Total No. of Questions : 8]

SEAT No. :

P2873

[Total No. of Pages : 3

[4838] - 101
M.C.A. (Semester - I)
CA - 101 : Programming with C
(2013 Pattern)

Time :3 Hours] ***[Max. Marks :50***

Instructions to the candidates:

1) ***Attempt any Five questions out of eight.***
2) ***All question carry equal marks.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt each of the following :

a) What is pointer? What are the different operations that can be performed on pointer? **[4]**

b) Explain the use of getchar ( ) getch ( ) and getche ( ) with suitable example. **[4]**

c) What are the features of 'C' language? **[2]**

Q2) Attempt each of the following :

a) Explain the functions used to allocate and deallocate memory dynamically. **[4]**

b) Write a 'C' program to copy contents of one text file to another such that uppercase alphabets are converted to lowercase, lowercase to uppercase and digits are converted to ∗. The filenames are accepted as command line arguments. **[4]**

c) What will be the output of the following? **[2]**

```
main ( )
{
    static int a [5];
    int i;
    for (i = 0; i< = 4; i ++)
    printf ("%d \h", a[i]);
}
```

P.T.O.

Q3) Attempt each of the following :

a) Write down the differences between 'while' and 'dowhile' loop with example. **[4]**

b) Write a "C' program using recursive function to calculate sum of digits of given number. **[4]**

c) What is fseek ( ) function? Give the syntax. **[2]**

Q4) Attempt each of the following :

a) Explain the use of functions fprintf ( ) and fscanf ( ) with suitable example. **[4]**

b) Write a 'C' program using structure to accept name, author, rate, quantity of n books from user and display name of book, author name and total cost in sorted order of rate. **[4]**

c) "C performs bound checking for an array" state whether True/False and justify. **[2]**

Q5) Attempt each of the following :

a) Explain enumerated data type and typedef with suitable example. **[4]**

b) Explain the concept of formal and actual parameters with an example. **[4]**

c) Write down the syntax for following functions used in graphics.

i) arc

ii) ellipse **[2]**

Q6) Attempt each of the following :

a) Explain call by value and call by reference used in function with suitable example. **[4]**

b) Write a 'C' program to sort an array of n integer numbers in descending order. **[4]**

c) What will be the output of following program. **[2]**

```
main ( )
{   int i = 10;
    int * j, **k;
    j = & i, k = & j;
    printf ("%d%d%d\n", i, * j, **k).,
}
```

Q7) Attempt each of the following :

a) Write an algorithm and draw a flowchart to check given number is palindrsme or not. **[5]**

b) Write a 'C' program which prints given matrix with its rowsum and columnsums. **[5]**

e.g.

I/P		
1	2	3
4	5	6
7	8	9

O/P			
1	2	3	6
4	5	6	15
7	8	9	24
12	15	18	

Q8) Attempt each of the following :

a) What is nesting of structure? How can members of nested structure be accessed. Explain with suitable example. **[5]**

b) Write a 'C' program for menu driven operations on a string using standard library functions. **[5]**

Total No. of Questions : 8]

SEAT No. :

P2874

[Total No. of Pages : 3

[4838] - 102

M.C.A. - I (Science Faculty)

COMPUTER SCIENCE

CA - 102 : Database Management System

(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Attempt any five questions.***
2) ***Figures to the right indicate full marks.***
3) ***Assume appropriate data if necessary.***
4) ***All questions carry equal marks.***

Q1) Attempt **each of the** following :

a) Explain different types of symbols used in E-R diagram. **[4]**

b) Explain different states of a transaction with diagram. **[4]**

c) State the responsibilities of DBA. **[2]**

Q2) Attempt **each** of the following :

a) Compute (AG) with the Functional dependencies given below: **[4]**
A->B, A->C, CG->H, CG->I, B->H

b) Explain recoverable and cascadeless schedules. **[4]**

c) State the properties of transaction. **[2]**

Q3) Attempt **each** of the following :

a) Consider the following transactions. Find out any two non-serial schedules which are serializable to a serial schedule <T1 ,T2,T3> . **[4]**

T1	T2	T3
Read(a)	Read(c)	Read(a)
a:=a-100;	c:= c*10;	a:=a+a * 0.12;
Write(a)	Write(c)	Write(a)
Read(b)	Read(d)	Read(c)
b:=b+100;	d:=d-1000;	c:=c+i000;
Write(b)	Write(d)	Write(c)

P.T.O.

b) What are the disadvantages of file-oriented system? **[4]**

c) Explain how to test conflict serializability. **[2]**

Q4) Attempt **each** of the following :

a) Explain the concept of Multiple - Granularity locking. **[4]**

b) Consider the following relations: teacher(ID, name, dept_name) **[4]**

ID	name	dept_name
10101	Srinivasan	Comp.Sci.
12121	Wu	Finance
15151	Mozart	Music

Teaches (ID, Course_id)

ID	Courseid
10101	CS-l0l
12121	FIN-201
15151	BIO-101

Draw left outer join and Full outer join of Teacher and Teaches.

c) Define: **[4]**

i) Primary Key

ii) Candidate key

Q5) Attempt **each** of the following :

a) What is timestamp ordering protocol? State Thomas' Write rule. **[4]**

b) What is canonical cover? State the procedure to compute it. **[4]**

c) Explain the terms **[2]**

i) weak entity

ii) 2 NF

Q6) Attempt **each** of the following :

a) Explain multivalued dependency with its uses. **[4]**

b) Explain Armstrong's axioms required to compute F^+. **[4]**

c) What is Query Language? State any two categories of it. **[2]**

Q7) Attempt **each** of the following :

a) What is RAID? Explain different levels of RAID. **[5]**

b) Explain deadlock prevention techniques. **[5]**

Q8) Attempt **each** of the following :

a) A company database needs to store information about employees (identified by *ssn*, with *salaiy* and *phone* as attributes), departments (identified by *dno*, with *dname* and *budget* as attributes), and children of employees (with *name* and *age* as attributes). Employees *work* in departments; each department is *managed* by an employee; a child must be identified uniquely by *name* when the parent (who is an employee; assume that only one parent works for the company) is known. Draw an ER diagram representing this scenario. **[5]**

b) Shown below is the log as it appears at three instances of time. Explain the recovery actions for **immediate update scheme** in each of case a, b, c. **[5]**

(a)	(b)	(c)
$<T_0$ start>	$<T_0$ start>	$<T_0$ start>
$<T_0, A, 1000, 950>$	$<T_0, A, 1000, 950>$	$<T_0, A, 1000, 950>$
$<T_0, B, 2000, 2050>$	$<T_0, B, 2000, 2050>$	$<T_0, B, 2000, 2050>$
	$<T_0$ commit>	$<T_0$ commit>
	$<T_1$ start>	$<T_1$ start>
	$<T_1, C, 700, 600>$	$<T_1, C, 700, 600>$
		$<T_1$ commit>

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Total No. of Questions : 8]

SEAT No. :

P2875

[Total No. of Pages : 3

[4838] - 103

M.C.A. - I (Under Science Faculty)

COMPUTER SCIENCE

CA - 103 : Mathematical Foundations

(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Solve any five questions out of eight questions.***
2) ***Figures to the right indicate full marks.***
3) ***Use of non programmable scientific calculator is allowed.***

Q1) Attempt each of the following :

a) Let A and B be two sets. Show that $A - A \cap B^c$. **[4]**

b) Let A = {1, 2, 3}, B = {*a*, *b*} Does there exist a one-one function fro set A to set B. justify. **[4]**

c) Give an example of a reflexive relation which is not symmetric. **[2]**

Q2) Attempt each of the following :

a) Let $f : \mathbb{R} \to \mathbb{R}$, $f(x) = 2x + 3$ and $g : \mathbb{R} \to \mathbb{R}$, $g(x) = \sin x$. Find $(fog)(x)$ and $(fog)^{-1}(x)$. **[4]**

b) Let $A = \{x \in \mathbb{R} \mid x^2 + 2x + 1 = 0\}$ and $B = \{x \in \mathbb{R} \mid (x - 1)(x + 1) = 0\}$. Find $A \times B$. **[4]**

c) Define partial order also give an example of a partial order on the set of integers $\mathbb{Z}$. **[2]**

Q3) Attempt each of the following :

a) Let P(x) be teh statement "student x knows calculus" and let $Q(y)$ be the statement "class y contains a student student who knows calculus". Express each of the following as quantifications of P(x) and $Q(y)$: **[4]**

i) Some students know calculus

ii) Not every student knows calculus

b) Show that $\forall x(P(x) \wedge Q(x))$ and $\forall x P(x) \wedge \forall x Q(x)$ are logically equivalent. **[4]**

c) Find *a* compound proposition involving propositions p, q, and r that is true when p and q and r is false, but false otherwise. **[2]**

P.T.O.

