M.C.A. (Semester – II) (Mgt. Faculty) Examination, 2010
(2002 Pattern)
BM-22 : ACCOUNTING AND MANAGERIAL CONTROL (Old)

Time : 3 Hours   Max. Marks : 80

N.B.: *1)* **All** *questions carry* **equal** *marks.*
       2) Answer **any five** *questions.*

1. Discuss at least three different types of ratios from each of the category – Turnover ratios, Liquidity ratios and Profitability ratios. Give formula, example and significance of each.

2. Write short notes on :
   a) Profit Center
   b) Transfer Price
   c) Accounting conventions
   d) Internal Audit.

3. Journalize any ten business transactions of your choice.

4. Explain in detail following terms :
   a) Capital Budgeting
   b) IIR
   c) Investment Center
   d) Trading on equity.

5. A company has three alternative choices of product mix. It produces two products A and B. It can produce either :
   a) 200 units of A and 400 units of B
   b) 300 units of A and 300 units of B
   c) 400 units of A and 200 units of B

P.T.O.

Other information is given as below :

	Product A (Rs.)	Product B (Rs.)
Selling Price	400	300
Variable Cost	320	240

Fixed Expenses Rs. 16,000.

You have to decide the best profitable mix of products to be produced.

6. Explain the meaning and significance of cost variances in respect of Material and Labour.

7. From the following particulars prepare flexible budget for the production of 40,000, 70,000 and 1,00,000 units of product D distinctly showing variable cost and fixed cost as well as total cost. Also indicate element wise cost per unit.

Budgeted output 1,00,000 units

Particulars – Cost per unit (Rs.)

Direct Material		85
Direct Labour	50	
Direct Variable Expenses	30	
Manufacturing Variable Cost	40	
Fixed Manufacturing Overheads		5
Administrative Overheads (Fixed)	5	
Selling Overheads (25% Fixed)		10
Distribution Overheads (20% Fixed)		15

8. Following information is obtained from the books of ABC Ltd. for a particular year for production and sale of 1000 units.

Particulars	Amount (Rs.)
Sales	3,00,000
Variable Cost	
Raw Material	1,20,000
Direct Labour	60,000
Fixed Cost	50,000

Calculate P/V Ratio, Break-Even Point and Margin of safety in the following situation :

a) Based on information given above

b) In case of selling price increased by 25%

c) In case of fixed cost decreased by 10%.

9. Differentiate between fixed and flexible budget, explain the role of each in planning.

10. What do you mean by elements of cost ? How the cost is classified into various elements of cost ? Draw and explain standard format of cost sheet for a manufacturing company.

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M.C.A. (Semester – II) (Management Faculty) Examination, 2010
IT 22.202 : DATABASE MANAGEMENT SYSTEM
(2008 Pattern) (New)

Time : 3 Hours   Max. Marks : 70

Instructions : *1) Q. No. **1** is **compulsory**.*
                *2) Solve **any five** questions from **remaining**.*
                *3) Draw **neat** diagrams **wherever** necessary.*

1. Normalize the following invoice upto 3 NF. Also draw the ER diagram.   **20**

ABC Traders,   INVOICE

Victoria Road,

Chennai 41   Invoice No. :   _____

                   Date :   _____

Customer Name   : _____

Customer Address : _____   Customer No. : _____

Quantity	Item ID	Description	Unit Price	Amount
			Total Due	

2. What is data independence ? Explain why the provision of data independence is a major objective for database system ? **10**

3. What is a lock ? Explain the types of locks. Explain two-phase locking protocol for concurrency control. **10**

4. What is a transaction ? Explain the desirable properties of a transaction. Also explain the state transition diagram of a transaction. **10**

5. Consider the following tables and solve the following SQL queries (**any five**) : **10**

   Employee (employee – name, street, city)

   Works (employee – name, company – name, salary)

   Company (company – name, city)

   1) Find the names and cities of residence of all employees who work for 'Wipro'.

   2) Find all employees in the database who live in the same city as the company for which they work.

   3) Find all employees who are working in 'Pune'.

   4) Display employee – name, company – name and salary of all employees.

   5) Find the average payroll of each company.

   6) Find those companies whose employees earn a higher salary, on average, than the average salary at 'Wipro'.

6. Explain E.F. Codd rules for RDBMS. **10**

7. Write short notes on (**any two**) : **10**

   1) Fundamental operations of relational algebra

   2) Tertiary storage

   3) DBTG set

   4) Shadow paging.

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M.C.A. (Semester – III) (Mgt. Faculty) Examination, 2010
IT-36 : OBJECT ORIENTED ANALYSIS AND DESIGN
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) Question 1 is compulsory.
2) Answer any five from the remaining.
3) Mention the assumptions made for solving case study.

1. a) A New American Venue Management Company has contracted you to develop their new online booking system for entertainment events such as sports and concerts. The process of the system involves :

   * Search for an event based on customer's enquiry for the name of event, type of event, venue and date.

   * View the event details and providing informations about the availability of tickets and price according to category.

   * Booking the tickets for an event can be done online or offline.

   * The administrator provides the venue list, rates and availability of venue to customers for event registration.

   * Provision should be given by the administrator to add a new venue to the system.

   Draw the use case diagram and class diagram for the above system.   **15**

   b) Explain association with objects using examples.   **5**

2. Explain the four major phases of RUP with suitable example.   **10**

3. Explain the needs and requirements of the following UML diagrams :   **10**

   a) Collaboration diagram

   b) Deployment diagram.

4. a) Draw a sequence diagram to register your details in any job searching website. **5**

   b) Discuss any two approaches that are used to identify classes in any system. **5**

5. Draw an Activity Diagram for EPABX inter communication system in an organisation. **10**

6. Draw a state transition diagram for a priority based elevator system in a building. **10**

7. Write short notes on **any two** : **10**

   a) Testing Business Process

   b) Benefits of Patterns

   c) Reusability.

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M.C.A. (Semester – IV) (Mgt. Faculty) Examination, 2010
BME 4-414 : COLLABORATIVE MANAGEMENT (New) (Elective)
(2008 Pattern)

Time : 3 Hours   Total Marks : 70

Note : 1) *Attempt* **any five** *questions.*
2) *Figures to the* **right** *indicate* **full** *marks.*
3) *Support your answers with relevant examples.*

1. How various derivative products may be combined to financially engineer products suitable for risk management ? Describe hybrid forms of instruments such as swaptions. **14**

2. "Strategic Financial Management is identification of the possible strategies to achieve organisational financial objectives". Elaborate with suitable examples. **14**

3. What are stakeholders of an organization ? What roles do different stakeholders play in strategic issue identification and resolution ? **14**

4. Define strategy and explain the concept of strategic management in brief. Whether the concept of strategy is relevant in the current business environment ? Why or why not ? **14**

5. Compare and contrast 'startups' with 'mergers and acquisitions' as alternative routes to strategy implementation. **14**

6. "Corporate Social Responsibility (CSR) distracts from the fundamental economic role of businesses". Elaborate with suitable examples. **14**

7. Write short notes on **any two** : **14**
   a) Mc Kinsey's 7S framework
   b) Social responsibility Vs. Profitability
   c) Strategic Alliances
   d) GE 9 Cell Model.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
IT – 11-101 : COMPUTER ORGANIZATION AND ARCHITECTURE
(2008 Pattern) (New)

Time : 3 Hours   Max. Marks : 70

Note : *1) Q. No. **1** and Q. No. **7** are **compulsory**.*
            *2) Attempt **any four** from the **remaining**.*
            *3) Draw neat diagram **wherever** necessary.*

1. a) How pipelining approach differ from non pipelining approach ? Explain
      instruction pipelining with examples.   **10**

   b) Solve the following :   **5**
      i) $(11AB)_{16} = (?)_{10}$
      ii) $(777)_8 = (?)_2$

2. Compare 32 bit architecture with 16 bit architecture.   **10**

3. a) Compare RISC Vs. CISC.   **5**

   b) Explain Demorgon's Theorems.   **5**

4. Explain instruction execution interrupt cycle in detail.   **10**

5. a) Write a brief note on memory system.   **5**

   b) Explain multiplexer and dimultiplexer.   **5**

6. Explain instruction word format. Explain any four types of addressing modes in
   detail with suitable examples.   **10**

7. Write short note (**any three**) :   **15**
   i) DMA   ii) Superscaler architecture
   iii) Register   iv) System BUS.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
IT – 12-102 : C – PROGRAMMING (New)
(2008 Pattern)

Time : 3 Hours   Total Marks : 70

Note : *1) Question No.* ***1*** *is* ***compulsory.***
          2) Solve ***any six*** *questions from Q.* ***2*** *to Q.* ***9.***
          3) ***Use*** *comment statements to explain logic of programme*
              wherever *necessary.*
          4) Figures to the ***right*** *indicate* ***full*** *marks.*

1. Find and explain the output of following programme :   **10**

    1) void main( ) {

```
        int i;
        for (i = 1; i < 4; i + +)
            switch (i)
            case 1 : printf ("%d", i);
                    break;
            {
            case 2 : printf("%d", i);
                    break;
            case 3 : printf("%d", i);
                    break;
            }
            switch (i)
            case 4 : Printf("%d", i);
        }
```

    2) void main( ) {

```
        static int b[6] = {10, 20, 30};
        int i, *k;
        k = &b[3] – 3;
        for (i = 0, i < = 5; i + +) {
            printf ("%d", *k);
            k + +;
        }
    }
```

3) ```
   void main( ) {
       char *p = "PROGRAM";
       printf ("%c\t", *( + + p));
       p – = 1;
       printf ("%c\t", *( p + +));
   }
   ```

4) ```
   # define SQ(x) x * x
   # define CB(x) SQ(x) * x
   main( ) {
       int a, b, c;
       a = 4;
       b = SQ(+ + a);
       c = CB(b + +);
   printf("a = %d  b = %d  c = %d", a, b, c);
   }
   ```
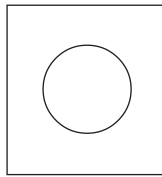
2. Write a C program to accept a string from the user and reverse each word in the given string.   **10**

   (For eg : Input is : My Name is Computer

   Output should be : yM emaN si retupmoC).

3. A) Accept 5×5 matrix from the user and display the sum of each column.   **5**

   B) Write a C program to convert Binary Number to Decimal Number.   **5**

4. A) Write a short note on : Applications of Bitwise operators.   **5**

   B) Write a C program to accept a number from the user and find out the product of Digits of that number using Recursion.   **5**

5. A) Write a C program to display the following pattern : **5**

       A
     b c
   D E F
 g h i j

   B) Write a C program to display the following output : **5**

6. Write a C program to accept the string and filename from the user by using command line argument, display the number of occurrences in a given file for a given string. **10**

7. Create a structure item having Item Id, Name and Price. Accept the details for 50 records and find out the item having highest price and lowest price. Display the report. **10**

8. Accept a filename from the user and write a C program to replace all vowels in a given file with '✳'. **10**

9. Accept a file name from the user and write a C program to count the no. of sentences, no. of alphabets and no. of non-alphabets. **10**

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M.C.A. (Sem. – I) (Management Faculty) Examination, 2010
BM-11-103 : PRINCIPLES AND PRACTICES OF MANAGEMENT AND ORGANISATIONAL BEHAVIOUR (New)
(2008 Pattern)

Time : 3 Hours　　　　　　　　　　　　　　　　　　　　　Max. Marks : 70

Note : 1) Q. *1* is **compulsory**.
　　　　2) Solve **any three** of the **remaining** questions.

1. A) "Leaders are born and not made" Comment by enumerating the essential qualities and functions of leader. **15**

　 B) Explain the contribution of Henri Fayol to the development of management thought. **(10)**

2. Explain transactional analysis in understanding the ego states. **(15)**

3. Define management. List its functions. What is meant by management process ? **(15)**

4. What is organizational structure ? Explain its features and effect on human behavior. **(15)**

5. Explain the importance of planning and controlling as a function of management. **(15)**

6. Write short note on (**any 3**) : **(15)**
　　1) Centralization of authority.
　　2) Common difficulties in decision-making.
　　3) Theory Z.
　　4) Roles of manager.
　　5) Recruiting.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
IT – 13 - 104 : OPERATING SYSTEM CONCEPTS
(2008 Pattern) (New)

Time : 3 Hours
Total Marks : 70

Note: *1) Q. **1** and Q. **7** are **compulsory** questions.*
*2) Attempt **any four** from Q. **2** to Q. **6**.*

1. Explain in detail preemptive and non-preemptive process scheduling. **10**

2. What is Virtual Memory ? How it can be implemented ? **10**

3. What is dead lock ? Explain how deadlock can be prevented. **10**

4. Explain different file allocation methods. **10**

5. Define NOS. Explain NOS Architecture in detail. **10**

6. Explain disk scheduling algorithms. **10**

7. Write short notes on **(any four) :** **20**

   i) Virtual Machine

   ii) RAID

   iii) MBR

   iv) Monitors

   v) Scheduling criteria.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
IT –11 : INFORMATION TECHNOLOGY AND PROGRAMMING
METHODOLOGIES
(2005 Pattern) (Old)

Time: 3 Hours   Max. Marks : 70

*Note :   i) Q. **1** and Q. **7** are **compulsory**.*
*ii) From Q. **2** to Q. **6** attempt **any four**.*

1. a) What are the basic building blocks of a language ? Explain structured and non
   structured data types.   **10**

   b) Solve the following :   **5**

      i) $(BABA)_{16} – (762)_8 = ?_8$

      ii) $(17)_{10} * (DAD)_{16} = ?_2$

2. a) Explain block diagram of computer in detail.   **6**

   b) Short note on Cache memory.   **4**

3. a) Pre-test and post-test loop statements.   **5**

   b) Explain the types of software with examples.   **5**

4. Explain different types of memories used in computers.   **10**

5. Explain various numbering and coding systems used in computers.   **10**

6. a) Explain the concept of event-driven programming.   **5**

   b) What is binding ? Explain its types.   **5**

7. Write short notes on (**any three**) :   **15**

   a) Virus
   b) De Morgan's Theorem and Duality Theorem
   c) Modem
   d) NOS.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
IT – 12 : 'C' PROGRAMMING
(2005 Pattern) (Old)

Time : 3 Hours   Max. Marks : 70

***Instructions** :1) Q. No. **1** is **compulsory**.*

*2) Solve **any six** from Q. No. **2** to Q. No. **9**.*

*3) **Use** comments **wherever** necessary.*

*4) **Each** question carries **10** marks.*

1. Find and explain output of the following program :

A) void main ( )
    { int j, x = –1 ;
    For (j = 0; j < = 5; j++)
        { switch (j – 1)
            {   case 0 :   case – 1 : x + = 1; break ;
                case 1 : case 2 : case 3 : x + = 2; break ;
                default : x + = 3 ;
            }
          printf ("%d", x) ;
        }
    }

B) main ( )
    { int x = 4, z ;
    z = ++x * x++ / x++ ;
    printf ("%d \t %d", x, z) ;
    }

C)   main ( )

```
{   int a = 5, b = 10, c = 15 ;
    printf ("%d %d %d", printf (a ? b:c), printf (b? c : a), printf (c? b:a));
}
```

D)   main ( )

```
{   int a = 16, b = 4, c = 1 ;
        a =  b >>c ; b =  a <<c; c =  c << a >> b;
    printf ("%d %d %d", a, b, c) ;
}
```

2. Write a programme to accept a string and display frequency of each character in string.

3. Write a program to print the following pattern.

```
    A)              9          B)  *
                 7  9              $    *
              5  7  9              *    $    *
           3  5  7  9              $    *    $    *
        1  3  5  7  9              *    $    *    $    *
```

4. A) Write a program to accept the number and print its prime factors.

   B) Write a program to demonstrate different colours filled in circle.

