) a) Explain with neat diagram architecture of World Wide Web. **[8]**

b) What is URL? Explain in brief structure of URL? **[8]**

Total No. of Questions : 12]

SEAT No. :

P1296

[Total No. of Pages : 2

[4166] - 35
S.Y. M.C.A. (Under Engg. Faculty)
PRINCIPLES OF MULTIMEDIA
(2005 Pattern) (215005) (Sem. - III)

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 writtten in separate sheet.***
3) ***Use of logarithmic tables, slide rules and electronic pocket calculator is allowed.***
4) ***Neat diagrams must be drawn wherever necessary.***
5) ***Figures to the right indicates full marks.***
6) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) What is multimedia? Explain the building blocks of multimedia systems with suitable examples. **[6]**

b) Specify the hardware and software requirements for multimedia PC. **[6]**

c) Explain the characteristics of Multimedia. **[6]**

OR

Q2) a) Explain various storage medias for multimedia. With appropriate examples differentiate between magnetic and optical media based storage devices. **[6]**

b) What is authoring tool? Explain various types of multimedia authoring tools. **[6]**

c) Define hypertext and hypermedia. For what purpose are they used? **[6]**

Q3) a) What is bitmap? Explain the .BMP file format in details. **[8]**

b) What is redundancy? Explain different types of redundancies that exist in image. **[8]**

OR

Q4) a) How compression is achieved in images? What are the main steps in JPEG image compression? **[8]**

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

P.T.O

Q5) a) How digital audio is represented and stored? What are the factors which affects quality of digital recording? **[8]**

b) What is MIDI? Explain how it is different from digital audio? **[8]**

OR

Q6) a) What is audio compression? How is that achieved in ADPCM? Explain in brief. **[8]**

b) Explain WAV file format used for audio. **[8]**

SECTION - II

Q7) a) Draw a flow chart of LZW compression and convert any sentence in the compressed form. **[9]**

b) Explain PDF, PS as text file formats. **[9]**

OR

Q8) a) Explain the process of digitizing a video. How video recording systems helps in doing it? **[9]**

b) How HDTV is better than any other format of digital TV? Explain. **[9]**

Q9) a) What is virtual reality? Explain various norms of Virtual reality. **[8]**

b) Explain the following terms in context of Virtual Environment. **[8]**

i) Degree of Freedom.

ii) Latency.

iii) Augmented Reality.

iv) Telepresence.

OR

Q10) a) Explain the basic structure of VRML with suitable example. **[8]**

b) What is meant by Virtual Realism? Describe a real world application of VR technology, which demands a high virtual realism. **[8]**

Q11) a) What are the types of animation? Illustrate with suitable example. **[8]**

b) With suitable example explain following techniques of animation: **[8]**

- Onion skinning.
- Motion cycling.
- Flip book animation.

OR

Q12) a) What are the methods of controlling computer based animation? Explain the methods by giving suitable examples. **[8]**

b) What is morphing? How morphing helps animations on web? **[8]**

Total No. of Questions : 12]

SEAT No. :

P1300

[Total No. of Pages : 3

[4166] - 54

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

SOFTWARE TESTING

(2005 Pattern) (Elective - I) (315004) (Sem. - V) (Theory)

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

Instructions to candidates:

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

SECTION - I

Q1) a) Explain five levels for software measurement. **[8]**

b) List & explain the four principles of software investigation. **[8]**

OR

Q2) a) Explain the representation theory for measurement. **[8]**

b) Define : **[8]**

i) Measurement.

ii) Entity.

iii) Attribute.

Q3) a) Explain the different aspects of software measurement. **[8]**

b) Explain the control flow structure & morphology. **[8]**

OR

Q4) a) Explain data flow structure & data structure. **[8]**

b) Explain the object oriented metrics. **[8]**

Q5) a) Explain in detail test plan template. **[8]**

b) With neat diagram draw & explain defect life cycle? **[10]**

OR

Q6) a) Explain the different types of defect. **[8]**

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

c) Explain the test case execution process. **[4]**

P.T.O

SECTION - II

Q7) a) Explain how to do black box testing. Explain any two techniques in detail. **[9]**

b) Enlist the Challenges in white box testing. Discuss the negative effects of following constructs from a white box testing perspective. **[8]**

i) GOTO Statement.

ii) Global Variables.