Q4) Attempt each of the following :

a) Give a proof by contraposition of the theorem "if n is an integer and $3n + 2$ is odd, then n is odd". **[4]**

b) Show that $\forall x(P(x) \vee Q(x))$ and $\forall x P(x) \vee Q(x))$ are not logically equivalent. **[4]**

c) Let $Q(x, y)$ be the statement $x + y = x - y$. If the universe of discourse for both variables consists consists of all integers, what are the truth values Q(1, 1) and Q(2, 0)? **[2]**

Q5) Attempt each of the following :

a) Find G.C.D. of polynomials $f(x) = x^3 - 2x^2 + 3x - 7$, $g(x) = x^2 + 2$. **[4]**

b) Find all roots of $x^4 + 2x^3 - 12x^2 - 22x + 40 = 0$ where roots are in arithmetic progression. **[4]**

c) Use Remainder Theorem to find remainder when $x^4 - 3x^3 - 7x^2 - 2$ is divided by $x - 2$. **[2]**

Q6) Attempt each of the following :

a) Describe all solutions of $5x \equiv 3(mod 7)$ **[4]**

b) Prove that if $a \equiv b(mod\ n)$ and m|n, then $a \equiv b(mod\ m)$. **[4]**

c) Find remainder of 4^7 when divided by 7. **[2]**

Q7) Attempt each of the following :

a) Let $\rho = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 \\ 4 & 5 & 3 & 2 & 1 & 7 & 6 & 9 & 8 \end{bmatrix}$ be a permutation. **[5]**

i) Write ρ as a product of disjoint cycles.

ii) Write ρ as a product of transpositions.

iii) Determine whether ρ is seven or odd.

iv) Find order of ρ.

v) Find inverse of ρ.

b) Find GCD of 3587, 1819 and express it in linear combinations of 3587 and 1819. **[5]**

Q8) Attempt each of the following :

a) Solve the following system of equations by Guass elimination method.

$2x - y + 3z = 8, -x + 2y + z = 4, 3x + y - 4z = 0.$ **[5]**

b) Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 1 \\ -1 & 0 & 2 \\ 2 & 1 & -3 \end{bmatrix}$ by adjoint method. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2876

[Total No. of Pages : 3

[4838] - 104

M.C.A. (Under Science Faculty)

CA - 104 : Concrete Mathematics and Graph Theory

(2013 Pattern) (Semester - I)

Time :3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Attempt any five questions out of eight.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks.***
4) ***Use of single-memory, non-programmable scientific calculator is allowed.***

Q1) a) Find the remainder when 2^{340} is divided by 31. **[4]**

b) Explain Travelling salesman problem. **[4]**

c) Give an example of a graph which is complete bipartite and regular. **[2]**

Q2) a) Draw the graph of following adjacency matrix and find complement of its underlying graph.

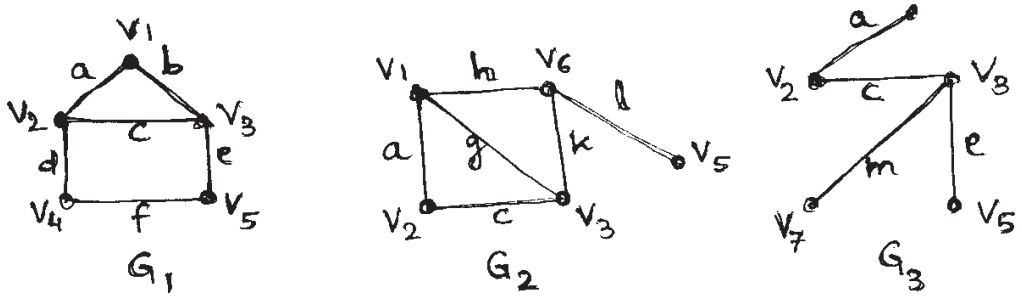
$$\begin{bmatrix} 2 & 1 & 0 & 0 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 1 & 2 & 0 \end{bmatrix}$$ **[4]**

b) Prove that any two simple connected graphs with n vertices, all of degree 2, are isomorphic. **[4]**

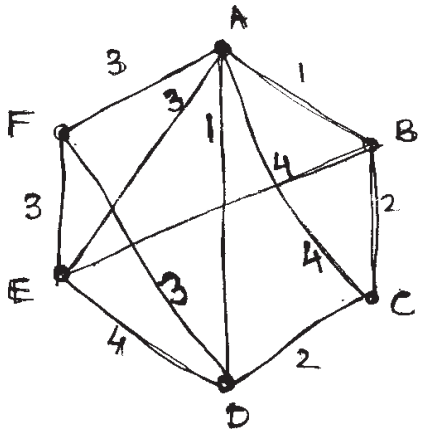
c) Draw the graph which is Eulerian but not Hamiltonian. **[2]**

P.T.O.

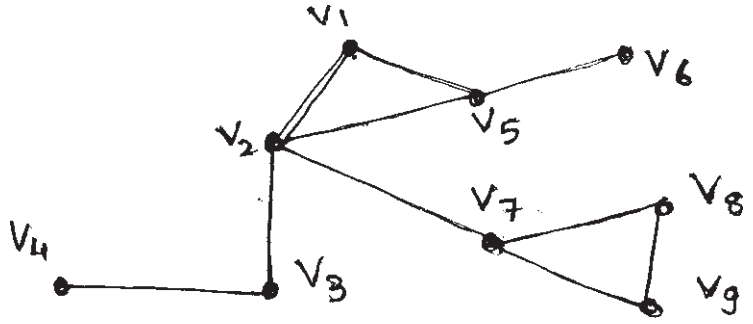
Q3) a) For the graphs G_1, G_2, G_3 given below, find $G_2 \oplus (G_1 \cap G_3)$. **[4]**



b) Find shortest spanning tree using Kruskal's algorithm. **[4]**



c) Find all isthmus and cutvertices in the following graph. **[2]**



Q4) a) Draw two spanning trees of the Peterson's graphs. **[4]**

b) Solve the following recurrence relation. **[4]**

$2\ a_n = 7a_{n-1} - 3\ a_{n-2}$; $a_0 = a_1 = 1$

c) Define the terms :

i) Planar Graph

ii) Complete asymmetric diagraph **[2]**

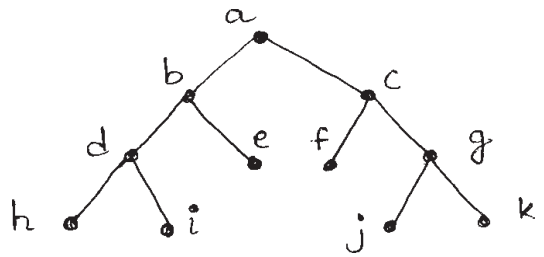
Q5) a) Draw arborescence for the following expression and express it in polish notation.

$a + (b * c) / (d + e - f \uparrow g)$ **[4]**

b) Obtain the particular solution of the recurrence relation.

$a_n - 5\, a_{n-1} + 6\, a_{n-2} = 7^n$. **[4]**

c) Obtain preorder traversal for the following binary tree. **[2]**



Q6) a) Find all incongruent solutions to $18\,x \equiv 30 \pmod{42}$. **[4]**

b) Prove that K_5, the complete graph on 5 vertices is nonplanar. **[4]**

c) Find gcd of 119 and 272. **[2]**

Q7) a) Solve the following system of congruences by Chinese Remainder theorem. **[5]**

$x \equiv 2 \pmod 3$

$x \equiv 3 \pmod 5$

$x \equiv 2 \pmod 7$

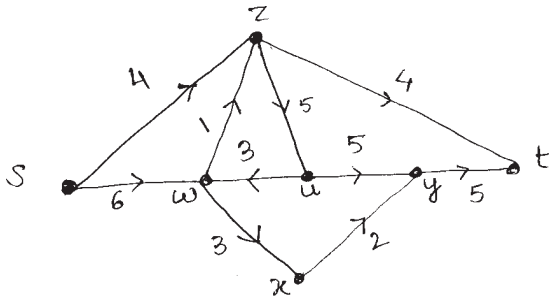
b) Explain RSA algorithm in brief. **[5]**

Q8) a) Encrypt the message "cryptography" by using linear cipher $c \equiv p + 13 \pmod{21}$ where p is digital equivalent of plain text. Use the following digital equivalents **[5]**

c = 12 , r = 04 , y = 08 , p = 11

t = 09 , o = 14 , g = 20 , a = 03, h = 10

b) Use Ford and Fulkerson algorithm to find a maximal flow from source s to sink t. **[5]**



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Total No. of Questions : 5]

SEAT No. :

P2877

[Total No. of Pages : 3

[4838] - 105

M.C.A. - I (Science Faculty)

COMPUTER SCIENCE

CA - 105 : Computer Organization

(2013 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Attempt any five questions of the following.***
2) ***Figures to the right indicate full marks.***
3) ***Draw neat diagram wherever necessary.***

Q1) a) Write a note on Associative memory. **[4]**

b) Distinguish between the synchronous and asynchronous communication and give example of each. **[4]**

c) State at least four features of 8086. **[2]**

Q2) a) What are the advantages of parallelism? Classify parallel processing based on instruction and data stream. **[4]**

b) Implement the following function using 8:1 multiplexer : **[4]**

$F(A, B, C, D) = \Sigma(1, 2, 4, 8, 11, 13, 15)$

c) Explain instructions PUSH and pop in stack operation. **[2]**

Q3) a) Design BCD to gray code converter using K-map. **[4]**

b) Draw block diagram of ALU and explain function table for 2bit data. **[4]**

c) What is interrupt? What is IVT? **[2]**

P.T.O.

Q4) a) What will be the output voltage of a 4 bit R-2R ladder corresponding to the binary inputs : **[4]**

i) 1010

ii) 0010

The input levels are 0 = 0V and 1 = 8V

b) What are the major characteristics of CISC processor? **[4]**

c) Explain functions of BIU and EU in 8086. **[2]**

Q5) a) Draw logic diagram and explain working of 3 bit VP - counter. **[4]**

b) Draw block diagram and explain working of UART. **[4]**

c) Give functions of following registers. **[2]**

i) Program counter

ii) Instruction register.