5. Write a program to merge alternate lines from FILE 1 and FILE 2 into FILE 3.

6. Write a program to accept 'string' and 'n' through command prompt. Display 'string', 'n' times.

7. Write a program to count and display no. of characters, no. of lines, no. of words, no. of spaces in a file.

8. A record contains name, age, average runs. Create an array of structure to hold 10 records. Write a program to read these records and print the records of players that has lowest and largest avg. runs.

9. Write short note on :

   A) Memory Allocation functions

   B) Union.

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M.C.A. (Semester – I) (Management Faculty) Examination, 2010
M.T. 11 : DISCRETE MATHEMATICS
(2005 Pattern) (Old)

Time : 3 Hours   Max. Marks : 70

Instructions : *i) Question No. **1** is **compulsory.***
  *ii) Solve **any two** questions from the remaining.*
  *iii) Figures to the **right** indicate **full** marks.*

1. a) Obtain p.d.n.f. of $(\sim p \rightarrow r) \wedge (p \leftrightarrow q)$.   **5**

   b) Write the converse and contra positive of the following sentences :

      i) If it is raining the grass is wet

      ii) Rain is necessary for it to be cloudy.   **5**

   c) Let I be a set of all integers. Consider a relation R = {(a.b)/(a – b) is divisible by 5}.
       Find equivalence classes.   **5**

   d) Let A = {1, 2, 3, 4} and R = {(1,1) (1,4) (2, 1) (2, 2) (3, 3) (4, 4)}. Using
       Warshal's algorithm find R^{∞} .   **5**

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

   f) Determine whether the binary operation * is commutative and associative on
       the set R where $x * y = \frac{xy}{3}$.   **5**

2. a) Verify the following implication is a tautology by using truth table.
       $[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow (p \rightarrow r)$.   **5**

   b) Show that the following premises are inconsistent. If Jack misses many classes
       through illness, then he fails in the examination. If Jack fails in the examination
       then he is uneducated. If Jack reads a lots of books, then he is educated. Jack
       misses many classes through illness and reads a lot of books.   **5**

c) Let P(x), Q(x) and R(x) be the statements x is a professor "x is ignorant" and "x is vain" respectively. Express the following statements using quantifiers, logical connectives and P(x) , Q (x) and R(x).

   i) No professors are ignorant

   ii) All ignorant people are vain.   **5**

d) Verify whether the following statement is logically equivalence or not.

$$[(\sim p \vee \sim q) \Rightarrow (p \wedge q \wedge r)] \Leftrightarrow (p \wedge q).$$ **5**

3. a) Consider the following functions defined by
   $f : A \rightarrow B$ such that $f(x) = x + 1$
   $g : B \rightarrow C$ such that $g(x) = 2x$
   where A, B and C are set of integers, find i) gof ii) fog iii) fo(gof).   **5**

b) Verify whether the following relation $\langle R, \leq \rangle$ is lattice
   R = {(1, 1) (1, 2) (2, 2)
   (3, 3) (2, 4) (1, 3) (3, 4) (4, 4) (1, 4) }.   **5**

c) Draw that Hasse diagram representing the partial ordering {(a, b)/ a divides b} on { 1, 2, 3, 4, 6, 8, 12}. Is it totally ordered ?   **5**

d) Let m be a positive integer greater than 1. Show that the relation
   R = {(a, b)/a ≡ b(mod m)} is an equivalence relation on the set of integers.   **5**

4. a) Show that ϕ in a group (G, *), if for any a, b∈ G $(a * b)^2 = a^2 * b^2$ then (G, *) must be abelian.   **7**

b) Consider the group G = {1, 2, 3, 4, 5, 6} under multiplication modulo 7.

   i) Find the multiplication table of G

   ii) Is G cyclic.   **7**

c) Given the parity check matrix.

$$H = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 & 1 \end{bmatrix}$$

Find the minimum distance of code generated by H. How many errors it can detect ?   **6**

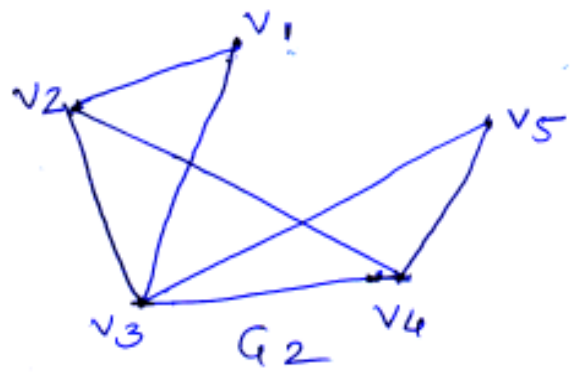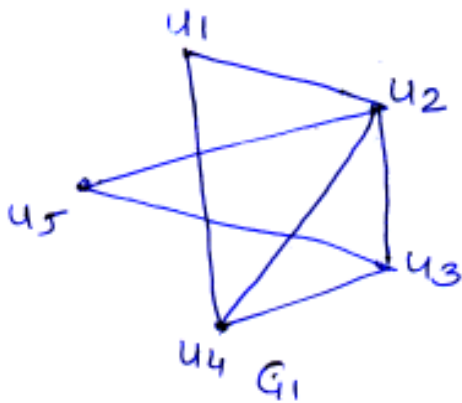5. a) Define the following terms with illustration.
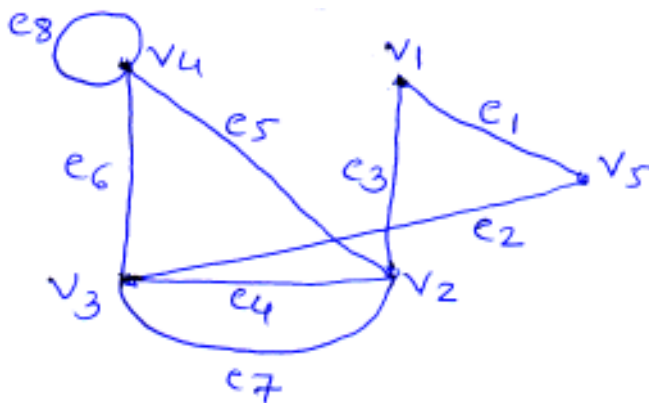
   i) Euler graph

   ii) Vertex connectivity. **4**

   b) Verify whether the following graphs G_1 and G_2 are isomorphic. **6**

   c) Find the adjacency matrix and incidence matrix of the multigraph. **4**

   d) i) Draw a tree with 6 vertices that has exactly 2 vertices of degree 1.

   ii) Define planar graph with illustration. **6**

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M.C.A. (Semester – II) (Management Faculty) Examination, 2010
IT – 23-203 : SOFTWARE ENGINEERING
(2008 Pattern) (New)

Time : 3 Hours   Max. Marks : 70

*N.B.: 1) Q. No. 1 and Q. No. 7 are **compulsory**.*
*2) Attempt **any three** from Q. no. 2 to Q. no. 6.*

1. a) Draw the context level diagram and first level data flow diagram for a bill tracking system which includes the following :   **15**

   i) The system should keep track of bills that are not paid and how much material is purchased from each supplier along with the details of the supplier.

   ii) Validation of supplier and material sent by the supplier.

   iii) Bill code generation.

   iv) Payment issue process.

   v) Report generation.

   b) Explain the format of limited entry decision table with a suitable example.   **5**

2. Explain prototyping and spiral models.   **10**

3. Explain the format and features of a good SRS.   **10**

4. Explain the types of maintenance and role of documentation in maintenance.   **10**

5. Explain the role of CASE tools throughout the software development life cycle.   **10**

6. Explain the objectives of input design and types of output in detail.   **10**

7. Write short notes on **any four** :   **(4×5=20)**
   a) JAD
   b) Function decomposition diagram
   c) Agile process
   d) Reverse Engineering
   e) Structured English.

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M.C.A. (Semester – II) (Mgmt. Faculty) Examination, 2010
B.M. 21-204 : SOFT SKILLS (2008 Pattern) (New)

Time: 3 Hours   Max. Marks : 70

Instructions : *1) Q. No. **1** and Q. No. **8** are **compulsory**.*
*2) Solve **any four** from Q.No. **2** to Q. No. **7**.*
*3) Figures to the **right** indicate **full** marks.*

1. Define communication. Explain the process of communication with a neat block-diagram. **15**

2. Distinguish between formal and non-formal communication. **10**

3. What are the steps a report writer should identify to write an effective report ? **10**

4. Define Kinesics. How does Kinesics help in comprehension of a message ? **10**

5. What are the different elements of presentation ? What considerations deserve attention while making a power point presentation ? **10**

6. Write a Job application letter to "PlaNet Technology, Karve Rd, Kothrud, Pune for the post of JAWA instructor. You are Mr. Amol Patil, B.C.A. with 3 years experience. **10**

7. What factors are considered in the choice of media of communication ? Illustrate your answer with example. **10**

8. Write short notes **any three** : **15**

   a) Telephone manners

   b) Agenda

   c) Reading skills

   d) Tele-conferencing

   e) Time management.

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M.C.A. (Semester – II) (Management Faculty) Examination, 2010
IT-21 : DATA STRUCTURES AND FILES USING 'C'
(2005 Pattern) (Old)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) *Q. No.* **1** *is* **compulsory***.*
                        2) *Answer* **any five** *from the remaining.*
                        3) *Make assumptions if* **required***.*

1. A) Convert the following infix expression to prefix form. Show the contents of stack at each step in tabular form

   A*(B + C) – D/E ∧ F.   **8**

   B) Write a note on Abstract Data Type.   **4**

   C) Consider the following graph :
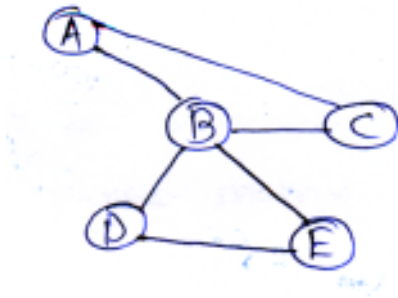
   a) Generate DFS and BFS output. Use 'A' as starting vertex.   **4**
   b) Write Adjacency matrix.   **2**
   c) Write Adjacency list.   **2**

2. Write the functions for the following :   **10**

   A) To reverse linear singally linked list.

   B) To insert a node at any position in circular singally linked list.

3. A) Consider the declaration float A[100] [200]. Compute the row major and column major address of the member A[57] [150]. Consider base address is 1000. **5**

   B) Write a function to reverse queue using stack implemented as an array. **5**

4. Construct the binary search tree for the following :

   30, 56, 95, 15, 7, 45, 60, 5, 3, 73.

   Write preorder and post order traversals of above tree. **(4+3+3)**

5. A) Write a note on Threaded binary tree. **5**

   B) Write function for LL Rotation of AVL tree. **5**

6. A) Sort the following numbers using heap sort

   25, 38, 13, 45, 9, 35, 15. **5**

   B) Write a note on file organisation. **5**

7. Write a program to create and transpose the sparse matrix from an array. **10**

8. Write note on : **10**

   A) Hashing Techniques

   B) Expression Tree.

   ————————

M.C.A. (Mgt. Faculty) (Semester – II) Examination, 2010
IT – 23 : INFORMATION SYSTEMS : ANALYSIS AND DESIGN METHODOLOGIES
(2005 Pattern) (Old)

Time : 3 Hours   Total Marks : 70

*Note : i) Q. No. **1** and **6** is **compulsory**.*
*ii) Solve **any three** from remaining.*
*iii) Figures to the **right** indicate **marks**.*

1. Oxford Institute of Commerce is an undergraduate Institute. The Institute receives sufficiently large number of applications for admission to F.Y., S.Y. and T.Y. classes . The Institute has decided to computerize its admission programme. The standard admission procedure requires adhering to the norms set by concerned government agencies, University and the Institute administration. The procedure also involves disbursing admission forms at a cost, collecting duly completed forms, preparing merit lists and admitting the students as per norms, notifying student, collecting fees, preparing and submitting reports to the concerned authorities.