OR

Q8) a) What is Cyclomatic complexity metric? **[9]**

Consider a program code

```
if (c1) {
   f1 ( ); }
else      {f2( ); }
if (c2) {
   f3 ( ); }
else      {f4( ); }
```

Find out the following and justify your answer.

i) No. of test cases for branch coverage.

ii) No. of test cases for path coverage.

iii) Cyclomatic Number.

b) Explain the concept of equivalence class partitioning. **[8]**

Q9) a) Write short note on any three: **[15]**

i) Acceptance testing.

ii) Scenario testing.

iii) Regression testing.

iv) Ad Hoc testing.

b) What is a role of "support analyst"? **[2]**

OR

Q10) a) Write short note on any two: **[10]**

i) Usability Testing.

ii) GUI testing.

iii) Accessibility testing.

b) What are the challenges in Software test automation? What are the various criteria for selecting automated test tools? **[7]**

Q11) a) How can we distribute the fixation of a problem, prepare and test shipment unit? **[8]**

b) Explain the role of customer repository, defect repository and customer support repository in problem reporting. **[8]**

OR

Q12) a) What are the challenges, best practices and pitfalls in problem resolution. **[8]**

b) How can one choose the method of fix distribution. **[8]**

Total No. of Questions : 12]

SEAT No.:

P1559

[Total No. of Pages : 4

[4166]-11
F.Y. M.C.A. (Engineering Faculty)
PROBLEM SOLVING AND PROGRAMMING IN "C"
(2005 Pattern) (115001) (Sem. - I)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Write a short note on the following : **[6]**

i) Analysis of Algorithm.
ii) Program Testing.

b) Generate the first *n* terms of the sequences. **[6]**

1 2 4 8 16 32 ...

c) Design an algorithm that converts binary numbers to octal. **[6]**

OR

Q2) a) Explain in brief about program verification for different types of program segments. **[6]**

b) For given *n*, design an algorithm to compute 1/n! **[6]**

c) Explain the algorithm development of find the square root of a number. **[6]**

Q3) a) Write various function prototypes to declare a function in C with suitable example. **[8]**

P.T.O.

b) Write a C program to read a positive integer value, and compute the following sequence : If the number is even, halve it; if it's odd, multiply by 3 and add 1. Repeat this process until the value is 1, printing out each value. [Hint : Expected Output: Let us Assume]. **[8]**

Initial value is 3
Next value is 10
Next value is 5
Next value is 16
Next value is 8
Next value is 4
Next value is 2
Next value is 1

OR

Q4) a) Differentiate between the following : **[8]**

i) Local and Global variable.
ii) Recursion and Iteration.

b) Write a C program to search an element from given array and also count how many times it appears. **[8]**

Q5) a) Write a short note on the following with suitable example : **[8]**

i) Pointer arithmetic.
ii) Array and pointers.

b) What will be output of following program? Justify your answer. **[4]**

```
#include<stdio.h>
#include<string.h>
void main () {
        char *ptr1 = NULL;
        char *ptr2 = 0;
        strcpy(ptrl,"c");
        strcpy(ptr2, "questions");
        printf("\n%s %s",ptr1,ptr2);
        getch(); }
```

c) What will be output of following program? Justify your answer. **[4]**

```
#include<stdio.h>
#include<string.h>
void main () {
int a = 5, b = 10,c;
int *p = &a, *q = &b;
c = p – q;
printf("%d", c);
getch(); }
```

OR

Q6) a) Write a short note on the following with suitable example : **[8]**

i) Dynamic memory allocation using Pointer.
ii) Void pointer.

b) What will be the output of the program? Explain it. **[4]**

```
#include<stdio.h>
int main()
{
    char *s;
    char *fun();
    s = fun();
    printf("%s\n", s);
    return 0;
}
char*fun()      {
    char buffer [30];
    strcpy(buffer, "RAM");
    return (buffer);    }
```

c) How would you dynamically allocate a 2-D array of integers? **[4]**

SECTION - II

Q7) a) Write a short note on the following with suitable example : **[8]**

i) 'Sizeof' operator.
ii) Self referencing structure.

b) Write a C program to create a database for Student using structure and perform the following operations on it : **[8]**

i) Create.
ii) Sort.
iii) Display.