Q6) a) Explain the concept of numeric co-processor with the help of neat block diagram. **[4]**

b) What is the difference between latch and flip-flop? Draw truth table and logic diagram of Jk flip flop. **[4]**

c) Distinguish between SRAM and DRAM. **[2]**

Q7) a) State De-Morgan's theorems. Simplify the following logic expression using Boolean algebram. Draw logic diagram for simplified expression. **[5]**

$$Y = \overline{A}\overline{B}\overline{C} + \overline{A}B\overline{C} + A\overline{B}\overline{C} + AB\overline{C}$$

b) Explain the concept of RISC pipeline. **[5]**

Q8) a) Explain block diagram of parallel interface. **[5]**

b) Draw logic diagram and explain working of successive approximation ABC. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2878

[Total No. of Pages : 3

[4838] - 201

M.C.A. - I (Science Faculty)

CA - 201 : Data Structures

(2013 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :80*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) Attempt all of the following :

a) What is circular queue? Explain its advantages over linear queue with example. **[4]**

b) Evaluate following postfix expression using stack (Give steps for evaluation). **[4]**

ABC + – CDB / + * B$C +

Consider A = 6, B = 2, C = 3 & D = 8.

c) What is ADT? Write properties of ADT. **[2]**

Q2) Attempt all of the following :

a) Create Max Heap for the following elements show all steps of creation.

5, 1, 9, 2, 11, 50, 6, 100, 7 **[4]**

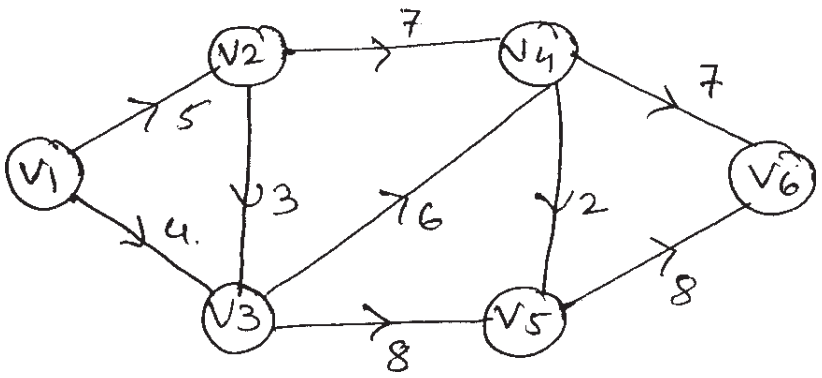
b) Write a short note on operations of doubly linked list. Explain with example. **[4]**

c) Define BST. "BST could be an example of skewed binary tree". - Justify. **[2]**

P.T.O.

Q3) Attempt all of the following :

a) Find critical path for the following graph. **[4]**

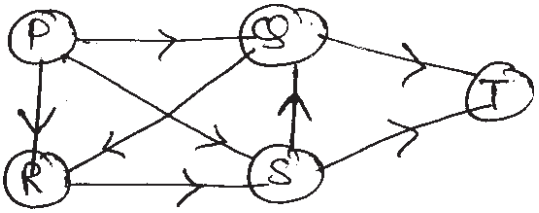


b) Write 'C' function for the following **[4]**

i) Display singly linked list.

ii) Delete a node from singly linked list (Position of node = Last node).

c) Find the adjacency list for the following graph. **[2]**



Q4) Attempt all of the following :

a) Sort following data using quick sort (show all iterations)

20, 54, 48, 37, 12, 92, 86, 07 **[4]**

b) Explain the use of hash tables using example. **[4]**

c) Show that f(x) = O(g(x)) where **[2]**

$f(x) = x^2 + 5x$

$g(x) = x^2$

Q5) Attempt all of the following :

a) Explain graphically, various situations to insert an item to circular linked list. (Assume suitable data). **[4]**

b) Consider Dqueue of characters with following scenario -
Left = 4, Right = 3 Qsize = 6, —,—, P, Q, —,—
What will happen when following operations are performed?
i) Insert left (z)
ii) Delete Right
iii) Delete left
iv) Insert Right (w). **[4]**

c) Explain with example Big theta (θ) notation. **[2]**

Q6) Attempt all of the following :

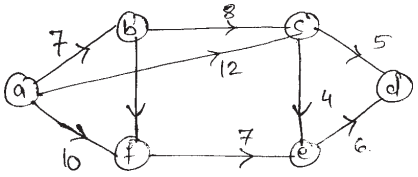
a) Write a 'C' function to check well formedness of paranthesis. **[4]**

b) Each element of an array Data[20] [50] requires 4 Byte of storage. Base address of data = 2000. Determine the location of element data [10] [10] when array is stored as -
i) Row major
ii) Column major. **[4]**

c) Define :
i) Primitive data structure
ii) Non-primitive data structure. **[2]**

Q7) Attempt all of the following :

a) Consider the following weighted graph. Find shortest path from vertex 'a' to all other vertices using Dijkstra's algorithm. **[5]**



b) Construct AVL tree for following data. **[5]**
SRI, IND, AUS, FRA, CAN, DEN

Q8) Attempt all of the following :

a) Write 'C' function to add two polynomials. **[5]**

b) Construct BST for following data show all steps.
Insert (7, 2, 9, 0, 5, 6, 8, 1)
Delete (5, 9) **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2879

[Total No. of Pages : 3

[4838] - 202

M.C.A. (Science Faculty)

COMPUTER SCIENCE

CA - 202 : Theoretical Computer Science

(2013 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Attempt any 5 of the following 8 questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***All questions carry equal marks.***

Q1) Attempt all :

a) Construct DFA to accept all strings over {0, 1} starting with 10 and having even length. **[4]**

b) Check whether L = $\{a^n b^m c^n / n, m \geq 1\}$ is Regular. Justify your answer. **[4]**

c) Define any two types of Turing Machines. **[2]**

Q2) Attempt all :

a) Convert the following grammar into GNF : **[4]**

$S \rightarrow AA$

$A \rightarrow SB / b$

$B \rightarrow AS / a$

b) Construct PDA for the following grammar **[4]**

$S \rightarrow OA1 / 1B$

$A \rightarrow OA / B / O$

$B \rightarrow 1AO / 1$

c) What operations are performed on sets. Give example of any two operations. **[2]**

P.T.O.

Q3) Attempt all :

a) Construct T.M for substraction of two unary numbers. **[4]**

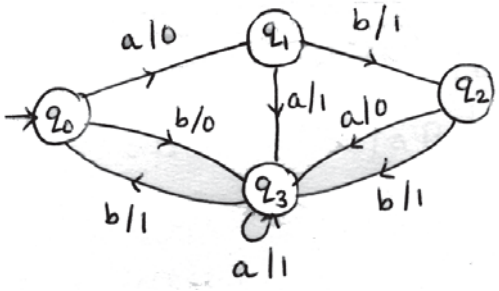
b) Construct NFA for regular expression : **[4]**

$$10 + (0 + 11)^* 0^* 1$$

c) Define useless symbols. Explain with example. **[2]**

Q4) Attempt all :

a) Construct Moore machine equivalent to the following Mealy Machine. **[4]**



b) Construct CFG for $L = \{a^n b^{n+2} c^m \mid n \geq 1, m \geq 0\}$ **[4]**

c) Define proper prefix and proper suffix. Give one example of each. **[2]**

Q5) Attempt all :

a) Construct PDA for $L = \{a^{n+m}\ b^n\ c^m / n, m \geq 1\}$. **[4]**

b) Define Chomsky Hierarchy of Formal languages. **[4]**

c) Rewrite the following grammar by eliminating $\in$-productions : **[2]**

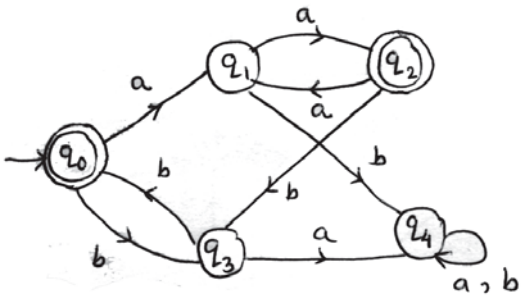
$S \rightarrow AB$

$A \rightarrow SA / BB / bB$

$B \rightarrow aA / b / \in$

Q6) Attempt all :

a) Minimize the following DFA. **[4]**



b) Convert the following grammar into CNF. **[4]**

$S \rightarrow aAab / AB$

$A \rightarrow a\ b\ B / ab / a$

$B \rightarrow bAB / aB / b$

c) Check whether '=' is an equivalence relation or not on set of integers. **[2]**

Q7) Attempt all :

a) Construct T.M for $L = \{a^n b^n c^m d^m / n, m \geq 0\}$. **[5]**

b) Construct CFG equivalent to the following PDA **[5]**

$M = (\{q_0, q_1\}, \{0, 1\}, \{X, R\}, \delta, q_0, R, \phi)$

where δ is defined as :