   You are required to study the system and

      i) Draw context level and first level DFD

      ii) Prepare skeleton data dictionary defining the flows and stores of first level DFD

      iii) Identify the major reports.   **20**

2. For college placement cell design GUI based data entry screen for recording resume of MCA students. The GUI should use modern features related to Menus, Scroll controls, Windows, Icons, Panels. Write probable error messages that can be shown on screen.   **10**

3. Explain various steps for developing a system proposal with suitable example. **10**

4. Explain about various decision analysis tools. **10**

5. Explain in detail about security of Information System, and explain various types of controls. **10**

6. Write short note (**any four**) : **20**
   i) Joint Application Development (JAD)
   ii) Object oriented methodology
   iii) Software acquisition
   iv) Functional Decomposition Diagram
   v) Role of System Analyst
   vi) Requirement Determination.

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M.C.A. (Semester – II) (Mgt. Faculty) Examination, 2010
IT – 24 : DATABASE MANAGEMENT SYSTEM
(2005 Pattern) (Old)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) *Q.* ***1*** *is* ***compulsory****.*
            2) *Solve* ***any 5*** *from remaining questions.*
            3) *State assumptions and draw well labeled diagram*
               wherever *necessary.*

1. Draw an ERD and normalize the following case upto 3-NF.

   Consider central school database for generation of progress report for an individual student. Each student appear for 4-unit test and 2 term end exam for 5 subjects. For annual exam 75% attendance is compulsory. For every exam result is given based on percentage grade is calculated. Admission-no. for each student is unique.   **20**

2. Explain NDM and HDM with all types of relationships.   **10**

3. Explain serializability. Explain different types of serializability with examples on schedules.   **10**

4. Explain 3-layer architecture of DBMS with diagram.   **10**

5. Explain data-warehouse and its architecture . Explain data mining tools.   **10**

6. Explain **any two** of the following :   **10**

   a) Codd's Rule

   b) Database security and privacy

   c) Object oriented database.

7. Write short notes on following (**any 2**) :   **10**

   1) Set operators of relational algebra.

   2) Knowledge database

   3) Check points

   4) Anomalies.

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M.C.A. (Semester – III) (Management Faculty) Examination, 2010
MT – 31 : STATISTICAL COMPUTING
(2002 Pattern)

Time : 3 Hours   Max. Marks : 80

Instructions *: i) Solve **any four** questions.*
*ii) Figures to **right** indicate **full** marks.*
*iii) Use of calculator and statistical table is **allowed.***
*iv) Graph paper will be supplied on **request**.*

1. a) Compute Arithmatic mean, median, mode for the following data :   **9**

C-I	80-90	90-100	100-110	110-120	120-130	130-140
Frequency	8	16	20	26	50	12

   b) A firm produces three products. These products are processed on three
   different machines. The time required to manufacture one unit of each of the
   three products and the daily capacity of three machines are given in the table
   below.   **5**

Machine	Time per unit (minutes)			Machine capacity (min/day)
	Product 1	Product 2	Product 3	
M_1	2	3	2	440
M_2	4	-	3	470
M_3	2	5	-	430

   It is required to determine the daily number of units to be manufactured for
   each of the three products. The profit per unit for product 1, 2 and 3 is Rs. 4,
   Rs. 3 and Rs. 6 respectively. It is assumed that all the amounts produced are
   consumed in the market. Formulate the mathematical (L.P.) model that will
   maximize the daily profit.

c) Formulate the difference equation, given **6**

$$Y_{x+2} - 6\,Y_{x+1} + 5Y_x = 5^x$$

2. a) Following data gives the performance of the players in 10 matches. **8**

A	26	26	30	32	25	27	28	32	35	29
B	65	60	62	70	72	75	60	64	68	64

   i) Which player is more consistent ?
   ii) Which player has more average score ?

b) Solve the following T.P. by NWCM and VAM method. **7**

Destinations

		1	2	3	4	Supply
	I	21	16	15	13	11
Source	II	17	14	18	23	13
	III	27	41	18	32	19
Demand		8	10	14	15	

c) Find roots of the equation $x^2 - 33 = 0$ by Newton-Raphson method. **5**

3. a) Calculate $\sqrt[3]{21}$ correct upto 3 decimal places by iterative method. **7**

b) Find Karl Pearson corelation coefficient between X and Y using following data. **8**

X	10	12	16	15	20	18
Y	28	18	25	30	32	27

c) Obtain the optimum assignment for the following A.P. **5**

Machines

Jobs	1	2	3	4	5
I	15	12	20	22	35
II	35	20	22	23	30
III	40	35	33	30	35
IV	25	38	40	35	35
V	29	52	31	24	29

4. a) A randomly choosen IQ test taker. Obtain a score that is approximately a normal random variable with mean 125 and std.deviation 15. What is probability that the test score of such a person is

   i) Above 130
   ii) Between 95 and 115
   iii) Below 85. **8**

   b) Obtain optimal solution of following T.P. using modi method. **7**

		Destinations				Supply
		D_1	D_2	D_3	D_4	
	O_1	1	2	3	4	6
Origins	O_2	4	3	3	0	8
	O_3	0	2	2	1	10
Demand		4	6	8	6	

   c) Solve the difference equation **5**
   $$Y_{x+2} - 3 Y_{x+1} + 2Y = 3^x.$$

5. a) Solve the following LPP using graphical method. **8**

   $Min\ Z = 4x_1 + 2x_2$

   S.t. $\quad x_1 + 3x_2 \geq 90$

   $\qquad 5x_1 + x_2 \geq 100$

   $\qquad 3x_1 + 2x_2 \geq 120$

   & $\quad x_1, x_2 \geq 0$

   b) In a certain factory, it was found that the variance of no. of absentees is
   3 workers per shift. Find the probability that on a given shift. **7**
   i) Exactly 2 workers will be absent
   ii) Atleast 2 workers will be absent
   iii) Not more than 1 worker will be absent.

   c) Give geometrical interpretation of Newton-Raphson method. **5**

6. a) Find the real root of the equation
   $x^3 - 3x^2 - 3 = 0$ using Regular Falsi method correct upto 3 decimal places. **8**

   b) Write the steps involved in Hungerian method. **5**

   c) In a certain competition ten participants are ranked by 3 judges A, B, C as
   below. **7**

Participants	Judge		
	A	B	C
1	6	6	8
2	2	1	2
3	1	2	3
4	5	4	4
5	9	9	10
6	8	7	9
7	10	10	5
8	4	5	6
9	7	3	7
10	3	8	1

   Find the Rank Correlation Coefficient.

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M.C.A. (Semester – III) (Management Faculty) Examination, 2010
IT 31 - 301 : WEB TECHNOLOGIES (2008 Pattern) (New)

Time : 3 Hours   Max. Marks : 70

Note : 1) Q. **1** *and* Q. **8** *are* **compulsory**.
2) *Solve* **any 5** *from* Q. **2** *to* Q. **7**.

1. What is DTD ? Explain components of DTD with example.   **10**

2. What is Global .asa ? Explain with example.   **10**

3. Design a form to accept workshop registration details from participants and validate any five fields using javascript (Assume suitable structure).   **10**

4. What is a style sheet ? Explain following properties with example :
   a) Color   b) Margin   c) Text.   **10**

5. Write ASP application to accept visiting faculty details and insert it into faculty database (assume suitable table structure).   **10**

6. Explain Error handling in VB Script with suitable example.   **10**

7. Explain Array and Math Object in Java Script with suitable example.   **10**

8. Write short notes (**any two**) :   **10**
   a) Web publishing
   b) Inline CSS
   c) Data Object in VBScript.

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M.C.A. (Management Faculty) (Sem. – III) Examination, 2010
(2008 Pattern)
IT 32 – 302 : DATA COMMUNICATION AND COMPUTER NETWORKS (New)

Time : 3 Hours   Max. Marks : 70

Instructions**: 1) Q.1 and Q.7 are **compulsory.
*2) Solve any **three** from the **remaining.***
*3) Draw **neat** diagrams **wherever** necessary.*

1. A) What is DNS ? Explain Name resolution in DNS.   **10**

   B) Explain in detail e-mail protocols (SMTP, $IMAP_4$ and POP_3.   **10**

2. What is security ? Explain different types of security threats.   **10**

3. Explain IP routing in detail.   **10**

4. Explain TCP/IP Protocol suite in detail.   **10**

5. What is LAN ? Explain LAN accessing techniques. (CSMA/CD, CSMA/CA)   **10**

6. Compare the following :   **10**

   1) Connectionless and Connection - Oriented Networks.

   2) P to P and Client - Server Networks.

7. Write short notes **(any four) :**   **(4×5=20)**

   i) SNMP Organization

   ii) Telnet

   iii) IPV_6

   iv) VSAT

   v) Gigabit Ethernet

   vi) ATM layers.

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M.C.A. (Semester – III) (Management) Faculty Examination, 2010
IT-33-303 : OBJECT ORIENTED PROGRAMMING USING C++
(2008 Pattern) (New)

Time : 3 Hours   Max. Marks : 70

Note : *1) Question **1** and **8** are **compulsory**.*
*2) Solve **any four** from question No. **2** to **7**.*
*3) Figures to the **right** indicate **full** marks.*

1. Answer the following :   **10**

   I) What will be the output of following program ?

     a)
```
# include < iostream.h >
# define SQUARE(x) x*x
inline float square(float y)
{
     return y*y;
}
int main( )
{
     float a = 0.5, b = 0.5, c, d;
     c = SQUARE(++a);
     d = square(++b);
     cout << c << endl << d;
     return 0;
}
```

     b)
```
# include< iostream.h >
class mca
{
     public: int a;
     private: int b;
     protected: int c;
};
void main( )
{
     mca obj 1;
     cout <<obj1.a<<obj1.b<<obj1.c;
}
```

c) # include< iostream.h >

  # include< conio.h >

  void main ( )

  {

     char s[ ] = "CLASS";

     int i;

     for (i =0; s[i]; i++)

        cout <<"\n"<< s[i]<<*(s + i)<<*(i + s)<< i[s];

  }

d) # include< iostream.h >

  class test

  {

    int a, b;

    public :

       void getdata(int x, int y)

       {

         a = x; b = y;

       }

       void mul( ) const

       {

         a =a*b;

         cout<< a;

       }

  };

  void main( )

  {

    test t;

    t.getdata(2, 4);

    t.mul( );

  }

e) #include< conio.h >

    #include<iostream.h >

    #include<math.h >

    void main( )

    {

        cout.setf(ios::left, ios::adjustfield);

        cout.width(9);

        cout.fill('#');

        cout.precision(5);

        cout <<-5.25;

        cout << "\n";

        cout.setf(ios::right, ios::adjustfield);

        cout.width(9);

        cout.fill('#');

        cout.precision(5);

        cout <<-5.25;

    }

II) Write a program to demonstrate default arguments and constant arguments
    for a function.   **5**

2. a) What is friend class ? Explain with example.   **5**

   b) Write a program to demonstrate copy constructor.   **5**

3. What is operator overloading ? Write a program to demonstrate how insertion
   and extraction operators are overloaded.   **10**

4. a) What is pure virtual function ? Explain with suitable example.   **5**

   b) What is Namespace ? Explain unnamed namespace using a suitable example.   **5**

5. a) Write a program that demonstrates how certain exceptions types are not allowed to be thrown. **5**

   b) What are user defined manipulators ? Illustrate with sample program. **5**

6. Explain different types of inheritance with suitable examples of each type. **10**

7. A company has following details of their employees in the file 'emp.dat". **10**

   1) EmpID

   2) Emp Name

   3) Emp Address

   4) Emp Dept (Admin/Sales/Production/IT)

   5) Emp phone

   6) Emp Age

   Write a program to read the above file. Create new files such as Adm.dat, Sal.dat, Pro.dat, IT.dat respectively, to store the employee details according to their department.

8. Write short notes on the following : **15**

   a) Templates

   b) RTTI

   c) Standard Template Library.

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M.C.A. (Semester – III) (Management Faculty) Examination, 2010
IT - 34 – 304 : ADVANCED DATABASE MANAGEMENT SYSTEMS
(New) (2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) *Question No.* **8** *is* **compulsory.**
        2) *Solve* **any five** *questions from* **1** *to* **7.**
        3) *Figures at the* **right** *indicate marks.*

1. a) What do you mean by Inter-Query and Intra-query parallelism ? Explain with example. **6**

   b) Explain Object Oriented Database architecture. **4**

2. a) Explain various concurrency control approaches in DDBMS. **6**

   b) Explain deadlock handling in DDBMS. **4**

3. a) What is data warehouse ? Explain data warehouse architecture in details. **6**

   b) Write note on Apriori algorithm. **4**

4. a) Explain DTD with example. **6**

   b) What are various XML parsers ? **4**

5. a) What is OLAP ? What are 3 types of OLAP servers ? **6**

   b) K-means algorithm in data mining. **4**

6. a) Explain various data partitioning techniques in parallel databases. **6**

   b) Explain distributed catalog manager. **4**

7. a) Compare with example homogeneous and heterogeneous databases. **6**

   b) Explain data preprocessing and major tasks associated with it. **4**

8. Write short note on **(any four)** : **(5×4=20)**

   a) Web search engines

   b) KBS

   c) Machine learning

   d) Mobile databases

   e) Data cubes.

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M.C.A. (Semester – III) (Mgt. Faculty) Examination, 2010
BM 31-305 : MANAGEMENT SUPPORT SYSTEMS & IS SECURITY
(New) (2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) *Q. No.* ***1*** *and* ***7*** *are* ***compulsory.***
2) *Attempt* ***any four*** *from Q.* ***2*** *to Q.* ***6.***
3) *Figures to the* ***right*** *indicates* ***full*** *marks.*

1. Explain in detail information requirements for finance function using systems approach. **10**

2. Explain the MIS structure based on management activity. **10**

3. Discuss Newell-Simon model of human as information processor in detail. **10**

4. Define EIS. Compare characteristics of EIS and DSS. **10**

5. What is Expert System ? Explain its components and characteristics. **10**

6. Explain the need for Auditing of Information Systems. **10**

7. Write short notes on (**any four**) : **(4×5=20)**
   a) Law of requisite variety
   b) Value of Information
   c) Static and Dynamic models
   d) Feedback control
   e) Simulation Technique
   f) Security of IS.