Assume suitable data for student structure.

OR

Q8) a) Explain various storage classifiers in C. **[8]**

b) What will be output of following c code? Explain. **[8]**

i)
```
#include<dos.h>
#include<stdio.h>
int main(){
printf("%d",_argc);
return 0;     }
```

ii)
```
#define A 4-2
#define B 3-1
void main()     {
  int ratio = A/B;
  printf("%d", ratio);
  getch();    }
```

Q9) a) Write a C program to count number of lines, number of characters and number of spaces from given text in a file. **[9]**

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

i) Redirection.
ii) Piping.
iii) Low level I/O.

OR

Q10) a) Write a C program to read 'file 1.txt' file and encrypt it in another 'file 2.txt' file. **[9]**

b) Explain *any three* file handling functions in C with an example. **[9]**

Q11) a) Explain with example Simpson's 6/8th rule. **[8]**

b) Solve the linear system by Gauss elimination method. **[8]**

$x + y + z = 3$
$x + 2y + 2z = 5$
$3x + 4y + 4z = 11$

OR

Q12) a) Explain the Gauss Seidal iterative method. **[8]**

b) Evaluate to approximate the value of the definite integral. **[8]**

$$\int_{-1}^{1} \left(1 - x^2\right) dx$$

by applying the Trapezoidal Rule with n = 3.

Total No. of Questions : 6]

P1560

SEAT No.:

[Total No. of Pages : 5

[4166]-14
F.Y. M.C.A. (Engineering Faculty)
PROBABILITY AND STATISTICS
(2005 Pattern) (115004) (Sem. - I) (Theory)

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

Instructions to the candidates:

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

SECTION - I

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

i) Conditional Probability
ii) Sample Space.
iii) Independent events

b) 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.

c) A committee of 4 is to be formed from 3 Engineers, 4 Economists, 2 statisticians and 1 CA. **[5]**

i) What is the probability that each of the four categories of profession is included in the committee?
ii) What is the probability that the committee consists of the CA and at least one engineer?

OR

P.T.O.

a) State and prove Bay's Theorem. **[6]**

b) One bag contains 4 white and 2 black balls. Another bag 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.

c) How many different signals, each consisting of 9 flags hung in a line, can be made from a set of 4 white flags, 3 red flags and 2 blue flags if all flags of the same colour are identical? **[5]**

Q2) a) Compare Binomial and negative binomial distribution w.r.t.p.m.f, mean and variance. **[6]**

b) A purchaser of electrical components buys them in lots of size 10. It is his policy to inspect 3 components randomly from a lot and to accept the lot only if all 3 are non-defective. If 30% of the lots have 4 defective components and 70% have only 1, what proportion of lots does the purchaser reject? **[6]**

c) If the probability is 0.05 that a certain kind of measuring device will show excessive drift, what is the probability that sixth of these measuring devices tested will be the first to show excessive drift? **[5]**

OR

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

b) A pediatrician wishes to recruit 5 couples each of whom is expecting their first child, to participate in anew natural child birth regimen. If the probability that a randomly selected couple agrees to participate is 0.2 what is the prob. that at most 15 couples must be asked before 5 are found who agree to participate? **[6]**

c) Explain the following terms : **[5]**

i) Discrete Random variable.
ii) p.m.f of a discrete random variable.

Q3) a) Write the properties of normal distribution. **[6]**

b) Let X be an exponential random variable with parameter λ. Calculate :

i) E [x] and
ii) Var [x]. **[4]**

c) A candy company distributes boxes of chocolates with a mixture of creams, toffees and nuts coated in both light and dark chocolate. For a randomly selected box, let X and Y respectively be the proportions and suppose that the joint density function is **[6]**

$$f(x,y)=\begin{cases}\frac{2}{5}(2x+3y) & 0 \le x \le 1,\ 0 \le y \le 1\\ =0 & \text{else where}\end{cases}$$

i) Verify condition of definition.