$\delta (q_0, 0, R) = (q_0, XR)$

$\delta (q_0, 0, X) = (q_0, XX)$

$\delta (q_0, 1, X) = (q_1, \in)$

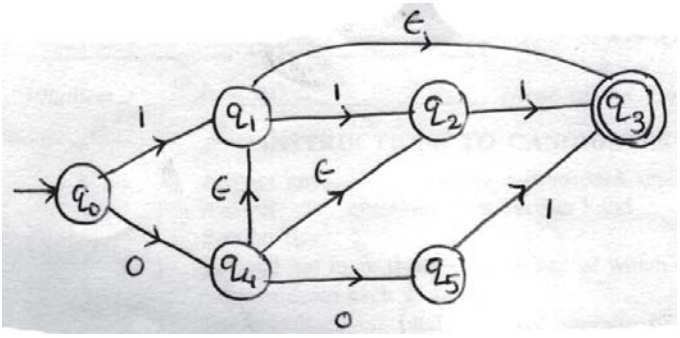
$\delta (q_1, 1, X) = (q_1, \in)$

$\delta (q_1, \in, X) = (q_1, \in)$

$\delta (q_1, \in, R) = (q_1, \in)$

Q8) Attempt all :

a) Construct DFA for the following NFA : **[5]**



b) Prove that CFL's are closed under concatenation. Give one example. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2880

[Total No. of Pages : 3

[4838] - 203

M.C.A. (Science Faculty)

CA - 203 : Object Oriented Programming (C++ Programming)

(2013 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) *Attempt any five questions from the following.*
2) *Figures to the right indicate full marks.*
3) *Assume suitable data if necessary.*

Q1) Attempt all of the following : **[4+4+2=10]**

a) What is an abstract class? How to declare an abstract class? Explain with example.

b) Write characteristics of virtual function.

c) Write any four applications of object oriented programming.

Q2) Attempt all of the following : **[4+4+2=10]**

a) Write a C++ program with class date (dd, mm, yy). Write overloaded constructors for this class. Also write display ( ) function to display date in dd/mm/yy format.

b) Explain the difference between function overloading & overriding.

c) What are the different ways to open a file in C++?

Q3) Attempt all of the following : **[4+4+2=10]**

a) Explain dynamic memory management operator in C++ with example.

b) Write a C++ program to overload << and >> for class string.

c) Explain read ( ) and write ( ) functions with example.

Q4) Attempt all of the following : **[4+4+2=10]**

a) What do you mean by protected access specifier? Explain protected derivation in detail.

b) Which functions are used to manipulate file pointers?

c) Explain in short

i) Class and object

ii) Data hiding

P.T.O.

Q5) Attempt all of the following : **[4+4+2=10]**

a) How to convert one class type data to another class type? Explain with example.

b) Write any four file opening modes with their meaning.

c) Find out any error in the following code. If there are no errors then write output:

```
float myfunc (float i);
double myfunc (double i);
main ( )
{
      cout << myfunc (10.1) << "   ";
      cout << myfunc (10) ;
      return 0 ;
}
float myfunc (float i)
{ return (i);}
double myfunc (double i)
{ return (i); }
```

Q6) Attempt all of the following : **[4+4+2=10]**

a) Write a short note on multipath inheritance.

b) What will be the output of the following code segment (assume there are no syntax errors);

```
class Base {public : virtual void vfunc ( )
{cout << "Base vfunc \n ";}.
};
class derived 1 : public Base
{ public : void vfunc ( )
                  {cout << "derived 1 vfunc \n";}
};
class derived 2 ; public derived 1
{  };
main ( )
{     Base *p, b;
      derived d1 ;
      derived d2 ;
   P = & b ;
   P → vfunc ( ) ;
   P = & d1;
   P → vfunc ( ) ;
   P = & d2;
   P → vfunc ( ) ;
return 0;
}
```

c) "The insertion and extraction operators have to be overloaded as members", State true/false Justify.

Q7) Attempt all of the following : **[5+5=10]**

a) Write a C++ program which accepts student information (name, age, year). The program should throw an exception for the following situation :

i) age is not between 18 and 25.

ii) year is not "F Y', "SY" or "TY".

b) What is this pointer? Where is it necessary to use this pointer? Explain with example.

Q8) Attempt all of the following : **[5+5=10]**

a) Write general form of a function template. Explain with suitable example.

b) Write a C++ program for class book (title, author, price). Accept data of 'n' books & display them.

Total No. of Questions : 8]

SEAT No. :

P2881

[Total No. of Pages : 2

[4838] - 204
M.C.A. (Science)
COMPUTER SCIENCE
CA - 205 : Advanced Database Management System
(2013 Pattern) (Semester - II)

Time :3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) *All questions carry same marks.*
2) *Attempt any five questions.*

Q1) Answer following questions :

a) Explain benefits and limitations of shared memory in parallel databases. **[4]**

b) Define following terms. **[4]**

i) Object

ii) Attributes

iii) Object-Identities

iv) Class

c) Define Associations in OODBMS. **[2]**

Q2) Answer following questions :

a) What do you mean by complex objects? List some of the complex objects that can be handled by ORDBMS. **[4]**

b) Explain various types of Actions used in Granting / Revoting privileges. **[4]**

c) Define Data encryptions in database security. **[2]**

Q3) Answer following questions :

a) Explain Distributed Deadlocks. **[4]**

b) Explain object Data Management Group (ODMG). **[4]**

c) What do you mean by Audit Trails. **[2]**

P.T.O.

Q4) Answer following questions :

a) Explain Timestamping in Distributed databases. **[4]**

b) What do you mean by Data Allocation and Data Replication. **[4]**

c) Define Assembly structure. **[2]**

Q5) Answer following questions :

a) Explain Firewalls and its types in Database security. **[4]**

b) Explain characteristics of object oriented databases. **[4]**

c) Define polymorphism in OODBMS. **[2]**

Q6) Answer the following questions :

a) Write a note on History of evolution of Data Models. **[5]**

b) Explain multimedia sources in multimedia databases. **[5]**

Q7) Answer following questions :

a) Define ORDBMS and explain its challenges. **[5]**

b) List and explain key elements of parallel Database processing. **[5]**

Q8) Answer following questions :

a) Write a note on Architecture of distributed Databases. **[5]**

b) Solve following case

A warehouse chain keeps several items to supply to its customers on the basis of order released by them for particular item (s). Warehouse has number of stores and stores hold a variety of items. The warehouse is required to meet all of customers order requirement - give Requirement Definition and Analysis. **[5]**

Total No. of Questions : 8]

SEAT No. :

P2882

[Total No. of Pages : 3

[4838] - 205

M.C.A. - I (Science Faculty)

COMPUTER SCIENCE

CS - 204 : Computer Networks

(2013 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Answer any five questions from eight.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicate full marks.***
4) ***Assume Suitable data jf necessary.***

Q1) Attempt all of the following :

a) Write a short note on reservation and token passing. **[4]**

b) What is Ethernet? What are its types? **[4]**

c) 'IP is called as best effort delivery protocol' comment. **[2]**

Q2) Attempt all of the following :

a) What are the different components of LAN? Explain in brief. **[4]**

b) Compare ISI-OSI and internet reference model. **[4]**

c) What are the disadvantages of unipolar encoding? **[2]**

Q3) Attempt all of the following :

a) Differentiate pure ALOHA and slotted ALOHA. **[4]**

b) Compare Circuit, message and Packet switching. **[4]**

c) What is Bluetooth? **[2]**

P.T.O.

Q4) Attempt all of the following :

a) Explain about CSMA/CD. **[4]**

b) Explain open ioop polices to avoid congestion. **[4]**

c) What is mean by pipelining? **[2]**

Q5) Attempt all of the following :

a) What are the different network topologies? **[4]**

b) If the frame is 110101011 and generator is $X^{4+}X+ 1$, What would be the transmitted frame. **[4]**

c) Explain GET and POST method of HTTP protocol. **[2]**

Q6) Attempt all of the following :

a) Compare between server based LAN and peer to peer LAN. **[4]**

b) What are the congestion? Explain closed loop solution for congestion control. **[4]**

c) Find out class net Id and host id of following IP address: 126:46:50:22. **[2]**

Q7) Attempt all of the following :

a) What is routing? What are the different types of routing? **[5]**

b) Write the detail working of SMTP. **[5]**

Q8) Attempt all of the following :

a) Explain different scenatios in email process. **[5]**

b) What is the domain name System? **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2883

[Total No. of Pages : 4

[4838] - 301

M.C.A. (Science Faculty)

CA - 301 : Design and Analysis of Algorithms

(2013 Pattern) (Semester - III)

Time :3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicates full marks.***
3) ***Solve any five (5) from the following.***

Q1) Attempt all of the following :

a) Write the Horner's Rule for Polynomial evaluation and it's pseudo code. **[4]**

b) Solve the given instance of TSP by using Branch and Bound reduced cost matrix method. **[4]**

$$\begin{bmatrix} \infty & 7 & 3 & 12 & 8 \\ 3 & \infty & 6 & 14 & 9 \\ 5 & 8 & \infty & 6 & 18 \\ 9 & 3 & 5 & \infty & 11 \\ 18 & 14 & 9 & 8 & \infty \end{bmatrix}$$

c) Define θ notation and show that

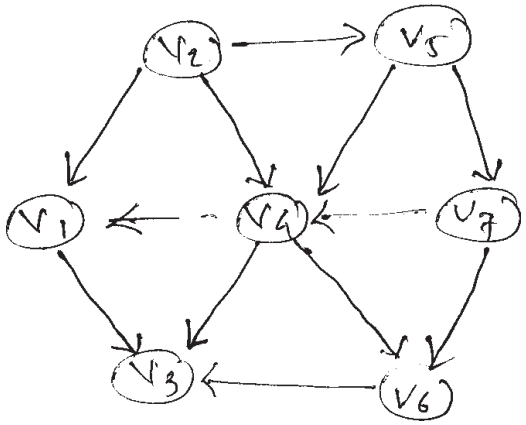
$5n^2 + 3n$ is $\theta(n^2)$ **[2]**

Q2) Attempt all of the following :

a) Explain the 4 Queens problem with its Explicit and Implicit constrains. **[4]**