_____

M.C.A. (Sem. – III) (Management Faculty)Examination, 2010
IT – 31 : WEB SUPPORTING TECHNOLOGIES
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) *Q.* **1** *is* **compulsory**.
2) *Solve* **any 3** *questions from remaining.*

1. Explain following tags with basic attributes :
   a) < Form >   b) < Frame >   c) < select >
   d) < textarea >   e) < Div >   **10**

2. a) Design a calculator using Java script, which will perform following operations :
      i) Square of number
      ii) Multiplication of 2 numbers
      iii) Cosin of a number.   **10**

   b) What do you mean by hyperlink ? Explain with example in how many ways anchor tag is used .   **10**

3. a) Write Vb script code for accepting age and name of user from user. Before submitting the form validate both name and age field with 3 different validations for each and provide appropriate message.   **10**

   b) Explain Document Object Model in java script.   **10**

4. a) Write xml DTD for journal details like ISSN number, title, publisher, volume and year.   **10**

   b) What is style sheet ? Explain various types of style sheet.   **10**

5. Write short note on (**any 4**) :   **20**
   a) Image Mapping
   b) Web Publishing
   c) XSLT
   d) Error handling in VB script
   e) String object in java script.

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M.C.A. (Management Faculty) (Semester – III) Examination, 2010
IT-32 : COMPUTER NETWORKS
(2005 Pattern)

Time : 3 Hours Max. Marks : 70

Instructions : *1) Q.* ***1*** *and Q.* ***7*** *are* ***compulsory***.
 2) Solve any ***three*** *from the* ***remaining***.
 3) Draw neat diagram ***wherever*** *necessary.*

1. a) Explain different OSI layers and its functions. **10**

 b) Explain link state routing in detail. **10**

2. Explain SNMP organization and problems with SNMP. **10**

3. What is IP addressing ? Explain various IP addressing schemes with example. **10**

4. Explain ISDN in detail. **10**

5. Explain TCP connection establishment and release. **10**

6. What is network topology ? Explain tree, star and bus topologies in detail. **10**

7. Write short notes on (**any four**) : (**5×4=20**)

 a) Packet switching

 b) FTP

 c) Piggybacking

 d) VLAN

 e) Ethernet frame format

 f) IPsec.

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M.C.A. (Semester – III) Examination, 2010
IT – 33 : MANAGEMENT SUPPORT SYSTEM
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) Q.No. **1** *and* **7** *are* **compulsory**.
2) *Attempt* **any four** *from Q.* **2** *to Q.* **6**.
3) *Figures to the* **right** *indicate* **full** *marks.*

1. Explain in detail the information required in designing IT based MIS for handling production function. **10**

2. Explain Herbert Simon model in detail. **10**

3. Explain characteristics and limitations of human information processing performance. **10**

4. Define Expert system. Differentiate between Expert system and Conventional system. **10**

5. Define Information. Explain factors in deciding quality of information. **10**

6. Define MIS. Explain its characteristics and use in an organisation. **10**

7. Write short notes on (**any four**) :   (**4×5=20**)

   a) Negative feedback control.

   b) Executive Information system.

   c) Operation Research Techniques.

   d) Modeling process.

   e) Subsystem concept.

   f) Types of Information.

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M.C.A. (Mgt. Faculty) (Sem. – IV) Examination, 2010
(2002 Pattern) (Old)
IT – 41 : NETWORK PROGRAMMING

Time : 3 Hours   Max. Marks : 80

Instructions : *1) Answer **any eight** questions.*
                          *2) **All** questions carry **equal** marks.*

1. What is Ipv6 ? What are the reasons for changing to Ipv6 from ipv4 ?

2. What is VPN ? What are the uses of VPN ?

3. Write short notes on :

   a) uucp   b) SMTP

4. What is meant by tunneling ? What are the commonly used tunneling protocols
   and explain how they provide the basic vpn requirements ?

5. Explain the structure and components of Internet.

6. Explain different phases involved in establishing a point-to point link.

7. Briefly explain WAP architecture.

8. Discuss SNA architecture.

9. Explain IPX/SPX protocol stack.

10. Write short notes on :

    a) Berkely sockets

    b) IPSec.

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
IT – 41-401 : JAVA PROGRAMMING
(2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions *: i) Question **1** and **8** compulsory.*
                *ii) Solve **any five** from question **2** to **7**.*

1. Answer following question :   **10**
   a) Explain checked and unchecked exception.
   b) Explain runtime poly morphism.
   c) What is Runnable interface ?
   d) Explain Item Listener.
   e) What is marshalling and unmarshalling ?

2. Write a Java Socket program for client server chatting application.   **10**

3. Write JDBC application for registration of participation in paper presentation
   contest. (assume suitable table structure)   **10**

4. Write RMI application to invoke discount on purchase calculation method. Accept
   purchase amount from client and display discount amount on server. If purchase
   is between 5-50 lakh discount is 10% of purchase amount and for above discount
   is 15%.   **10**

5. Write programme to accept rollno, marks from user store the contents in the text
   file. Throw Marks Out Of Bound Exception if marks are < 0 or marks > 100.   **10**

6. Write an applet to display scrolling ball in an applet window using thread.   **10**

7. Design GUI based JDBC application to navigate (first, last, next, previous) through
   student records. (Assume suitable table structure).   **10**

8. Write short notes on **any 2** :   **10**
   a) Thread synchronization   b) Java Beans   c) Garbage collection.

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
MT 41-405 : OPTIMIZATION TECHNIQUES
(2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions :   *i)*   *Question No.* ***1*** *is* ***compulsory***.

                ii)   *Attempt* ***any two*** *questions from the remaining.*

                iii)   *Figures to the* ***right*** *indicate* ***full*** *marks.*

                iv)   *Use of statistical table is* ***allowed***.

                v)   *Use of electronic calculator is* ***allowed***.

1. a) A project has the following activities and other characteristics :

Activity	Preceding activity	Time Estimates (in weeks)		
		Most optimistic	Most likely	Most pessimistics
A	-	4	7	16
B	-	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E, F	1	4	7
I	G	4	19	28

    i) Draw the PERT Network diagram.

   ii) Determine the critical path and compute the project completion time.

  iii) What is the probability that the length of the critical path doesnot exceed
      32 weeks ?   **9**

b) Find the optimum integer solution to the following linear programming problem using Gomory's cutting plane method.

Max $Z = 5x_1 + 8x_2$

Subject to $x_1 + 2x_2 \leq 8$

$4x_1 + x_2 \leq 10$

and $x_1, x_2 \geq 0$ and integers. **9**

c) An airlines organization has one reservation clerk on duty in its local branch at any given time. The clerk handles information regarding passenger reservation and flight timings. Assume that the number of customers arriving during any given period is Poisson distribution with an arrival rate of eight per hour and that the reservation clerk can serve a customer in six minutes on an average, with an exponentially distributed service time.

   i) Find the probability that airline reservation clerk is idle.

   ii) What is the average time a customer spends in the system ? **6**

d) Solve the following assignment problem :

	1	2	3	4	5
A	4	6	10	5	6
B	7	4	8	5	4
C	12	6	9	6	2
D	9	3	7	2	3
E	6	5	5	3	8

6

2. a) Find the optimal solution for the following transportation problem :

Distribution Centre	Retail outlet					Availability
	A	B	C	D	E	
Agra	55	30	40	50	40	8
Allahabad	35	30	100	45	60	4
Calcutta	40	60	95	35	30	8
Requirement	5	2	4	6	3	

8

b) A computer has a large number of electronic tubes. They are subject to mortality as given below :

Period	Age of failure	Probability of failure
1	0-200	0.1
2	201-400	0.26
3	401-600	0.35
4	601-800	0.22
5	801-1000	0.07

If the tubes are group replaced, the cost of replacement is Rs. 15 per tube. Group replacement can be done at fixed intervals in the night shift when the computer is not normally used. Replacement of individual tubes which fail in service cost Rs. 60 per tube. How frequently should the tubes be replaced ? Assume N = 1000. **6**

c) Describe the characteristics of Queuing system. **6**

3. a) Solve the following LPP by Big-M method.
   Min Z = 25x + 30 y
   Subject to $4x + 3y \geq 60$
   $2x + 3y \geq 36$
   and x, y ≥ 0. **8**

b) A company uses 75 numbers of an item per month. Each unit costs the company Rs. 25/-. The cost of putting through each order and inventory carrying charges per month are computed at Rs. 36 and 1.5% of the average inventory investment respectively.
   Find   i) EOQ
          ii) Minimum yearly total inventory cost. **6**

c) Define the following :
   i) Float of an activity
   ii) Slack of an event. **6**

4. a) The normal and crash duration with cost for various activities involved in a project is given below :

Activities	Time (weeks)		Cost	
	Normal	Crash	Normal	Crash
1-2	3	1	25,000	27,500
2-3	4	2	38,000	44,000
2-4	3	3	29,000	29,000
2-5	8	7	36,000	37,000
3-6	4	2	28,000	30,000
4-6	6	4	22,000	23,000
5-7	5	4	20,000	24,000
6-7	3	1	18,000	22,000

  i) Draw the network of a project.

  ii) Find Normal duration and cost of the project.

  iii) Find optimum duration and cost of the project. **8**

  b) Express the following assignment problem as LPP : **6**

Contractors	Projects			
	A	B	C	D
I	7	5	9	10
II	3	7	5	8
III	7	4	8	9
IV	8	7	5	2

  c) Give the economical interpretation of the duality in LPP. **6**

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M.C.A. (Management Faculty) (Sem. – IV) Examination, 2010
BM–E1:411–MIS FRAMEWORK AND IMPLEMENTATION
(2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Notes:1) Q.No. **1** *and* **7** *are* **compulsory.**
         2) Solve **any four** *questions from* **remaining.**
         3) Figures to the **right** *indicates* **full** *marks.*

1. Explain the impact of IT infrastructure / applications in changing business
   environment.   **10**

2. What is DSS ? Explain components of DSS.   **10**

3. Explain the basic elements of IT infrastructure. Also list and explain the IT
   resources required to generate information.   **10**

4. How Information Technology changing the way marketing function is
   performed ? Explain.   **10**

5. Explain the techniques of evaluating information technology investments.   **10**

6. Explain the different threats to IT infrastructure.   **10**

7. Write short notes on **(any four)** :   **[4×5=20]**

   a) Characteristics of EIS

   b) Features of MIS

   c) Objectives of Security Policy

   d) Competitive advantage

   e) MIS as an instrument for organizational change

   f) Expert System.

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M.C.A. (Sem. – IV) (Management Faculty) Examination, 2010
IT 41-401: JAVA PROGRAMMING
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions: *i) Question **1** is **compulsory**.*

*ii) Solve **any 4** questions from **remaining.***

1. Answer the following questions in short.   **10**

   a) Differentiate between Abstract class and Interface.

   b) Describe Thread class.

   c) Explain default and protected access specifiers.

   d) What is Flow Layout ?

   e) Differentiate between Byte stream and Character stream classes.

2. a) Write an Applet program to display font name, size and color names in list
      boxes. On changing /selecting any option from list boxes, display "Welcome"
      message in proper format.   **10**

   b) Explain steps involved in RMI application.   **5**

3. a) Write a Client-Server Socket program. Client program will accept the string
      from user and send to the server. Server will count the number of vowels from
      string and send it to client.   **10**

   b) Explain java-io. File class.   **5**

4. a) Write a servlet program, which will accept bank account number from account holder. Display account details for last 10 transactions. (Assume suitable table structure.) **10**

   b) Explain Thread Synchronization. **5**

5. a) Write a Java Program to copy contents of source file to target file, by removing comment lines from source file. **10**

   b) Explain session tracking in servlet. **5**

6. Write short notes on **any 3** : **15**

   a) MVC Architecture.

   b) Jar files.

   c) Exception Handling.

   d) Java Beans.

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
BM 41-402 : SOFT SKILLS (2005 Pattern)

Time : 2 Hours   Max. Marks : 50

Instructions : *1) Question No.* ***1*** *is* ***compulsory.***
2) Solve ***any four*** *from Q. No.* ***2*** *to Q.* ***7.***
3) ***All*** *questions carry equal* ***10*** *marks.*

1. Define communication. Explain the process of communication with block-diagram.

2. Compare formal and non-formal communication.

3. Reports are one of the important tools of management. What are the components of a accident report ?

4. How will you prepare for effective public speech ?

5. Explain the value of time in management.

6. Write a job application letter to 'PlaNet Technologies" Karve Road, Kothrud, Pune for the post of Instructor. Assume you are Ashok Patil with BCA qualification and 2 years practical experience.

7. Write short notes on **any two** :

   a) Signs and symbols

   b) Art of Presentation

   c) Stress Management

   d) Business Etiquette.

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M.C.A. (Mgt. Faculty) (Semester – IV) Examination, 2010
IT – 43 : SOFTWARE ENGINEERING
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : 1) Q. No. **1** *and* **7** *are* **compulsory***.*
2) Solve **any four** *from Q.* **2** *to Q.* **6***.*

1. The purchase order system functions as follows :

   After receiving the purchase requisition from store department, enquiries are made to various suppliers. The suppliers send quotation to the company. All quotation are analysed and final selection of supplier is done and accordingly purchase order to respective supplier are send. The supplier sends invoice along with raw material.