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

$$\{(x, y) \mid 0 < x < \frac{1}{2},\ \frac{1}{4} < y < \frac{1}{2}\}$$

OR

a) The joint probability mass function of (X, Y) is given by f (x, y) = K (2x + 3y), x = 0, 1, 2, 3. Find all marginal and conditional probability distribution. The joint probability distribution of (X, Y) is given below. **[6]**

Y \ X	1	2	3
0	3K	6K	9K
1	5K	8K	11K
2	7K	10K	13K

b) Explain the following terms : **[4]**

i) Continuous random variable.

ii) Cumulative distribution function.

c) Write a note on Exponential distribution. State its lack of memory property. **[6]**

SECTION - II

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

i) Sampling with and without replacement.

ii) Sample mean and sample variance.

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

Find :

i) The mean of the population.

ii) The standard deviation of the population.

c) Explain in brief the point estimator and point estimate. **[5]**

OR

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

ii) Explain the terms sample statistics and location statistics. **[4]**

b) A random sample of size 100 is taken from a population whose mean is 60 and variance is 400. Using central limit theorem, with what probability can we assert that the mean of the sample will not differ from $\mu = 60$ by more than 4? **[6]**

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

Q5) a) Explain Type I and Type II error? Why Type II error is more significant than Type I error? **[6]**

b) A sample of 400 male is found to have mean weight of 52.47kg can it be regard as sample taken from large population with mean weight of 52kg. Given that standard deviation is equal to 1.2kg (Test at 1% l.o.s. with table value = 2.58). **[6]**

c) Define Chi-square and discuss its uses in testing of hypothesis. **[5]**

OR

a) Write a short note on student-t distribution. **[6]**

b) From the following table test the hypothesis that the flower color is independent of flatness of leave. Use 5% l.o.s. as 3.841. **[6]**

	Flat flowers	Curled leaves	Total
White flowers	99	36	135
Red flowers	20	05	25
Total	119	41	N = 160

c) Explain the following terms : **[5]**

i) Critical region.

ii) Null hypothesis.

Q6) a) Write a short note on SQC. **[6]**

b) Construct a control chart for a proportion of defectives obtained in repeated random sample of size 100 from a process which is considered to be under control when the proportion of defective $\overline{p} = 0.20$. Draw the control line and *U.C.L* and *L.C.L*. **[6]**

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

OR

a) What is control chart? Name the types of control charts and explain them in brief. **[8]**

b) What are the objectives of an acceptance sampling plan? What procedure should be adopted for selecting a plan? **[8]**

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Total No. of Questions : 12]

SEAT No.:

P1561

[Total No. of Pages : 3

[4166]-15
F.Y. M.C.A. (Engineering Faculty)
MANAGEMENT SCIENCE
(2005 Pattern) (Sem. - I) (115005)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Give in brief historical developments in the management philosophy. **[8]**

b) Define management. Explain different functions of management. **[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) Elasticity of supply.

d) Ecommerce.

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) Maslow's Theory of need hierarchy. **[8]**

b) McGregor's Theory X and theory Y. **[8]**

OR

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

b) With the help of block diagram explain the communication process. What are the barriers in the communication process? **[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 them 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]**

Total No. of Questions : 6]

P1562

SEAT No.:

[Total No. of Pages : 4

[4166]-33
S.Y. M.C.A. (Engineering Faculty)
FINANCIAL ACCOUNTING
(2005 Pattern) (215003) (Sem. - III)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) What do you understand by the term 'Accounting Concepts'? Explain any four accounting concepts. **[6]**

b) Journalize the following transactions in the books of RAMOJI for the month of January 2011. **[14]**

1. Ramoji started business with a capital of Rs.15000/-.
2. He Purchased goods from Raj on credit Rs.3500/-.
3. He Paid cash to Raj Rs.1750/-.
4. He sold goods to Brij Rs.3000/-.
5. He received cash from Brij Rs.5000/-.
6. He further purchased goods from Raj Rs.3000/-.
7. He deposited cash into bank amounting to Rs.2,000/-.