P.T.O.

b) Find the topological order for the following graph 'G'. **[4]**



c) Write a recursive algorithm for calculating sum of n numbers. **[2]**

Q3) Attempt all of the following :

a) Solve the given 0/1 knapsack instance by LCBB method by drawing variable tuple size state space tree **[4]**

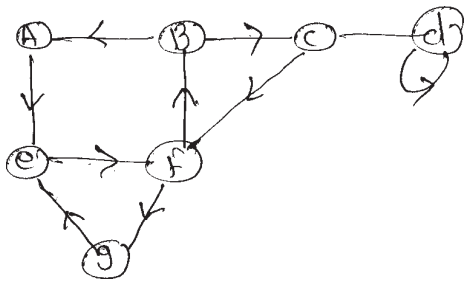
m = 12 n = 5 w = {4, 6, 3, 4, 2} p = {10, 15, 6, 8, 4}.

b) Explain PROBLEM REDUCTION? **[4]**

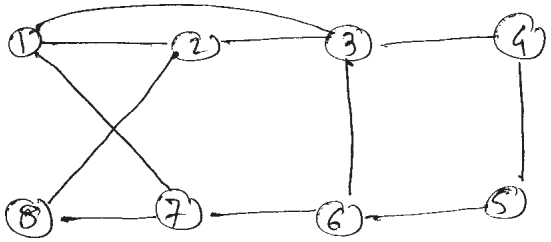
c) Discuss the time complexity of heap sort in Best – case, worst - case. **[2]**

Q4) Attempt all of the following :

a) Find strongly connected components of given graph 'G'. **[4]**



b) Find all the Hamiltonian cycles in given graph 'G'. **[4]**



c) Construct the Binary search tree for the given data {7, 2, 9, 5, 4, 6}. **[2]**

Q5) Attempt all of the following :

a) What is the best way to multiply a chain of matrices with dimensions that are 13×5, 5×89, 89×3, and 3×34 using dynamic programming. **[4]**

b) Sort the given data using quick sort

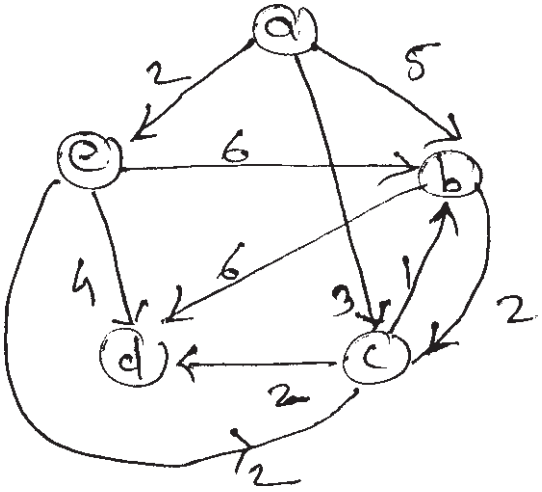
15, 25, 10, 3, 27, 7, 9, 19, 8, 40 **[4]**

c) Using job sequencing find the profit for the given data.

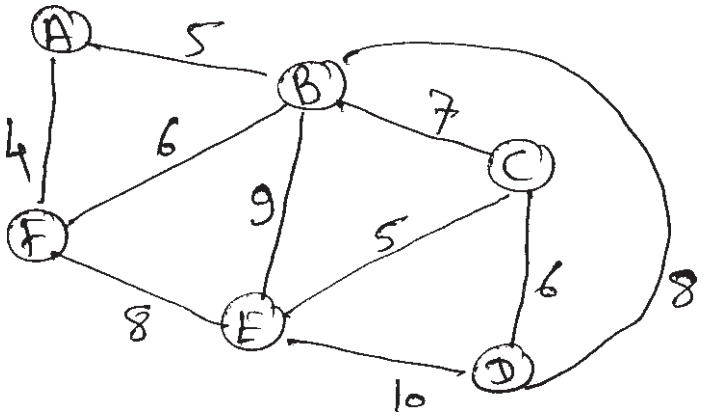
P = {10, 15, 7, 12, 2} d = {2, 1, 3, 2, 1}. **[2]**

Q6) Attempt all of the following :

a) Apply Dijkstra's Algorithm on the following graph. **[4]**



b) Using prim's algorithm find MST of given graph 'G'. **[4]**



c) Define Np-Hard and Np-complete. **[2]**

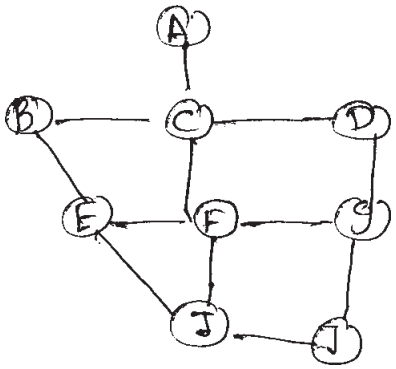
Q7) Attempt all of the following :

a) Explain 0/1 Knapsack problem merge and purge, give the value of the optimal solution for knapsack. **[5]**

n = 4 P = (13, 11, 12, 15)

m = 18 w = {6, 5, 7, 8}

b) Draw DFS and BFS for G. **[5]**



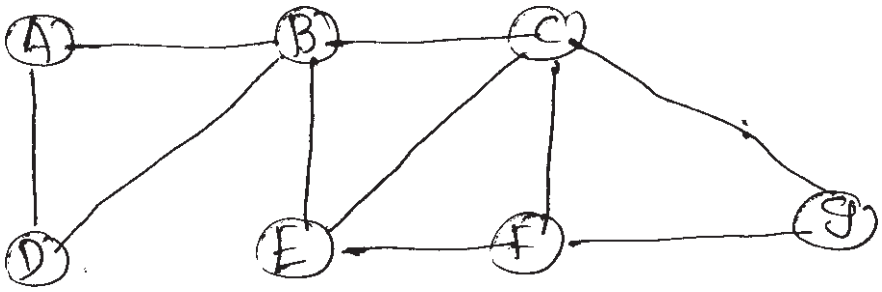
Q8) Attempt all of the following :

a) Solve Travelling Sales person problem (TSP) using Dynamic programming for the graph 'G' by adjacency matrix A

$$\begin{bmatrix} 0 & 8 & 13 & 18 & 20 \\ 3 & 0 & 7 & 8 & 10 \\ 4 & 11 & 0 & 10 & 7 \\ 6 & 6 & 7 & 0 & 11 \\ 10 & 6 & 2 & 1 & 0 \end{bmatrix}$$

[5]

b) Find articulation point and Bi-connected component for the following graph 'G'. **[5]**



Total No. of Questions : 8]

SEAT No. :

P2884

[Total No. of Pages : 3

[4838]-302

M.C.A. (Science Faculty)

CA - 302 : OPERATING SYSTEM

(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Figures to the right indicate full marks.***

Q1) Answer the following :

a) Explain in short any 4 system calls. **[4]**

b) Explain acyclic - graph directory structure. **[4]**

c) Define turn around time. **[2]**

Q2) Answer the following :

a) Explain the file system structure. **[4]**

b) Explain deadlock recovery techniques. **[4]**

c) What is virtual memory. **[2]**

Q3) Answer the following :

a) Explain the structure of the disk. **[4]**

b) Write a note on multi level queue scheduling. **[4]**

c) What is semaphore. **[2]**

Q4) Answer the following :

a) Explain the purpose of file attributes. **[4]**

b) Explain bounded buffer problem. **[4]**

c) Define load - time binding and link - time binding. **[2]**

P.T.O.

Q5) Answer the following :

a) Explain dining philosophers problem. **[4]**

b) Write a note on file operations. **[4]**

c) What is aging? **[2]**

Q6) Answer the following :

a) Explain what is process scheduling. Discuss different types of schedulers. **[4]**

b) What is segmentation? **[4]**

c) What is multithreading? **[2]**

Q7) Answer the following :

a) Consider the following processes with the length of CPU burst time in milisecond and the arrival time in milisecond. **[5]**

Process	Arrival time	Burst time
P_1	0	7
P_2	2	4
P_3	4	10
P_4	5	4

What is the average waiting time and turn around time for these processes with SIF (pre-emptive) - Round Robin. (Time slice 3)

b) Consider the following snapshot of the system. **[5]**

Answer the following questions using Bankers algorithm.

- What is the content of need matrix?
- Is the sytem in a safe state?

Process	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

Q8) Answer the following : **[5]**

a) Let head of moving disk with 200 tracks numbered from 0 to 199 is currently at 80. It has served the previous request at 70. Consider the queue of requests as follows :

100, 40, 25, 60, 120, 90, 110.

Compute the total head movements using

- SSTF and - Look algorithm.

b) Consider the following reference string

7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1.