   Prepare SRS and system specification for the above system.   **20**

2. Explain the method of estimating Software Engineering for software projects.   **10**

3. Explain the relationship among software process, project and product. Compare Agile process with the conventional.   **10**

4. Explain the various types of documentation in detail.   **10**

5. Design a Web-based GUI from for entering registration details for state level common entrance test of MCA.   **10**

6. Explain the various components of legacy system.   **10**

7. Write short notes on (**any four**) :   (**4×5=20**)
   1) Inspection process
   2) Code Design
   3) CASE Tools
   4) Structured charts
   5) Role of system analyst.

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[3780] – 44

M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
MT 41-404 : OPTIMIZATION TECHNIQUES
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

N.B. :*1) Question No. **1** is **compulsory.***
*2) Attempt **any two** questions from Question **2, 3** and **4**.*
*3) **Use** of electronic calculator and statistical table is **allowed**.*

1. a) A project has the following activities :   **9**

Activity	Preceding Activity	Time Estimates (weeks)		
		Optimistic	Most likely	Pessimistic
A	-	4	7	16
B	-	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E, F	1	4	7
I	G	4	19	28

   i) Draw the network diagram for the project.
   ii) Identify the critical path and compute the project completion time.
   iii) Find the probability that the project is completed in 36 weeks.

   b) Solve the following problem by using Gomory's cutting plane algorithm :   **9**
   Maximize $Z = x_1 + x_2$
   Subject to the constraints
   $$3x_1 + 2x_2 \leq 5$$
   $$x_2 \leq 2$$
   and $x_1, x_2 \geq 0$ and are integers.

P.T.O.

b) Explain different types of replacement policies.   **6**

c) Explain the following transportation problem as LPP.   **5**

Plants	Markets				
	M_1	M_2	M_3	M_4	Capacities
P_1	6	4	9	1	40
P_2	20	6	11	3	50
P_3	7	1	10	14	40
P_4	7	1	12	6	90
Demand	90	40	50	40	

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M.C.A. (Mgt. Faculty) (Semester – IV) Examination, 2010
BM-E1 : MIS FRAMEWORK AND IMPLEMENTATION (2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Notes : *1)* Q. No. **1** *and* **7** *are* **compulsory**.
          2) Solve **any four** *questions from remaining.*
          3) Figures to the **right** *indicate* **full** *marks.*

1. Explain the role played by IT infrastructure in Operational Control and Decision Support System in an organization. **10**

2. Define MIS. Explain its features and limitations. **10**

3. Explain the need of managing the information resources. Also give the guidelines for information resource management. **10**

4. How Information Technology changing the way finance function is performed? Explain. **10**

5. Explain the techniques of evaluating Information Technology investments. **10**

6. What are common compute abuses that damage IT infrastructure ? **10**

7. Write short notes on (**any four**) : **(4×5=20)**

   a) Characteristics of EIS

   b) Threats to IT infrastructure

   c) Objectives of Security Policy

   d) Competitive Advantage

   e) MIS as an instrument for organizational change

   f) Expert System.

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M.C.A. (Sem. – IV) (Management Faculty) Examination, 2010
BME-2 : FOUNDATIONS OF DECISION PROCESS
(2005 Pattern) (Elective)

Time : 3 Hours

Total Marks : 70

Instructions*: 1) Question No.* **1** *is* **compulsory.**
　　　　　　　2) Solve **any two** *questions from the remaining.*
　　　　　　　3) Figures to the **right** *indicate* **full** *marks.*
　　　　　　　4) **Use** *of Electronic Calculator is* **allowed.**

1. a) Describe the steps involved in the process of decision making. **10**

　　b) A market research organization studied the car purchasing trends in a certain region, with a conclusion that a new car is purchased on an average, once in every 4 years. The buying pattern of the customers is as follows:

　　　Of the current small car owners, 30% will replace the car again with a small car and 20% with a large car. Similarly 60% of the large car users will replace it with a small car while 40% will replace it with another large car. Assuming the market and the preferences remaining the same:

　　　i) Construct the transition matrix.

　　　ii) If there are currently 40,000 small cars and 20,000 large cars in the region, what will be the distribution in 8 years from now?

　　　iii) Find the probability that a person presently using a small car will buy a large car in the next to next purchase.

　　　iv) Draw the tree diagram for the distribution in 8 years. **10**

c) Customers arrive at a one-window drive according to a Poisson distribution with a mean of 10 minutes and service time per customer is exponential with a mean of 6 minutes. The space in front of the window can accommodate only 3 vehicles including the serviced one. Other vehicles have to wait outside this space.

Calculate :

  i) Probability that an arriving customer can drive directly to the space in front of the window.

  ii) Probability that an arriving customer will have to wait outside the directed space. **10**

  iii) How long an arriving customer is expected to wait before getting the service?

2. a) Explain pure strategy and mixed strategies games. **10**

  b) A investor has Rs. 10,000 to invest in common stock. His selection is between Companies A and B. He feels that for each of the investments, he has a 0.7 probability for doubling his money and 0.3 probability of losing half his money depending upon the company's stock rising or falling respectively. His choices are:

  i) Invest the entire money in A or B.

  ii) Invest Rs. 5,000 in one company and not invest in other.

  iii) Invest Rs. 5,000 in A and Rs. 5,000 in B.

If this utility values changes in assets are Rs. 10,000=1, Rs. 5,000=0.9, Rs. 2,500=0.7, Rs. 0=0.4, – Rs. 2,500=0.2, – Rs. 5,000=0,

What investment plan should he choose to maximize his expected utility?

Assume that the rise or fall of either stock is independent of the other. **10**

3. a) Two firms are competing for business under the conditions so that one firm's gain is another firm's loss. Firm A's pay-off matrix is given below:

Firm B

		No Advertising	Medium Advertising	Heavy Advertising
Firm A	No Advertising	10	5	-2
	Medium Advertising	13	12	15
	Heavy Advertising	16	14	10

Suggest the optimum strategies for the two firms and the net outcome. **10**

b) A bakery keeps a stock of a popular brand of bread. Previous experience indicates the daily demand as given below.

Daily Demand	0	10	20	30	40	50
Probability	0.01	0.20	0.15	0.50	0.12	0.02

Consider the following sequence of random numbers:

48, 78, 19, 51, 56, 77, 15, 14, 68, 9

Using the above sequence, simulate the demand for next 10 days.

i) Estimate the daily average demand for the bread on the basis of simulated data.

ii) Find out the stock situation if the owner of the bakery decides to make 30 breads everyday. **10**

4. a) A retailer purchases figs every morning at Rs. 50 a box and sells for Rs. 80 **10**
   a box. Any boxes remaining unsold at the end of the day can be disposed of
   the next day at a salvage value of Rs. 20 per box. Past sales have been ranged
   from 15 to 18 boxes per day. The following is the record of sales for past 120
   days.

Boxes sold	:	15	16	17	18
No. of Days	:	12	24	48	36

   How many boxes the retailer should purchase everyday to maximize the profit?

   b) Write short notes on **any two**: **10**
   a) Decision Tree
   b) Concept of Dominance in Game theory
   c) Monte-Carlo Simulation.

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
BME – 3 : INFORMATION SYSTEM AUDIT – (Elective)
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions : *1) Question No.* **1** *is* **compulsory.**
                        2) Attempt **any five** *questions from the* **remaining.**

1. Answer the following :   **20**

   a) Astha Institute of Pune running various Educational Institute at P.G. level.
      Presently they have implemented ERP-Educational Software to do all
      administrative and academic work.

      You as an IS Auditor; What performance measurement tools are going to
      apply ? Explain.

   b) What are the security issues involved in E-Commerce ?

2. What are the various Audit Standards (ISACA) ?   **10**

3. What are the control objectives ? Explain.   **10**

4. Define and explain the role of auditor in SDLC.   **10**

5. What are the various steps involved in security mechanism under physical access
   controls ?   **10**

6. Write short note on (**any two**) :   **10**
   a) Network control
   b) BCP
   c) Database control
   d) Audit charter.

7. What do you mean by validation controls ? Explain I/P validation control.   **10**

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M.C.A. (Semester – IV) Examination, 2010
(Management Faculty)
BME 4 : COLLABORATIVE MANAGEMENT (Old)
(2005 Pattern) (Elective)

Time : 3 Hours   Max. Marks : 70

Instructions : *1) Answer **any five** questions.*
*2) Figures to the **right** indicate **full** marks.*
3) Support your answers with relevant examples.

1. How corporate strategies are developed using analysis of environmental appraisal ?
   Explain with the help of suitable examples.   **14**

2. Comment on **any two** :   **14**
   a) Gap analysis and Benchmarking.
   b) Michel Porter's five forces of competition in an industry.
   c) Difference between strategic control and operations control.
   d) Business Definition.

3. Explain different types of Growth Strategies. Why many Indian companies are
   acquiring global companies ? What are the issues involved in post acquisition
   scenario ?   **14**

4. "The companies must address both financial and social integration issues involved
   in mergers and acquisitions." Elaborate the statement in connection with the
   corporate financial engineering.   **14**

5. "Corporate social responsibility (CSR) distracts from the fundamental economic
   role of business." Elaborate with suitable examples.   **14**

6. "Financial engineering is a process that utilizes existing financial instruments to
   create a new and enhanced product of some type". Elaborate with suitable
   examples.   **14**

7. How IT enabled services and E Commerce can create competitive advantages ? **14**

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
BME – 5 : DECISION SUPPORT SYSTEMS
(2005 Pattern) (Elective)

Time: 3 Hours   Max. Marks: 70

Instructions : *1)* ***Q.1*** *and* ***Q.8*** *are* ***compulsory****. Out of the remaining attempt*
5 questions.
2) ***Full*** *marks are indicated to the* ***right*** *of* ***each*** *question.*
3) ***All*** *questions carry* ***equal*** *marks.*

1. What is Decision Making and explain the Decision Making process with examples. **10**

2. Discuss Material Requirement Planning (MRP) and its benefits. **10**

3. What are Knowledgebase Expert Systems and how are they related to DSS ? **10**

4. Why is it difficult to implement DSS as compared to MIS ? **10**

5. What are the various tools that are used for DSS development ? How would you
choose a DSS development tool ? **10**

6. Discuss SDLC as a methodology for DSS development. **10**

7. Explain Data warehousing and what is meant by Data Mining ? **10**

8. Write short notes (**any two**) : **10**

1) Business Intelligence

2) Frontline DSS

3) Prototyping.

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M.C.A. (Semester – V) (Mgmt. Fac.) Examination, 2010
IT 51 : SOFTWARE TESTING AND QUALITY ASSURANCE
(2005 Pattern)

Time: 3 Hours   Max. Marks : 70

Instructions : *1)* *Q.* ***1*** *and Q.* ***6*** *are* ***compulsory***.
                       2) *Attempt* ***any 3*** *from remaining.*
                       3) *State assumptions if* ***any***.

1. Draw a control flow graph for a code that performs binary search over given set of numbers. Also calculate the complexity of code using McCabe's formula. **10**

2. a) Compare static testing and dynamic testing. **8**

   b) Write 7-8 point check list for testing online railway reservation system. **7**

3. a) "Complete testing of software is just not possible". Comment. **8**

   b) How do you define software quality ? Explain any 2 software quality factors. **7**

4. a) Write test cases for functional testing of Hospital Management System for patient admission screen. This screen allows the administrator to enter following patient details.

   a) Patient ID (Automatically generated for successful registration).

   b) Patient ward No

   c) Patient's name

   d) Referred by doctor

   e) Admit date **8**

   b) Compare black box testing with white box testing. **7**

5. a) Explain 'V' model with reference to its advantages over waterfall model. **8**

   b) Explain with example top down and bottom up integration testing. Why mixed mode integration testing preferred most of the times ? **7**

6. Write short note on **any three** : **15**

   a) Usability testing   b) CAST

   c) Software walkthrough   d) Regression testing.

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M.C.A. (Semester – V) (Management Faculty) Examination, 2010
IT – 52 : ADVANCED INTERNET TECHNOLOGY
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

*Note : 1) Q. **1** is **compulsory**.*
*2) Solve **any 3** questions from **remaining**.*
*3) Figures to the **right** indicate **full** marks.*

1. What is digital certificate ? How encryption is used in digital certificate ?   **10**

2. a) Write ASP code to accept student details for online examination registration
     and store it in student-table.
     (Assume suitable structure)   **10**

   b) Explain CGI architecture and features of Perl.   **10**

3. a) Write JSP code for accepting product-id from user. Verify if product already
     exists the display details. If not insert details into product table.
     (Assume suitable table structure)   **10**

   b) Discuss file handling in php with example.   **10**

4. a) Write Php code to display list of senior-citizens from citizen table. Assume
     suitable table structure.   **10**

   b) JSP Implicit Object with example.   **10**

5. Write short note on (**any four**) :   **20**

   a) Error handling in asp

   b) E-comm. benefits

   c) JSP directive tags

   d) Associative array in php

   e) Perl file functions.

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M.C.A. (Mgmt. Faculty) (Semester – V) Examination, 2010
IT - 53 : EMERGING TRENDS IN INFORMATION TECHNOLOGY
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

***Instructions** : i) Question **1** and **7** are **compulsory**.*
*ii) Attempt **any four** from remaining.*

1. A reputed management institute want to start executive MBA programme only for the working class students. Institute is interested in having online admission process, teaching learning process and online examination process. Suggest various models of e-learning and find out best model for their requirements. **15**

2. Explain and compare E-commerce and E-business. **10**

3. What is E-banking ? Suggest various securities required. **10**

4. What is GIS ? Explain various standards and its implementation. **10**

5. What is knowledge management ? Explain various tools. **10**

6. Explain supply chain management and E-logistics. **10**

7. Write short note on **any three** : **15**

   a) RFID

   b) BCP

   c) Electronic clearing system

   d) Warehouse Management

   e) E-Governance.