OR

P.T.O.

The following figures are extracted from the books of Mr.Manmohan, you are required to prepare a trading and profit and loss account for the year ended 31st March, 2011 and a Balance Sheet as on that date after giving effect to the necessary adjustments. **[20]**

Particulars	Amount(Rs)	Particulars	Amount (Rs)
Mr.Manmohan's Capital	2,28,800	Sales	4,81,000
Mr.Manmohan's Drawing	13,200	Wages	39,800
Plant & Machinery	99,000	Sundry Creditors	44,000
Freehold Property	79,000	Stock (01.04.2010)	34,800
Purchased	2,35,000	Postage & Telegram	1,540
Bills Payable	11,000	Factory lighting	2,500
Cash-at-Bank	36,560	Provision for D/D	1,100
Sundry Debtors	29,600	Interest on loan to Ram	1,000
Discounts (Dr)	650	Loose Tools	21,500
Office Furniture	9,000	Gas & Fuel	5,600
Office Expenses	2,750	Bad debts	4,000
Return Outwards	2,200	Cash-in-hand	95,000
Loan to Ram @ 10% p.a.balance on 1.4.10	40,000	Office Rent	3,900
Salaries	13,200	Freight	2,500

Adjustments :

1. Stock on 31st March, 2011 was valued at Rs.1,72,900/-.
2. Depreciate : -
   a) Plant & Machinery by 20%.
   b) Freehold Property by 10%
   c) Furniture by 15%
3. Loose tools were valued at Rs.19,000/- on 31.3.11.
4. Of the Sundry Debtors Rs.1,900/- are bad and should be written off.
5. Maintain a provision of 5% on sundry debtors for doubtful debts.

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

OR

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

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

Q3) Ramoji Ltd. Sells goods on a gross profit of 25% depreciation is considered in cost of production. The following are the annual figures given :

Sr.No.	Particulars	Rs.
1	Sales (Two Month's Credit)	18,00,000
2	Material Consumed (One Month's Credit)	4,50,000
3	Wages Paid (One month lag in payment)	3,60,000
4	Administrative expenses (One month lag in payment)	1,20,000
5	Sales Promotion expenses (Paid quarterly in advance)	60,000
6	Income tax payable in 4 equal installments of which one falls in next year	1,50,000
7	Cash manufacturing expenses (One month lag in payment.)	4,80,000

The Company keeps one month's stock each of raw materials and finished goods. It also keeps Rs.40,000/- in cash. You are required to estimate the working capital requirements of the company on cash basis assuming 10% safety margin. **[15]**

OR

Explain the concept and need of Working Capital Management. What are Factors affecting it? **[15]**

SECTION - II

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

OR

What is Capital Budgeting Process? Explain the limitations of it. **[15]**

Q5) a) ZARA Ltd. has issued 5,000 12% debentures of Rs.100 each on 1.04.11. The issue price was fixed at Rs.102/-, floating charges being 5%. The tax applicable to the company is 40%. The debentures are redeemable after 7 years at Rs.105/- each. What is the cost of debentures to the company? **[10]**

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

OR

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

Required :

a) Calculate the cost of debt after tax, if debenture are issued at
   1. Par.
   2. 10% Discount.
   3. 10% premium.

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

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

OR

Write a detailed note on Tally 9 package. Explain the terms (Any 5) :

a) Purchase Voucher.
b) Sales Voucher.
c) Debit Note Voucher.
d) Credit Note Voucher.
e) Payment Voucher.
f) Contra Voucher.