How many page faults occur for the following algorithms - LRU - Optimum. No. of frames = 3. **[5]**

Total No. of Questions : 8]

SEAT No. :

P2885

[Total No. of Pages : 3

[4838] - 303

M.C.A. - I (Science Faculty)

COMPUTER SCIENCE

CA - 303 : Software Engineering

(2013 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates :

1) ***Answer any five of the following.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Attempt the following :

a) Explain teh waterfall model with diagram. **[4]**

b) Explain project life - cycle with different phases. **[4]**

c) Define the ripple effect. **[2]**

Q2) Attempt the following :

a) Explain any four McCalls quality factores. **[4]**

b) Write a short note on black bose testing. **[4]**

c) Define Re-engineering. **[2]**

Q3) Attempt the following :

a) Differentiate between verification & validation. **[4]**

b) What are the different types of maintenence? Explain. **[4]**

c) What is requirement investigation? **[2]**

P.T.O.

Q4) Attempt the following :

a) What are the qualities of a good design? Explain. **[4]**

b) Write a note on questionaries. **[4]**

c) Define data dictionary. **[2]**

Q5) Attempt the following :

a) Explain the role of system analyst in brief. **[4]**

b) Explain soflware measurement in brief. **[4]**

c) List various types of system. **[2]**

Q6) Attempt the following :

a) Describe the software crisis in brief. **[4]**

b) Explain the concept of configuration management. **[4]**

c) Give the steps for prototyping model. **[2]**

Q7) Attempt the following :

a) Why project control is important? Explain objectives of project control. **[5]**

b) Draw the structure chart of "Phone bill System". **[5]**

Q8) Attempt the following :

a) Explain testing principles & objectives. **[5]**

b) Design a protolype of input screen for a system use to reserve seats in long distance buses. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2886

[Total No. of Pages : 2

[4838] - 304

M.C.A. - II (Under Science Faculty)

CA - 304 : CORE JAVA

(Semester - III) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***

2) ***Neat diagram must be drawn wherever necessary.***

3) ***Figures to the right indicates full marks.***

Q1) Attempt all of the Following

a) What is a package? How user - defined packages are created? **[4]**

b) Write a program to display names of plants in a combobox & display the name of selected plant in a text field. **[4]**

c) Why java is platform independent? **[2]**

Q2) Attempt all of the Following

a) Write a java program to accept a number 'n' and print addition of first 'n' numbers. **[4]**

b) Accept 'n' strings from the user and write only those strings to a file which contains 'and' as a substring. **[4]**

c) Explain any four applet tag. **[2]**

Q3) Attempt all of the Following

a) Explain Delegation Event model. **[4]**

b) Differentiate between string & string Buffer class. Explain any two methods of each class. **[4]**

c) Write any four methods of input stream class. **[2]**

P.T.O.

Q4) Attempt all of the Following

a) Write a note on string Tokenizer class. **[4]**

b) How can we create our own exception? **[4]**

c) Explain drawoval ( ) method with example. **[2]**

Q5) Attempt all of the Following

a) Write a program to display calculator with basic airthmetic operations. (+, –, /, *) using awt & event handling. **[4]**

b) Explain synchronization of threads with suitable example. **[4]**

c) Differentiate between Reader class and input stream class. **[2]**

Q6) Attempt all of the Following

a) Write a program to create an applet & draw various graphical shapes with different colours. **[4]**

b) What is a thread? How to create a thread? Give suitable example. **[4]**

c) How type casting is done in Java. **[2]**

Q7) Attempt all of the Following

a) What is an interface? How it is implemented? Illustrate with the help of suitable example. **[5]**

b) Write a program to select a text file from mycomputer & display the content of that file into a textarea field using swing. **[5]**

Q8) Attempt all of the Following

a) Write a note on model view controller Architecture for swing. **[5]**

b) Write a Java program to find average of all elements of array and check for array limit. (use exception handling) **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2887

[Total No. of Pages : 3

[4838] - 305

M.C.A. (Science Faculty)

CA - 307 : Numerical Methods

(Semester - III) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***All questions carry equal marks.***
3) ***Use of scientific, non programmable calculator is allowed.***
4) ***Figures to the right indicates full marks.***

Q1) All questions are compulsory.

a) Find square root of 15 corrected up to 3 decimal places by false position method. **[4]**

b) Prove that $\nabla E = E\nabla$. **[4]**

c) Define the term "Relative error" with appropriate formula. **[2]**

Q2) All questions are compulsory.

a) Find $\Delta^7(2x^7 + 3x^6 - 5x^5)$. **[4]**

b) Using Euler's modified method, solve $\frac{dy}{dx} = x + y$ with initial condition $y_0 = 1$ at $x_0 = 0$, find $y(0.1)$ $y(0.1)$ upto four decimal places take $h = 0.1$. **[4]**

c) Define geometric interpritation of numerical integration. **[2]**

P.T.O.

Q3) All questions are compulsory.

a) Using Runge-Kutta method of fourth order, evaluate $y(0.2)$ where $\frac{dy}{dx} = -x + y$. With $y(0) = 2$ take $h = 0.1$. **[4]**

b) Using simpson's $1/3$ rule evaluate $\int_0^6 \frac{1}{\sqrt{x+1}} dx$. **[4]**

c) Define the term unequal interpolation. **[2]**

Q4) All questions are compulsory.

a) If $f(0) = 2, f(1) = 3, f(2) = 10, f(3) = 29$ find $\int_0^3 f(x)\,dx$. **[4]**

b) Find a polynomial $f(x)$ for following data. also find $f(4)$. **[4]**

x	-1	1	5	6
y	0	2	30	42

c) Locate the error and correct it in the following table **[2]**

x	1	2	3	4	5
$f(x)$	2	10	29	68	130

Q5) All questions are compulsory.

a) Given that $\frac{dy}{dx} = x^2 + y$, $y(0) = 1$, obtain $y(0.02)$ using Eulers method take $h = 0.01$ **[4]**

b) Given that $u_{20} = 24$, $u_{24} = 32$, $u_{28} = 35$ $u_{32} = 40$, find u_{25}. **[4]**

c) Find the error in x where $y = \tan x$. **[2]**

Q6) All questions are compulsory.

a) Estimate the missing term of following data. **[4]**

x	-1	0	1	2	3
y	1	0	------	8	81

b) Use Regula falsi method to find approximate root of the equation $x^3 - 4x - 9 = 0$ in the interval (2 3) correct up to 2 decimals. **[4]**

c) Obtain Lagranges polynomial of following data. **[2]**

x	10	15	25
y	20	25	35

Q7) All questions are compulsory.

a) Derive Newtons Backward interpolation formula. **[5]**

b) Estimate the number of students who obtain the marks between 40 and 45. **[5]**

Marks	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of Students	35	48	70	40	122

Q8) All questions are compulsory.

a) Prove that $(1 + \Delta)(1 - \nabla) = 1$. **[5]**

b) Find value of area of the circle of diameter 82 from data. **[5]**

D (Diameter)	80	85	90	95	100
A (Area)	5026	5674	6362	7088	7854

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Total No. of Questions : 7]

SEAT No. :

P2888

[Total No. of Pages : 2

[4838] - 306

M.C.A. (Science Faculty)

COMPUTER SCIENCE

CA - 308 : Multimedia Systems

(Semester - III) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Solve any five.***

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

Q1) Answer the following :

a) Explain Color Management System. **[4]**

b) Explain Hytime. **[4]**

c) What is Multimedia document. **[2]**

Q2) Answer the following :

a) Explain SGML. **[4]**

b) Explain uses of Audio in Computer Application. **[4]**

c) What is Intra Object Synchronization. **[2]**

Q3) Answer the following :

a) Explain Digital Representation of sound. **[4]**

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

c) List format of images. **[2]**

P.T.O.

Q4) Answer the following :

a) Explain DPCM. **[4]**

b) Explain goals of multimedia system services. **[4]**

c) What is Entropy coding. **[2]**

Q5) Answer the following :

a) Explain principles of video compression. **[4]**

b) Explain Adaptive & Linear predictive coding. **[4]**

c) Enlist basic steps of image processing. **[2]**

Q6) Answer the following :

a) Explain Embedding Domain System Design. **[5]**

b) Explain Lossless and Lossy compression. **[5]**

Q7) Answer the following :

a) Explain QMF file format. **[5]**

b) Explain spectrum partition in detail. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2889

[Total No. of Pages : 2

[4838] - 307

M.C.A. (Science Faculty)

COMPUTER SCIENCE

CA - 309 : Dot Net

(Semester - III) (2013 Pattern)

Time : 3 Hours] *[Max. Marks :50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right side indicates full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain .NET framework in detail. **[4]**

b) Explain garbage collection process with object generation. **[4]**

c) Differentiate between Inheritance and Interface. **[2]**

Q2) a) Explain assembly with its components. **[4]**

b) Write a C# program to create object of a class Student (Name, age, class). Throw an exception 'Invalid Name Exception' if name contains digit or special symbol. (Accept data members from user). **[4]**

c) List any four methods of Font class. **[2]**

Q3) a) What is Reflection? Explain methods of System.Type class. **[4]**

b) What is synchronization? Explain thread synchronization using lock with example. **[4]**

c) List any four methods of System.GC class. **[2]**

P.T.O.