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M.C.A. (Management Faculty) Sem. – V Examination, 2010
BM – 51 : SOFTWARE PROJECT MANAGEMENT
(2005 Pattern)

Time : 3 Hours   Maximum Marks : 70

Note : 1) *Que.**1**and Que.**8** are* **compulsory**.
    2) *Assume suitable data if* **required**.
    3) *Solve any* **Five** *from Que.* **2** *to Que.* **7**.

1. a) Draw the network diagram for the following.   **10**

Activity	Immediate Predecessor	Duration (in week)
A	–	2
B	–	6
C	–	6
D	C	4
E	A	3
F	B	4
G	E	1
H	F,G,J	2
I	A	3
J	D, I	2

 i) Find critical path

 ii) Indicate the total slack time of each activity

 b) List out estimation techniques and explain FPA.   **5**

2. What is the difference between Software Engineering and SPM ? Explain SPLC. **8**

3. Explain testing activities carried out through the software development. **8**

4. Discuss the difference between internal risk and external risk. **8**

5. What are the factors must be considered while making the team for software project ? **8**

6. What are the difference between change management and configuration management ? **8**

7. What do you mean by IT infrastructure management ? **8**

8. Write short note on **(any 3)** : **15**

    a) LOC

    b) FTR

    c) ISO Series

    d) Quality Assurance

    e) MS – Project.

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M.C.A. (Semester – V) (Mgt. Faculty) Examination, 2010
ITE -1 : DISTRIBUTED DATABASE MANAGEMENT SYSTEMS
(2005 Pattern) (Elective)

Time : 3 Hours   Max. Marks : 70

Note : 1) *Question No.* **7** *is* **compulsory**. *Solve* **any 5** *from the remaining.*
2) *Figures to the* **right** *indicate* **full** *marks.*

1. What is DDBMS ? Explain its advantages and disadvantages.   **10**

2. Explain client/server reference architecture.   **10**

3. Explain Top-Down design process for designing DDBMS.   **10**

4. Explain the generic layering scheme for distributed query processing.   **10**

5. Define transaction. Explain the goals of transaction management.   **10**

6. Explain concurrency control for centralized database systems.   **10**

7. Write short notes on following (**any 4**) :   **(4×5=20)**

    1) Handling site failures in DDBMS.

    2) Concept of Mobile Databases.

    3) Object clustering.

    4) Query optimization.

    5) Horizontal fragmentation.

    6) Network Topologies.

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M.C. A. (Management Faculty) (Semester – V) Examination, 2010
(2005 Pattern) (Elective)
IT3 : NETWORK SECURITY

Time : 3 Hours   Max. Marks : 70

Note : 1) *Q.* **1** *and Q.* **6** *are* **compulsory**.
2) *Solve* **any three** *from Q.* **2** *to Q.* **5**.
3) *Figure at* **right** *indicate marks*.
4) *Give appropriate examples* **wherever** *necessary*.

1. a) Compare Block Cipher with Stream Cipher mechanism.   **10**

   b) Explain various authentication mechanism in Network Security Applications. **10**

2. Explain with example Secure Hash and Key Management in cryptosystems.   **10**

3. Explain encapsulation in IP Sec.   **10**

4. What is MIME ? Explain its usefulness in email security.   **10**

5. Explain DES Algorithm with its functions with example.   **10**

6. Write short notes (**any four**) :   **(4×5=20)**

   a) Chinese wall

   b) Kerberos Protocol

   c) SET

   d) ACL in Proxy

   e) HRU

   f) Biometrics.

M.C.A. (Semester – V) (Mgt. Faculty) Examination, 2010
ITE 4 : MOBILE COMPUTING (2005 Pattern)
(Elective)

Time : 3 Hours　　　　　　　　　　　　　　　　　　Max. Marks : 70

Instructions *: 1) Question No.* **1** *and* **6** *are* **compulsory**.
　　　　　　2) Attempt **any three** *from remaining.*

1. a) Define the following terms (**any five**) :　　　　　　**10**
　　 i) BSS　　　　　　　ii) SIM
　　iii) GSM　　　　　　iv) MMF
　　 v) VLR　　　　　　vi) BCA

　 b) What is WAP push ? How push is different from pull ?　　**10**

2. Explain the importance of framing and logical channels in GSM.　**10**

3. What is Hidden-node problem ? How it is resolved ?　　**10**

4. Differentiate between - TDMA, CDMA and FDMA.　　**10**

5. Explain problems faced in 802.11 MAC design.　　**10**

6. Write short notes (**any four**) :　　　　　　**20**
　　 a) HiPER LAN
　　 b) PUSH-PULL
　　 c) BS-hand off
　　 d) Indirect TCP
　　 e) Blue-Tooth
　　 f) MMS.

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M.C.A. (Semester – V) (Management Faculty) Examination, 2010
ITE 6 : HUMAN COMPUTER INTERFACE
(2005 Pattern) (Elective)

Time: 3 Hours   Max. Marks: 70

Instructions : 1) *Q. 1 and Q. 7 are* **compulsory**.
                     2) *Solve* **any three** *from remaining.*

1. Every college is has website showing all information about college, faculty, infrastructure etc. Consider your college website and analyze its user interface, theme, forms and downloads and identify problem with current interface. Propose design changes you would like to make, why they are need from principle of interface design ? And how it will benefit to viewer ?   **20**

2. Explain design principles of form fill-in dialog boxes of various types. How layout, environment and direct manipulation programming affects the design of dialog boxes ?   **10**

3. a) Explain stages of user centered interactive design methodology.   **5**

   b) Explain steps in Usability and Acceptance test of user interface design.   **5**

4. a) Explain Individual window design, multiple window design from implementation point of view.   **5**

   b) Explain guidelines for effective error interaction handling in user interface.   **5**

5. State various video input devices. Explain Response time and display rate importance in video input.   **10**

6. Explain object action interface model for website design.   **10**

7. Write short notes (**any four**) :   (**4×5=20**)

   a) Advance filtering in information search

   b) Documentation balancing function

   c) Human factors in design

   d) Command menu design

   e) Information virtualization.

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M.C.A. (Semester – V) (Management Faculty) Examination, 2010
ITE – 8 : ADVANCE UNIX
(2005 Pattern) (Elective)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) *Question No.* ***1*** *is* ***compulsory****.*
2) *Solve* ***any four*** *questions from* ***2*** *to* ***6****.*
3) *Assume suitable data* ***wherever*** *necessary.*
4) *Draw suitable diagram* ***wherever*** *needed.*
5) *Figures to the* ***right*** *indicate* ***full*** *marks.*

1. Explain the following system calls with syntax (**any five**) :   **(2×5=10)**
    a) fork( )
    b) vfork( )
    c) exit( )
    d) wait( )
    e) fgets( )
    f) gets( )

2. a) What are the phases in signaling process ? Explain what is meant by the
       lifetime of a signal.   **8**
    b) What is meant by signal catching function ? What are the advantages of signal
       function ?   **7**

3. a) Explain in detail the requirements of file locking mechanism.   **8**
    b) With an example, explain about the setting a lock.   **7**

4. a) Explain how to place "Data in shared memory".   **8**
    b) What is the use of destroying a shared memory segment ? Explain the process
       of "destroying a shared memory segment".   **7**

5. a) What are named pipes ? Explain in detail.   **8**
    b) Explain in detail client -server communication using FIFOS.   **7**

6. What is shared memory ? What is the importance of it ? Explain in detail about
   the process of "Allocating a shared memory segment".   **(2+5+8)**

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M.C.A. (Semester – V) (Mgt. Faculty) Examination, 2010
ITE – 9 : PROGRAMMING LANGUAGE PARADIGMS
(2005 Pattern) (Elective)

Time : 3 Hours Total Marks : 70

Note : 1) *Figures to the **right** indicate **full** marks.*
2) *Q. No. **7** is **compulsory**.*
3) *Solve **any 5** from **remaining**.*

1. Explain with suitable construct the sub-program call and return structure. **10**

2. Explain the structure showing stages from original syntax to executable form of typical compiler. **10**

3. Write in detail syntactic elements of language. **10**

4. Explain stack based and heap based storage management. **10**

5. Explain how the environment affects the language design. **10**

6. Compare compiler, interpreter and assembler. **10**

7. Short notes (**any 4**) : **20**
   1) Firmware computer
   2) AI systems
   3) Binding time classes
   4) Pushdown Automala
   5) Features of C++ programming.

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M.C.A. (Management Faculty) Examination, 2010
ITE – 6 : IMAGE PROCESSING
(2002 Pattern) (Elective Paper)

Time : 3 Hours   Max. Marks : 80

Instructions : 1) Solve **any four** questions from **1** to **5**.
2) Assume suitable data **wherever** necessary.
3) Draw suitable diagram **wherever** needed.
4) Figures to the **right** indicate **full** marks.

1. a) Explain sampling and quantization process during digitization of an image.   **10**

   b) Explain basic relationships between pixels.   **10**

2. a) Explain basic gray level transformations.   **10**

   b) What is histogram of an image ? Explain histogram equalization.   **10**

3. Discuss various spatial transformations with suitable diagrams and discuss their effects.   **20**

4. List down the various Geometric Transformation and explain them in brief.   **20**

5. Write short notes on :   **(5×4=20)**

   a) Region based segmentation

   b) Image Compression Models

   c) Low pass filter

   d) Directional smoothing.

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M.C.A. (Mgt. Faculty) (Semester – IV) Examination, 2010
BME – 6 : INVESTMENT TECHNOLOGY
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions : *1) Attempt **any five** questions.*
*2) **All** questions carry **equal** marks.*

1. What are mutual funds ? Describe the types of schemes offered by the mutual funds. **14**

2. Discuss the investment portfolio on diversified pattern. How it helps maximization of return on total investment ? **14**

3. Discuss the role of information technology to facilitate the investor. Elucidate with the help of suitable example. **14**

4. What is technical analysis ? How does it help the investors in various types of investment proposals ? **14**

5. What are venture capital funds ? Comment on the venture capital scenario in India. **14**

6. Describe the products that you think are financially engineered. **14**

7. Write short notes on **any two** : **14**
   i) Markowitz Theory
   ii) Valuation of Shares
   iii) Credit Rating.

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M.C.A. (Management Faculty) (Semester – V) Examination, 2010
(2002 Pattern)
BM - 41 : ORGANISATIONAL BEHAVIOUR
(Elective Paper) (Compulsory)

Time : 3 Hours   Total Marks : 80

Note. : *1) Q.* ***1*** *and Q.* ***8*** *are* ***compulsory***.
              2) Solve ***any 3*** *out of the* ***remaining***.
              3) Figures to the ***right*** *indicate* ***full*** *marks.*

1. a) Define the term organisational behaviour. Explain the fundamental concepts
     of O.B.   **10**

   b) Elaborate the relationship between morale and productivity with its
     measurement.   **10**

2. Explain McGregor's theory of motivation, in detail.   **15**

3. Define leadership and explain any one style of leadership.   **15**

4. What are the factors responsible for change ? How can change be overcomed ?   **15**

5. Define group and elaborate the different types of group, with examples.   **15**

6. What is stress management ? What are the ill-effects of stress ?   **15**

7. Define the term conflict. Explain the strategies to resolve conflict.   **15**

8. Write short notes on **(any 3)** :   **15**

  a) Attitude

  b) Organisational climate

  c) Defense Mechanism

  d) Down - sizing

  e) Motives.

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M.C.A. (Semester – I) (Mgt. Faculty) Examination, 2010
MT-11-106 : DISCRETE MATHEMATICS
(New) (2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions : *i) Question No. **1** is **compulsory**.*
*ii) Solve **any 2** from the **remaining**.*

1. a) Obtain PCNF of $(\daleth P \to R) \wedge (P \rightleftarrows Q)$.   **5**

   b) Test the validity of the following arguments. If there was a game, then swimming was impossible.

      If they started on right time, then swimming was possible.

      They started on right time.