☒☒☒☒

Total No. of Questions : 12]

P1563

SEAT No.:

[Total No. of Pages : 4

[4166]-42
S.Y. M.C.A. (Engineering Faculty)
WEB TECHNOLOGY
(2005 Pattern) (215010) (Sem. - IV)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) In the OSI model : **[6]**

i) How does the physical layer and 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) "The web typically sends multiple objects in a web page within a multipart MIME message".
iii) All web servers use port 80 to listen for client requests.
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) Write a program in HTML to create a static page that displays sale of fruits in the various regions as shown in the table below : **[8]**

Region	East	West	North	South
Dry Fruits	80%	79%	78%	80%
Oranges	65%	82%	75%	58%
Apples	67%	78%	85%	68%
Banana	79%	79%	79%	90%

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) a) What do you understand by following terms, explain with examples : **[8]**

i) Object orientation and JavaScript.

ii) Object creation and modification.

b) Write a JavaScript code that displays the HTML form as shown in fig.1 below : **[8]**

(When user enters the any input data in the both text boxes is seen as valid input. Try to enter nothing and it displays error message).

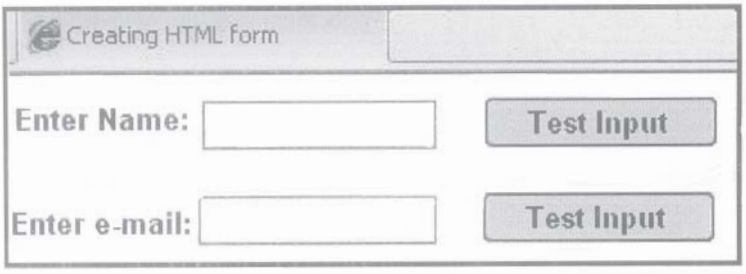

fig.1

OR

Q6) a) Write a function in JavaScript to find largest of the three input numbers. **[6]**

b) What do you understand by following terms, explain with examples : **[6]**

i) Constructors.

ii) Errors in Scripts.

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]

SEAT No.:

P1564

[Total No. of Pages : 3

[4166]-53
T.Y. M.C.A. (Engineering Faculty)
ADVANCED DATABASES
(2005 Pattern) (315003) (Sem. - V)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain basic scan algorithms to implement selection operation in query processing. **[6]**

b) Explain nested loop join and block nested loop join algorithm. **[6]**

c) What are the ways to execute pipelines? **[5]**

OR

Q2) a) Discuss the cost components for a cost function that is used to estimate query execution cost? Are the cases in which it is desirable for users to be aware of the costs of computing query processing strategies? Explain your answer. **[8]**

b) Explain materialization and pipelining with example. **[4]**

c) Explain the search algorithms that make use of index. **[5]**

Q3) a) Explain speedup and scaleup. **[3]**

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

c) State the advantages and disadvantages of distributed system. **[6]**

OR

Q4) a) Explain transaction server system with block diagram. **[8]**

b) Why distributed database architecture is required? Explain with example. **[3]**

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

P.T.O.

Q5) a) Explain object identity and reference types with example. **[8]**

b) Explain type inheritance and table inheritance with example in SQL. **[8]**

OR

Q6) a) Explain various ways of making an object persistent. **[8]**

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

i) Object identity and pointers.
ii) Structured types in SQL.

SECTION - II

Q7) a) Explain multidimensional data model in detail. **[9]**

b) What are the different data smoothing techniques? Explain in brief. **[8]**

OR

Q8) a) Compare Operational System vs Data Warehouse. **[8]**

b) What is Data Warehouse? Explain the key features of Data Warehouse. **[9]**

Q9) a) State and explain K-means algorithm for clustering. **[9]**

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

i) Outlier Analysis.
ii) Apriori Algorithm.

OR

Q10) a) What is decision tree? How are decision trees used for classification? Why are decision tree classifiers so popular? **[9]**

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

i) Text Mining.
ii) Machine Learning.

Q11) a) Explain the following terms in Information Retrieval. **[8]**

i) Web Crawler.
ii) Full text retrieval.
iii) Proximity.
iv) TF-IDF.

b) Define Information Retrieval System. Describe Vector Space Model. **[8]**

OR

Q12) a) Explain Page Ranking in detail. **[6]**

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

i) Synonyms and Homonyms.

ii) Signature Files.