Q4) a) Create an interface Shape with methods calc_area() and calc_volume(). Derive two classes Cube(side), and Cylinder(radius, height) from it. Calculate area and volume of all. **[4]**

b) Explain connected architecture of ADO.NET. **[4]**

c) 'Catch block is optional'. State true or false. Justify. **[2]**

Q5) a) List and explain types of dialog boxes using events and methods. **[4]**

b) Write a C# program to store subject-code and subject-name using Sorted List (for 5 subjects). Write code to check if subject ".NET" is present. If present then display its subject code. **[4]**

c) What is jagged array? Explain with example. **[2]**

Q6) a) Explain how Validation controls are used in ASP.NET. **[4]**

b) What are the types of delegates? Explain any on delegates in detail. **[4]**

c) State the purpose of ExecuteScalar and Execute NonQuery methods. **[2]**

Q7) a) How to send argument from command line? Write a program to accept a number from command line and check if it is an Armstrong number. **[5]**

b) Explain ASP.NET architecture. What is the use of View State in ASP.NET? **[5]**

Q8) a) What is serialization? Explain binary serialization. **[5]**

b) Define session? Explain Caching with implementation. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2890

[Total No. of Pages : 2

[4838] - 401

M.C.A. (Science Faculty)

CA - 401 : COMPUTER GRAPHICS

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right side indicates full marks.***
3) ***Neat diagram must be drawn wherever necessary.***

Q1) Attempt the following

a) Define the terms : **[4]**

i) Computer graphics ii) Refreshing of the screen

iii) Persistence iv) Aspect ratio

b) State and write Bresenham's line drawing algorithm. **[4]**

c) What is Color Look up table? **[2]**

Q2) Attempt the following

a) What is polygon filling? Explain Edge fill algorithm. **[4]**

b) Explain working of DVST. State its advantages. **[4]**

c) What is even-odd method? **[2]**

Q3) Attempt the following

a) What is workstation transformation? Write steps in workstation transformation. **[4]**

b) Define the terms : **[4]**

i) Window ii) Viewport

iii) Resolution iv) Pixel

c) What is object space method & image space method? **[2]**

P.T.O.

Q4) Attempt the following

a) Explain Z-buffer algorithm. **[4]**

b) Obtain matrix for 3 D rotation about x-axis & z-axis. **[4]**

c) What is point clipping & line clipping. **[2]**

Q5) Attempt the following

a) Write a short note on : **[4]**
   i) Valuator
   ii) Pick

b) Explain vector generation algorithm. **[4]**

c) Explain NTSC YIQ color model. **[2]**

Q6) Attempt the following

a) Explain Bezier curves. **[4]**

b) What is polygon mesh? State properties of Bezier curve. **[4]**

c) Explain basic interaction tasks. **[2]**

Q7) Attempt the following

a) State & explain Cyrus Beck clipping algorithm. Also. **[5]**

b) What is b-spline curve? Explain with its blending function. **[5]**

Q8) Attempt the following

a) List & explain any two interpolative shading methods. **[5]**

b) Explain Scan Line algorithm'. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2891

[Total No. of Pages : 2

[4838] - 402

M.C.A. (Science Faculty)

CA - 402 : SDK

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right side indicates full marks.***
3) ***Neat diagram must be drawn wherever necessary.***

Q1) Answer the following

a) Explain System Keystroke and Non System Keystroke. **[4]**

b) What is difference between Window scroll bar and scroll bar control. **[4]**

c) "The bitmap is independent of any device context". Justify Answer. **[2]**

Q2) Answer the following

a) What is queued and non queued message? Explain with example. **[4]**

b) Write a short note on Peek Message ( ). **[4]**

c) What do you mean by message Q thread? **[2]**

Q3) Answer the following

a) Write a window procedure two buttons left and right appear on the window. The status bar is divided into two parts. In left part the number of times left button pressed is displayed. **[4]**

b) Write a window procedure the window caption bar shows "I have the Focus" when window get the input focus and show "I loss the Focus" when window loose the focus. **[4]**

c) Explain Parent talk to its Child in child window control. **[2]**

P.T.O.

Q4) Answer the following

a) Write a window procedure to transferring data from Notepad to Global memory. **[4]**

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

c) What do you mean by MDI? **[2]**

Q5) Answer the following

a) What are the different types of windows header files? **[4]**

b) Explain client mouse messages and non client mouse messages. **[4]**

c) Explain any two ODBC API. **[2]**

Q6) Answer the following

a) Write a window procedure to create a Metafile for drawing an actor symbol in a use case diagram and display actor symbol in client area. **[4]**

b) What is difference between Modal and Modeless Dialog boxes? **[4]**

c) Define Critical Section. **[2]**

Q7) Answer the following

a) Write a window procedure to display a rectangle covering entire client area with a message "red alert" at the center of the rectangle in red color. **[5]**

b) Write a window procedure to display vertical scroll bar and keyboard interface to it. **[5]**

Q8) Answer the following : **[10]**

A college database stores information about students. Such as stud_id, stud name and course etc. in a data source name sdata. Write a SDK program which is menu driven having following facility

a) Display the list of student.

b) Delete the student.

c) Display the list of student, on selecting a particular course. (use ODBC API)

[Note : Win Main is not required]

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Total No. of Questions : 8]

SEAT No. :

P2892

[Total No. of Pages : 2

[4838] - 403

M.C.A. (Science Faculty)

CA - 403 : Advanced Java

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right side indicate full marks.***
3) ***Neat diagram must be drawn wherever necessary.***

Q1) Attempt the following

a) What is scrollable Resultset in JDBC? Explain with example. **[4]**

b) Explain methods of HttpSession in servlets. **[4]**

c) Explain the benefits of Enterprise java beans. **[2]**

Q2) Attempt the following

a) Define manifest file of Beans? Explain concept of introspection of the beans. **[4]**

b) Explain JSP Declaration with example. **[4]**

c) List life cycle methods of servlets. **[2]**

Q3) Attempt the following

a) Write and explain the steps for Java Database Connectivity. **[4]**

b) Describe Iterator & ListIterator with example. **[4]**

c) Enlist 4 methods of InetAddress class. **[2]**

P.T.O.

Q4) Attempt the following

a) Explain Batch execution in detail with example. **[4]**

b) Give the use of URL class and also give the syntax of two constructors of URL class. **[4]**

c) Enlist the methods of collection Queue & Describe any one in brief. **[2]**

Q5) Attempt the following

a) Write a program to accept EmpId & Name of 10 employees and display it in a sorted order (Use suitable collection). **[4]**

b) What are the benefits of Servlets? List the characteristics of Servlets. **[4]**

c) What are different action elements used in JSP page. **[2]**

Q6) Attempt the following

a) Explain the HttpServlet with its constructors and Methods. **[4]**

b) What are directives in JSP? Explain its types. **[4]**

c) Write a note on Entity bean. **[2]**

Q7) Attempt the following

a) Write a java program to connect the database using JDBC to find student with highest total marks. Consider the table : Student (Rollno, name, Sub1_marks, sub2_marks). **[5]**

b) Write a program to exchange the data from client to server until client send "BYE" to the server. **[5]**

Q8) Attempt the following

a) Create a JSP Application to insert given student data in student (Rollno, Name, Class, marks) table. Use request and response objects. **[5]**

b) Write a program to demonstrate passing and retrieving values of parameter to a servlet. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2893

[Total No. of Pages : 2

[4838] - 404

M.C.A. (Science Faculty)

CA - 404 : Object Oriented Software Engineering

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five of the following.***
2) ***Neat diagram must be drawn wherever necessary.***
3) ***Figures to the right indicates full marks.***

Q1) Attempt the Following

a) Draw a Usecase diagram for online purchase from "flipkart". **[4]**

b) Explain the Generalization with example. **[4]**

c) What is OOAD? **[2]**

Q2) Attempt the Following

a) Draw Class diagram for online placement agency like Monster.com. **[4]**

b) Explain Importance of UML. **[4]**

c) What is the use of uses relation in usecase diagram? **[2]**

Q3) Attempt the Following

a) Draw a sequence diagram for online Book Purchase form Amazon. **[4]**

b) Write a note on Generic Components of OO Design Model. **[4]**

c) Which are the elements of a component Diagram? **[2]**

P.T.O.