      Therefore, there was no game.   **5**

   c) If $\{\langle 1, 3, 5\rangle, \langle 2, 4\rangle\}$ is a partition set of the set $A = \{1, 2, 3, 4, 5\}$. Determine the corresponding equivalence relation.   **5**

   d) Let $A = \{1, 2, 3, 4\}$ and $R = \{\langle 1, 2\rangle, \langle 2, 1\rangle, \langle 2, 3\rangle, \langle 3, 4\rangle\}$. Find R^+ by using Warshall's algorithm.   **5**

   e) Let $(Z_6, +)$ be a group and $S = \{[0], [3]\}$ be a subgroup. Is s a normal subgroup ?   **5**

   f) An undirected graph has an even number of vertices of odd degree.   **5**

2. a) Verify the following implication is a tautology by using truth table
      $[(P \vee Q) \wedge (P \to R) \wedge (Q \to R)] \to R$.   **5**

   b) Let P(x), Q(x) and R(x) be the statements "x is a clear explanation", "x is satisfactory", and "x is an excuse" respectively. Suppose that the universe of discourse for x is the set of all English text. Express each of the following statements using quantifiers.   **5**
      i) All clear explanations are satisfactory
      ii) Some excuses are not clear explanations.

   c) Show that $(\exists x) M(x)$ follows logically from the premises $(x)(H(x) \to M(x))$, $(\exists x) H(x)$.   **5**

   d) Show that the premises $P_1 : \daleth(A \wedge \daleth B)$, $P_2 : \daleth B \vee D$, $P_3 : \daleth D$ leads to a conclusion $\daleth A$.   **5**

3. a) Let $A = \{1, 2, 3, 4, 5, 6, 7\}$. Determine a relation R on A by $a^R b$ iff 3 divides $(a - b)$. Show that R is an equivalence relation. Also, determine the partition generated by R.   **5**

b) Determine whether each of the posets $(\{1, 2, 3, 4, 5\}, /)$ and $(\{1, 3, 9, 27, 81\}, /)$ is a lattice ?   **5**

c) The compatibility relation on a set $\{x_1, x_2, ..., x_6\}$ be given by the matrix.   **5**

x_2	1				
x_3	1	0			
x_4	1	1	0		
x_5	0	1	0	0	
x_6	0	0	1	0	1
	x_1	x_2	x_3	x_4	x_5

Draw the graph and find all the maximal compatibility blocks of the relation.

d) Let $A = \{1, 2, 3, 4, 5, 6\}$. Let $f = (6, 3, 1, 4)$ and $g = (5, 2, 4)$ be permutations of A. Determine i) $f \circ g$ ii) $f^{-1} \circ g^{-1}$.   **5**

4. a) Let $G = \{a, b, c, d\}$ and * is the operation on G defined by Cayley table. Is G an abelian group ?   **7**

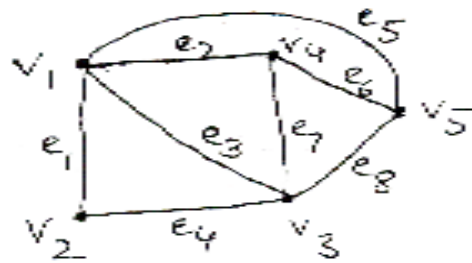| *	a	b	c	d
a	a	b	c	d
b	b	c	d	a
c	c	d	a	b
d	d	a	b	c

b) Let T be the set of all even integers. Show that the semigroups $(z, +)$ and $(T, +)$ are isomorphic ?   **7**

c) Let $m = 2$, $n = 5$ and $H = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$. Determine the group code $e_H : B^2 \rightarrow B^5$.   **6**

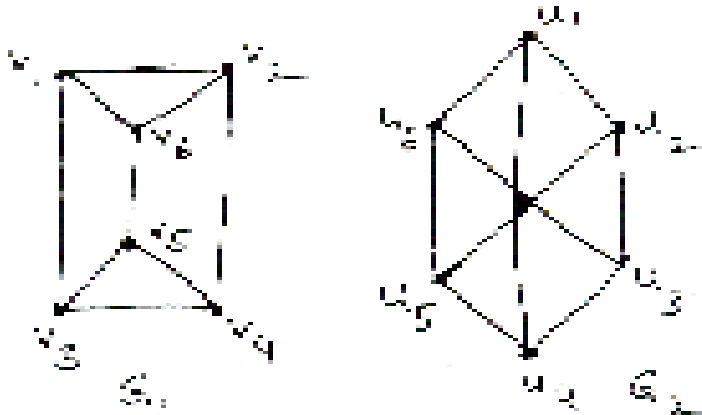5. a) Determine the incidence and adjacency matrix of the following graph. **4**

b) Verify whether the following graphs G_1 and G_2 are isomorphic ? **6**

c) Define the following terms with illustration i) Hamilton circuit ii) Cut set. **4**

d) Prove that a tree with 'n' vertices has (n – 1) edges and a full m-ary tree with 'i' internal vertices contains n = mi + 1 vertices. **6**

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M.C.A. (Semester – II) (Mgt. Faculty) Examination, 2010
MT-21-205 : PROBABILITY AND COMBINATORICS
(New) (2008 Pattern)

Time : 3 Hours   Max. Marks : 70

N.B. : 1) *Question No.* **1** *and question No.* **4** *are* **compulsory**.
　　　 2) *Solve* **any one** *from question Nos.* **2** *and* **3** *and* **any one** *from*
　　　　 question Nos. **5** *and* **6**.
　　　 3) *Figures to the* **right** *indicate* **full** *marks*.
　　　 4) **Use** *of calculator and statistical table is* **allowed**.

1. a) State and prove derangement theorem. **5**

   b) Solve the recurrence relation $a_n - 4a_{n-1} + 4a_{n-2} = 3^n$. **5**

   c) How many 3 digit numbers can be formed by using the 6 numbers 2, 3, 4, 5, 6 and 8 if : **5**

   　i) Repetition not allowed

   　ii) Number must contain the digit 5 and repetitions are allowed

   d) A man has 6 friends. At dinner in a certain restaurant, he has met each of them 12 times, every two of them 6 times, every three of them 4 times, every four of them 3 times, every five of them twice and all of them only once. He has dined out without meeting any of them 8 times. How many times has he dined out altogether ? **5**

2. a) How many solutions are there to equation $x_1 + x_2 + x_3 = 17$ where x_1, x_2 and x_3 are non-negative with $x_1 < 6$ and $x_3 > 5$? **8**

   b) Prove : **7**

   i) $\dbinom{n}{r} = \dbinom{n-1}{r} + \dbinom{n-1}{r-1}$

   ii) $\dbinom{n}{0}^2 + \dbinom{n}{1}^2 + \dbinom{n}{2}^2 + ... + \dbinom{n}{n}^2 = \dbinom{2n}{n}$

3. a) Determine the discrete numeric function of generating function

   $$A(z) = \frac{(1+z)^2}{(1-z)^4}.$$ **8**

   b) State multinomial theorem and find the coefficient of x^7 in $(1 + 3x - 2x^3)^{10}$. **7**

4. a) Define the following terms with illustration **5**

   i) Mutually Exclusive Events

   ii) Equally likely events.

   b) The probabilities of X, Y and Z becoming managers are $\frac{4}{9}, \frac{2}{9}$ and $\frac{1}{3}$ respectively. The probabilities that the bonus scheme will be introduced if

   X, Y and Z becomes managers are $\frac{3}{10}, \frac{1}{2}$ and $\frac{4}{5}$ respectively.

   i) What is the probability that bonus scheme will be introduced ?

   ii) If the bonus scheme has been introduced, what is the probability that the manager appointed was Y ? **5**

   c) Let the joint p.m.f. of two discrete random variables (X, Y) is as follows : **5**

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

   Find :

   i) Marginal distributions of X and Y

   ii) $P(X + Y \leq 2)$

   iii) Conditional probability distribution of Y given X = 1.

   d) Marks scored by candidate in an examination follows normal distribution. 44% of the candidates obtained marks below 55 and 6% of the candidates obtained marks above 80. Find the mean and standard deviation of marks. **5**

5. a) Find mean and variance of Hyper Geometric distribution. **8**

   b) $P(X = i) = \dfrac{c(2)^i}{i!}; i = 1, 2, 3, ...$ **7**

   Find :

   i) C

   ii) Verify the given expression is p.m.f.

6. a) Find mean and variance of Gamma distribution. **8**

   b) The joint p.d.f. of a two-dimensional random variable (X, Y) is given by :

   $$f(x, y) = \begin{cases} 2; & 0 < x < 1, \ 0 < y < x; \\ 0, & \text{elsewhere} \end{cases}$$

   i) Find the marginal density functions of x and y

   ii) Find the conditional density function of X given Y = y. **7**

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**M.C.A. (Semester – V) (Management Faculty) (2002 Pattern)
Examination, 2010
MT-51 : OPTIMIZATION TECHNIQUES (Old)**

Time : 3 Hours   Max. Marks : 80

N.B. : 1) Solve **any four** questions.
         2) **All** questions carry **equal** marks.
         3) **Use** of calculator and statistical table is **allowed**.
         4) Graph paper is supplied on request.

1. a) Describe Branch and Bound method to solve an integer programming problem. **10**

   b) Use the penalty (BIG-M) method to solve the following L.P.P. : **10**

   Minimize $z = 5x_1 + 3x_2$
   Subject to the constraints

   $$2x_1 + 4x_2 \leq 12$$
   $$2x_1 + 2x_2 = 10$$
   $$5x_1 + 2x_2 \geq 10$$

2. a) Solve the following problem using cutting plane method : **10**

   Maximize $z = x_1 + x_2$
   Subject to the constraints

   $$2x_1 + 5x_2 \leq 16$$
   $$6x_1 + 5x_2 \leq 30$$
   $$x_1, x_2 \geq 0 \text{ and are integers}$$

   b) Solve the following transportation problem to find its optimal solution. **10**

Distribution Centre	Retail outlet					Availability
	A	B	C	D	E	
Agra	55	30	40	50	40	8
Allahabad	35	30	100	45	60	4
Calcutta	40	60	95	35	30	8
Requirement	5	2	4	6	3	

3. a) Describe EOQ model and production run model in the inventory management. **10**

   b) A trading company buys and sells 10,000 bottles of pain-balm every year. The cost per bottle is Rs. 2 and the company's cost of placing an order of pain-balm is Rs. 100. The company's standard annual rate of return on working capital funds is 15%. The cost of physical storage of the pain-balm is fixed
   i) Determine the optimum order quantity and inventory cycle duration for the pain-balm ii) How many orders should be placed each year iii) Find the total variable annual inventory cost for the pain-balm. **10**

4. a) Describe the characteristics of the following : **10**

   i) $(M/M/1):(N/FIFO)$

   ii) $(M/M/C):(\infty/FIFO)$

   b) A xerox machine in an office is operated by a person who does other jobs also. The average service time for a job is 6 minutes per customer. On an average, every 12 minutes one customer arrives for xeroxing. Find

   i) xerox machine utilization,

   ii) percentage of times that an arrival has not to wait,

   iii) average time spent by a customer,

   iv) average queue length, and

   v) the arrival rate, if the management is willing to deploy the person exclusively for xeroxing when the average time spent by a customer exceeds 15 minutes. **10**

5. a) Describe different types of replacement models. **10**

   b) The following mortality rates have been observed for a special type of light bulbs :

Month	:	1	2	3	4	5
Percent failing at the end of month	:	10	25	50	80	100

In an industrial unit there are 1000 special type of bulbs in use, and it costs Rs. 10 to replace an individual bulb which has burnt out. If all bulbs were replaced simultaneously it would cost Rs. 2.50 per bulb. It is proposed to replace all bulbs at fixed intervals, whether or not they have burnt out, and to continue replacing burnt out bulbs as they fail. At what intervals of time the manager should replace all the bulbs ? **10**

6. a) The following table gives data on normal time and cost and crash time and cost for a project : **10**

Activity	Normal		Crash	
	Time (days)	Cost (Rs.)	Time (days)	Cost (Rs.)
1 – 2	6	600	4	1000
1 – 3	4	600	2	2000
2 – 4	5	500	3	1500
2 – 5	3	450	1	650
3 – 4	6	900	4	2000
4 – 6	8	800	4	3000
5 – 6	4	400	2	1000
6 – 7	3	450	2	800

The indirect cost per day is Rs. 100.

 i) Draw the network and identify the critical path.

 ii) What are the normal project duration and associated cost ?

 iii) Crash the relevant activities systematically and determine the optimum project completion time and cost.

b) A project has the following activities and other characteristics :   **10**

Activity	Preceding activity	Time estimates (in weeks)		
		Optimistic	Most likely	Pessimistic
A	–	4	7	16
B	–	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E, F	1	4	7
I	G	4	19	28

i) Draw the PERT network diagram and identify the critical path.

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

iii) What is the probability that the project is computed between 35 and 40 weeks ?

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M.C.A. (Semester – V) (Management Faculty) Examination, 2010
(2005 Pattern)
ITE-2 : ARTIFICIAL INTELLIGENCE
(Elective)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) Q. **1** is **compulsory**.
           2) Solve **any five** questions from Q. **2** to Q. **7**.
           3) Figures to **right** indicate **full** marks.
           4) Draw neat and suitable diagram **wherever** necessary.

1. a) Define the term Artificial Intelligence (AI). What is an AI technique ?   **5**

    b) Describe the 'Tower of Hanoi' problem in detail.   **5**

    c) Differentiate between following :   **10**

        1) Procedural Vs Declarative Knowledge

        2) Forward Vs Backward Reasoning.

2. Represent the following statements into well formed formula using the predicate logic :   **10**

    1) All the soldiers were either loyal to the King or hated him.

    2) Soldiers praise the Kings they are loyal to.

    3) Anything which has red nose is weird or clown.

    4) Prakash does not study but he is sharp.

    5) Shridhar likes to drive on highways.

3. Discuss the MINMAX algorithm along with its limitations.   **10**

4. a) Show a conceptual dependency representation of the following statement :
       "Since smoking can kill you, I stopped".   **5**

    b) What are Heuristic Search techniques ? Write an algorithm for Best First Search.   **5**

5. Write a state space representation for the Monkey-Banana problem. Analyze the problem with respect to seven problem characteristics.   **10**

6. Consider following statements : **10**

   1) Nitin likes all kinds of food

   2) Apple is food

   3) Anything anyone eats and isn't killed by is food

   4) Snehal eats peanuts and is still alive.

   Prove that Nitin likes peanuts using resolution principle.

7. Write short notes on **any two** of the following : **10**

   a) Expert Systems

   b) Learning

   c) Genetic Algorithms.

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M.C.A. (Semester – I) Examination, 2010
IT-13 : COMPUTER ARCHITECTURE (Old) (2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Notes : *1) Q. No.* ***1*** *and* ***7*** *are* ***compulsory****.*
              2) Solve ***any four*** *questions from remaining.*
              3) Draw neat diagram ***whenever*** *necessary.*

1. a) Explain 64-bit Architecture in detail.   **10**

   b) Write short note on Floating Point Unit.   **5**

2. What is pipelining ? Explain Arithmetic pipelining.   **10**

3. Compare EISA, PCI and USB bus architecture and its characteristics.   **10**

4. What is DMA ? Explain the working of DMA controller.   **10**

5. What is counter ? Explain asynchronous up counter.   **10**

6. What is Interrupt ? Explain all its types.   **10**

7. Write short notes on (**any three**) :   **(3×5=15)**

   a) I/O ports

   b) Full adder circuit

   c) SISO Shift Register

   d) Instruction cycle

   e) SPEC Benchmarks.

**M.C.A. (Semester – I) (Management Faculty) Examination, 2010
BM-12: PRINCIPLES OF MANAGEMENT FUNCTIONS AND
ORGANIZATIONAL BEHAVIOUR
(2005 Pattern) (Old)**

Time : 3 Hours   Total Marks : 70

> ***N.B. :*** 1) *Question.* ***1*** *is* ***compulsory****.*
> 2) *Solve any* ***three*** *from the* ***remaining****.*

1. A) "Behavioural approach to organizational management has gained significance
   in recent times". Discuss the relationship between Organisational behaviour
   and management.   **15**

   B) Enumerate the significance of Modern management in today's business.   **10**

2. "Leader decides the future of an organization" - comment by enumerating the
   essential qualities of leader and theories of leadership.   **15**

3. What are the causes of organizational conflicts ? Explain how the concept
   of Johari window can be applied to resolve intrapersonnel and interpersonnel
   conflicts ?   **15**

4. "Effective Decisions is a pre requisite for future success". Comment.
   What are the factors responsible for decision making ? Explain various types of
   decisions.   **15**

5. Classify different structures of organisation with examples.   **15**

6. Write short notes (**any 3**) :   **15**
   1) Types of control
   2) Levels of management
   3) Styles of leadership
   4) Line and staff organization
   5) Planning.

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M.C.A. (Semester – II) (Management Faculty) Examination, 2010
IT 22 : OPERATING SYSTEMS AND CONCEPTS
(2005 Pattern) (Old)

Time : 3 Hours   Max. Marks : 70

Note : 1) *Q.* **1** *and Q.* **7** *are* **compulsory**.
            2) *Solve* **any four** *from the remaining.*

1. Explain PCB and different process operations.   **10**

2. Explain page replacement algorithms in detail.   **10**

3. What is deadlock ? Explain deadlock prevention and avoidance.   **10**

4. What is FAT ? Explain its structure in detail.   **10**

5. What is OS ? Explain different functions of O.S.   **10**

6. Explain RAID structures in detail.   **10**

7. Write short notes on **(any four)** :   **20**

   i) System Call

   ii) NOS

   iii) Interrupt

   iv) IPC

   v) Process Synchronization.

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M.C.A. (Semester – II) (Mgmt. Faculty) Examination, 2010
MT 21 : PROBABILITY AND COMBINATORICS
(Old)(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

N.B. : *1)* *Question No.* ***1*** *is* ***compulsory****.*
        2) *Attempt* ***any 2*** *questions from question No.* ***2*** *to question No.* ***4.***
        3) *Figures to* ***right*** *indicate full marks.*
        4) *Use of Calcualtors and Statistical Tables is* ***allowed****.*

1. a) What is the probability that a number selected randomly from 1 to 5000 is divisible by 2 or 5 or 9.   **6**

   b) Determine the discrete numeric function of generating function .

   $$A(z) = \frac{1}{5 - 6z + z^2} .$$ **6**

   c) Let A, B & C be three mutually exclusive and exhaustive events defined on sample space S. If P (A) = 2 P (B) = 3 P(C). Find P (A$\cup$B).   **6**

   d) Obtain mean and variance of Poisson distribution.   **6**

   e) An explosion in a factory manufacturing explosions can occur due to

      i) short circuit

      ii) defects in machinery

      iii) negligence of workers.

   The probabilities of these causes are known to 0.25, 0.4 and 0.35 resp.

   The engineers feel that an explosion can occur with probabilities

      i) 0.35 if there is a short circuit

      ii) 0.2 if there are defects in machinery

      iii) 0.4 if the workers are negligent.

   Given that an explosion has occurred determine that it is due to workers negligence.   **6**

2. a) The life time of a certain type of battery has mean of 310 hours with a standard deviation of 32 hours. Assuming that the distribution is normal. Find

     1) Proportion of batteries having life time between 225 and 360 hours.

     2) The life in hours above which we will find best 15% of the batteries.   **8**

   b) If $f(x, y) = e^{-(x+y)}$

$$= 0 \quad \begin{array}{l} x \geq 0, y \geq 0 \\ 0.\omega \end{array}$$

     is the joint p.d.f. of (X,Y) find

     i) $P(X < 1)$

     ii) $P(X > Y)$ **6**

   c) Find the number of integer solutions of equation $x_1 + x_2 + x_3 = 30$ subject to the condition $4 \leq x_1 \leq 9$, $7 \leq x_2 \leq 14$, $10 \leq x_3 \leq 24$.   **6**

3. a) Find Mean and variance of exponential distribution.   **8**

   b) Given below is the joint p.m.f. of (X, Y)

X \ Y	1	2	3
−1	k	2k	3k
0	2k	4k	5k
1	3k	5k	6k

Find

  i) K

  ii) Marginal distribution of X and Y.

  iii) Conditional distribution of X given $Y = 2$

  iv) $P(Y > 2/ X < 1)$ **6**

c) Find the coefficient of xyz^{-2} in $\left(x - 2y + \dfrac{3}{z} \right)^4$.   **6**

4. a) Find expectation of sum of the outcomes when two dice are rolled. Hence find variance.   **8**

  b) Solve recurrence relation $a_n + 6\, a_{n-1} + 9a_{n-2} = 3$ for $n > 1$ given $a_0 = 0$ and $a_1 = 1$ **6**

  c) Define moment generating function and comulant generating function with the properties.   **6**

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M.C.A. (Semester – III) (Management Faculty) Examination, 2010
IT – 34 : OBJECT ORIENTED PROGRAMMING USING C++
(2005 Pattern)

Time : 3 Hours   Max. Marks : 70

Note : *1) Q. **1** is **compulsory**.*
            *2) Solve **any six** from Q. **2** to Q. **10**.*
            *3) Figures to **right** indicate **full** marks.*
            *4) Make suitable assumptions **wherever** necessary.*

1. Explain output of the following programs. If errors, correct it.   **10**
    A)   # include < iostream. h >
             void main ( )
          { int i = 0;
          for (i=0; I < 20 ; i ++)
          { switch (i)
          case 0:i+=5;
          case 1 : i+=2;
          case 5:i+=5;
          default i+ =4;
          break;}
          cout <<j; } }

    B) main ()
          { char c = – 64;
          int i = – 32
          unsigned int u = – 16;
          if (c>i) { printf ("pass1,");
                     if (c<U) printf ("pass2");
                     else   printf ("Fail2");
                     }
          else
          printf ("Fail 1);
          if(i<U) printf("pass2");
          else printf ("Fail2")
          }

C)   #include <iostream.h>
         #include<conio.h>
    class test {
    static int cnt ;
    public: static void show count (void)
    {
    cout << "count :" << ++cnt << "in" ; }
    };
    void main( )
    { test t1, t2, t3;
    t1.showcount( );
    t2.showcount( );
    t3.showcount( );
    }

    D) Explain Iterators in STL.

2. A) What is namespace conflict ? How it is handled in C++ ?   **5**

   B) What is generic program ? What is class template explain in detail ?   **5**

3. A) Write a class VECTOR with a series of float values and perform the following
      operations :   **5**

       i) To create a vector
       ii) To add two vectors – use object as parameter.

   B) What is a file mode ? Describe the various file mode options available. What is
      the difference between ios::ate and ios::app.   **5**

4. What is parameterized constructor ? How the derived class constructors are
   used to pass parameters to base class in multi level inheritance ? Explain with
   program.   **10**

5. Accept date 'D' in DD-MM-YYYY format and an integer number 'n' from keyboard. Write a program to overload + (plus) operator which gives the next date, 'n' days after 'D', in DD-MM-YYYY format. E.g. if D = 26-01-2010 & n = 5 then function returns 31-01-2010   **10**

6. Define a class to represent a Bank Account. Include the following

    Data Members :
    a) Name of the Depositor
    b) Account No.
    c) Type of Account (Saving, Current, Fixed Deposit, Loan)
    d) Balance Amount.

    Member Functions :
    a) To Assign initial value
    b) To Deposit an amount
    c) To withdraw an amount
    d) To display Name of Depositor & Balance.

    Define all member functions and main( ). Generate the saving account report slip as an output.   **10**

7. What is Exception ? Write a program to accept the string in upper case and display it in lower case. Raise an exception if input string is not in upper case.   **10**

8. What are file input and file output streams ? Explain seekg( ), seekp ( ), tellg( ), tellp ( ).   **10**

9. Write a C++ program that reads the data from command prompt and copy it to FILE1.txt. Also calculate and display total no. of Lines in FILE1.   **10**

10. Explain with example (**Any two**) :   **10**
     A) Object Oriented Programming
     B) Abstract Class
     C) RTTI.

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M.C.A. (Semester – IV) (Management Faculty) Examination, 2010
BME6 – 416 : ENTERPRISE RESOURCE PLANNING
(2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) *Q.1 and Q.6 are* **compulsory**.
               2) *Solve* **any three** *questions from Q. 2 to Q. 5*
               3) *Figures to* **right** *indicate* **full** *marks.*

1. Write a detail report about a manufacturing company, describing how the ERP system implementation has improved the company's operations. Look especially for improvements that have come as a result of better coordination between different business functional areas (Marketing, Sales, Production and so forth). **20**

2. a) Discuss the concept of Business Process Re-engineering (BPR) in brief. **5**

    b) What are the various resources an ERP has to optimize ? How does intelligent resource planning help this ? **5**

3. a) List and compare the available popular ERP systems in the market. **5**

    b) Explain the critical success factors for an ERP implementation. **5**

4. a) How can an organization use ERP implementation to obtain competitive advantages ? Explain with an appropriate example. **5**

    b) Discuss the ERP scenario in service based industry. **5**

5. a) Explain the ERP implementation methodology in brief. **5**

    b) A hospital is having a non integrated information system. List five potential problems that might result from that system. State your assumptions clearly. **5**

6. Write short notes on **any four** of the following : **20**
    a) OLAP
    b) CRM
    c) ESS
    d) MIS
    e) Data Mining.

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M.C.A (Mgt. Faculty) (Semester – V) Examination, 2010
(2005 Pattern)
IT 5 : VISUAL C++ (Elective)

Time : 3 Hours   Max. Marks : 70

Instruction: *Draw diagrams **wherever** necessary.*

1. Explain the following terms: (**any four**)   **20**

   a) TextOut Function

   b) Device Independent Graphics interface

   c) WM_DESTROY Message

   d) IParam variable

   e) System Menu.

2. Write code to change the mouse cursor to the cursor identified by IDC_CURSOR1 when the left mouse button is pressed.   **10**

   OR

   Write an algorithm and then code to draw a rectangle using user defined red pen.

3. Write a source code for simple windows application which creates and displays a window and displays messages.   **10**

   OR

   Write code which displays the client area mouse coordinates at the location of the mouse.

P.T.O.

4. Write code snippets to perform the following operations : **10**

   a) Draw a rectangle from the point (100,100) to (200, 250) using the default pen.

   b) Draw a line from the (0,0) to the current mouse cursor position on the click of the left mouse button .

5. Using the window controls write a program to display a dialog box with student details. **10**

6. Write short note on : **10**

   a) Pop up Menu

   b) Application Framework

   c) Windows Menu.

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M.C.A. (Semester – V) (Management Faculty) Examination, 2010
ITE – 7 : PARALLEL COMPUTING
(2005 Pattern) (Elective)

Time : 3 Hours   Max. Marks : 70

Instructions : *1) Question No.* **1** *is* **compulsory**.
2) Solve **any four** *questions from* **2** *to* **6.**
3) Assume suitable data **wherever** *necessary.*
4) Draw suitable diagram **wherever** *needed.*
5) Figures to the **right** *indicate* **full marks**.

1. Discuss the following **(any two)** :   **(2×5=10)**
   a) Grid computing
   b) Cluster computing
   c) Parallel Virtual Machine
   d) Multithreading.

2. a) Discuss any two applications of parallel processing.   **7**
   b) What are the primary-attributes used to measure the performance of a parallel
      computer system ?   **8**

3. a) How are parallel algorithms analyzed ? Explain each of them.   **7**
   b) What types of data structures are used for parallel algorithms ? Discuss in detail. **8**

4. Compare and contrast the following :   **(7+8)**
   a) Vector processing and Array processing
   b) Instruction pipelines and Arithmetic pipelines.

5. Differentiate between control flow computing concept and data flow computing
   concept. Give example of each.   **15**

6. a) Write a shared memory program for parallel systems, to add elements of an
      array using two processors.   **7**
   b) Write a program for PVM (parallel virtual machine), to give a listing of the
      "slave" or spawned program.   **8**

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M.C.A. (Semester – IV) (Mgt. Faculty) Examination, 2010
IT 43-403 : OBJECT ORIENTED ANALYSIS AND DESIGN
(2008 Pattern)

Time : 3 Hours   Max. Marks : 70

Instructions : 1) *Q.1 is **compulsory**.*
                   2) *Solve **any five** questions from remaining.*

1. A University has decided to conduct an online entrance test for Ph.D.

   - Candidate has to submit the application by selecting appropriate streams

   - University declares the exam centres depending on no. of candidate enrolled

   - A exam schedule is prepared by University and displayed on website

   - Candidate appear for exam and fill the option form for research center

   - Website provides subjectwise guide with vacancies

   - Result is declared and selected students are called for interview

   A) Draw class diagram.   **(10)**

   B) Draw use case diagram.   **(10)**

2. Explain various approaches for identifying classes.   **(10)**

3. A) Draw collaboration diagram for adding a new contact in mobile.   **(5)**

   B) Draw a sequence diagram for sending SMS to your friend.   **(5)**

4. Describe RUP in detail.   **(10)**

5. Draw activity diagram for online bill payment of electricity bill.   **(10)**

6. Draw the state transition diagram for Bank Safety Locker System which consist of a sensor and the system with the following facilities :

   1) Sensing the intruders

   2) Taking their photographs.

   3) Scanning their finger prints.

   4) Alarm system.

   5) Auto dialing to the authorities **(10)**

7. Write a short notes on (**Any two**) : **(10)**

   A) Booch methodology

   B) Object persistance

   C) Data access layer

   D) Testing strategy.

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