Q4) Attempt the Following

a) Draw object diagram for Mobile Application used for social networking (Whats App) which searches specified person/organization or group and chats as well as share images. **[4]**

b) Write a note on Generic Components of OO Design Model. **[4]**

c) What is user acceptance testing? **[2]**

Q5) Attempt the Following

a) Draw State Transition diagram for Queue. **[4]**

b) Explain the concept of Resource Management Component. **[4]**

c) What is role Name? **[2]**

Q6) Attempt the Following

a) Draw a component and deployment diagram for online money transfer transaction through ebanking. **[4]**

b) How are test cases designed for Object Oriented Software. **[4]**

c) What is Elaboration? **[2]**

Q7) Attempt the Following

a) Draw Class Diagram and Collaboration Diagram for mobile app 'Agro India' helpful for farmers. It helps farmer to sell their crops at the best price available in the market with comparison to other registered dealer. It provides – Daily updates of leading crops ,Crop wise list of dealers according to the region, crop quantity required and price associated to particular crop for the day by dealer. This application provide an ease to the farmer to sell his crop. **[5]**

b) Write a short note on Agile UP? **[5]**

Q8) Attempt the Following

a) Draw usecase and Activity Diagram for mobile app '*Life*'. Doctor has to login in to the app if registered. He / She has to fill up required fields necessary for particular certificate and mail this information in a PDF format to municipal officer. The officer will convert provided information to certificate format. The consulting doctor who has to issue this certificate will get it immediately. The doctor who registers in this app has to be a licensed doctor of registered hospital. **[5]**

b) Explain different types of software Testing. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2894

[Total No. of Pages : 2

[4838] - 405

M.C.A. (Science Faculty)

CA - 407 : Cyber Law

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right side indicate full marks.***
3) ***Neat diagram must be drawn wherever necessary.***

Q1) Attempt the following

a) Write short notes on : **[4]**

i) Trojan Horse

ii) Computer Virus

iii) Hacking / Cracking

iv) Unauthorized modification of Computer Programmes.

b) Discuss the Scope of Cyber Law. **[4]**

c) Define Cyber Crime. **[2]**

Q2) Attempt the following

a) Explain Digital Signature. Also discuss provisions relating to Digital Signature and Electronic Governance under the Information Technology Act, 2000. **[4]**

b) Explain 'Attribution, Acknowledgment and Dispatch' of Electronic Records. **[4]**

c) Explain the following term : **[2]**

i) Internet Fraud ii) Hacking

Q3) Attempt the following

a) Discuss the powers and functions of various authorities under the Information Technology Act, 2000. **[4]**

b) Give details of Griffis Case. **[4]**

c) List some of the cyber crime and their respective penalties. **[2]**

P.T.O.

Q4) Attempt the following

a) Explain in detail Extent of IT Act 2000. **[4]**

b) Explain in detail Amendments to Indian Evidence Act, 1872 under section 3, 35, 39, 47. **[4]**

c) List the Use and abuse of E-mail. **[2]**

Q5) Attempt the following

a) What is cyber squatting? Explain with the help of case laws. **[4]**

b) Explain the concept of digital copyright. Under which Act do digital Copyrights get registered? **[4]**

c) Difference between Inline Linking and Framing. **[2]**

Q6) Attempt the following

a) Discuss the role of international copyright conventions in development of Cyber technology copyrights. **[4]**

b) Explain the provisions relating to time and place of dispatch and receipt of electronic record. **[4]**

c) What is Infringement of Trademark? **[2]**

Q7) Attempt the following

a) What do you understand by Digital Signature? Discuss the use of Digital Signature in e-governance. **[5]**

b) What is the protection offered to Online Trade Marks under the Trade Marks Act, 1999. **[5]**

Q8) Attempt the following

a) Why there is Need of Bankers Book Evidence Act? **[5]**

b) Explain Yahoo Case in detail. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2895

[Total No. of Pages : 3

[4838] - 406

M.C.A. (Science Faculty)

CA - 408 : Soft Computing

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Figures to the right side indicate full marks.***
3) ***Neat diagram must be drawn wherever necessary.***
4) ***Assume suitable data, if necessary.***

Q1) Attempt the following

a) What is fuzzy relation? Find the $\underset{\sim}{A} \times \underset{\sim}{B}$ for following fuzzy sets. **[4]**

$$\underset{\sim}{A} = \left\{ \frac{0.2}{a} + \frac{0.5}{b} + \frac{1}{c} \right\}$$

$$\underset{\sim}{B} = \left\{ \frac{0.3}{p} + \frac{0.9}{q} \right\}$$

b) Given the following fuzzy numbers I and J, using Zadeh's entension principle calculate fuzzy number "Approximately 24". **[4]**

$$\text{I = "approximately 4"} = \left\{ \frac{0.6}{3} + \frac{1}{4} + \frac{0.5}{5} \right\}$$

$$\text{J = "approximately 6"} = \left\{ \frac{0.2}{4} + \frac{0.4}{5} + \frac{1}{6} + \frac{0.6}{7} \right\}$$

c) State any two applications of Genetic Algorithm. **[2]**

P.T.O.

Q2) Attempt the following

a) Determine the preposition "If $\underset{\sim}{A}$ THEN $\underset{\sim}{B}$" for the fuzzy sets given below. **[4]**

$$\underset{\sim}{A} = \left\{\frac{0}{a} + \frac{0.2}{b} + \frac{1}{c} + \frac{1}{d}\right\} \quad \underset{\sim}{B} = \left\{\frac{0}{p} + \frac{0.3}{q} + \frac{0.8}{r} + \frac{1}{s}\right\}$$

b) What is 'crossover' in GA? Explain with the help of example any two crossover techniques. **[4]**

c) What is an epoch? **[2]**

Q3) Attempt the following

a) What is a boolean function? Write a short note on space of boolean function. **[4]**

b) Explain Aggregation of fuzzy rules. **[4]**

c) List any two constituents of soft computing. **[2]**

Q4) Attempt the following

a) Differentiate between supervised and unsupervised learning. **[4]**

b) Explain special properties of classical sets. **[4]**

c) What is Intensification? **[2]**

Q5) Attempt the following

a) A neuron has two input weights : 0.5 and 0.75, for an input $x = \{-1, 0.5\}$. Find the value of bias weight such that the neuron output is 0.8 for lineus threshold signal function with $\alpha = 1$. **[4]**

b) Explain center of sum and center of largest area method of defuzzification. **[4]**

c) What is approximate Reasoning? **[2]**

Q6) Attempt the following

a) Is the following fuzzy relation R a tolerance relation? Convert the given relation to an equivalence relation. **[5]**

$$R = \begin{bmatrix} 1 & 0.2 & 0.6 & 0.8 \\ 0.2 & 1 & 0.4 & 0.4 \\ 0.6 & 0.4 & 1 & 0.2 \\ 0.8 & 0.4 & 0.2 & 1 \end{bmatrix}$$

b) Define **[3]**

i) Fuzzification

ii) Normal fuzzy set

iii) Fuzzy number

c) What is linear error in linear neuron. **[2]**

Q7) Attempt the following

a) Using the inference approach find the membership values for the triangular shapes I, R and E for a triangle with angles 45º, 55º and 80º. **[5]**

b) Implement the 'AND' function with bipolar inputs and bipolar targets using perceptron training algorithm. Assume initial weights and bias to be zero, learning rate $\eta = 1$ and the activation function as follows : **[5]**

$$S(u_j) = \begin{cases} 1 & , \text{ if } u_j > 0 \\ 0 & , \text{ if } u_j = 0 \\ -1 & , \text{ if } u_j < 0 \end{cases}$$

Q8) Attempt the following

a) Explain different Architectures of ANN. **[5]**

b) Explain backpropagation Learning algorithm. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2896

[Total No. of Pages : 2

[4838] - 407

M.C.A. (Science Faculty)

CA - 409 : Artificial Intelligence

(Semester - IV) (2013 Pattern) (Credit System)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five of the following.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicates full marks.***

Q1) Attempt the Following

a) Explain with examples how does conventional computing differs from intelligent Computing? **[4]**

b) Explain Applications of artificial intelligence. **[4]**

c) Define Artificial Intelligence? **[2]**

Q2) Attempt the Following

a) What is heuristic search? Explain with example. **[4]**

b) Explain AO* algorithm with Example. **[4]**

c) Solve the following cryptarithmatic problem. **[2]**
N I N A + S I N G = AGAIN

Q3) Attempt the Following

a) Discuss the Water Jug Problem with Production Rules and Solution Set. **[4]**

b) Write a note on Constraint Satisfaction with Example. **[4]**

c) What is Heuristic Function? **[2]**

P.T.O.

Q4) Attempt the Following

a) Describe MINIMAX method for Game Playing with Example. **[4]**

b) Write a note on Explanation based Learning. **[4]**

c) What is alpha-beta pruning? **[2]**

Q5) Attempt the Following

a) Differentiate in Forward and Backward knowledge representation. **[4]**

b) Explain the Components of learning system. **[4]**

c) What is Slot and Filler? **[2]**

Q6) Attempt the Following

a) Write the difference between predicate logic and proportional logic. **[4]**

b) Write brief notes on frames and scripts. Give examples for each. **[4]**

c) What is DFS? **[2]**

Q7) Attempt the Following

a) Describe the advantages of predicate logic over propositional logic. Represent each of the following sentences in first-order logic. **[5]**

i) A whale is a mammal.

ii) John knows Jane's father.

iii) All computers have a processor.

b) What is cut? Explain with the example PROLOG program. **[5]**

Q8) Attempt the Following

a) Explain the structure of prolog program. Also explain how conversion from English to Prolog facts and Rules is performed? **[5]**

b) Explain different types of Learning. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2897

[Total No. of Pages : 2

[4838] - 501

M.C.A. (Under Science Faculty)

CA - 501 : Internet Programming

(Semester - V) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Assume suitable data if necessary.***

Q1) Attempt all the questions

a) Explain client - server model in context with PHP. **[4]**

b) Write a PHP program to accept a string and convert it into array & print the array. **[4]**

c) What is use of check box? Give example of check box. **[2]**

Q2) Attempt all the questions

a) What is sticky form? Give example of sticky multivalued parameters. **[4]**

b) Explain security aspect of file uploads. **[4]**

c) Justify - "HTTP is stateful protocol". Justify True/False. **[2]**

Q3) Attempt all the questions

a) Give difference between POST & GET methods. **[4]**

b) Write steps in PEAR DB to access database. **[4]**

c) What is inheritance? Give example. **[2]**

Q4) Attempt all the questions

a) Write short note on cookies. **[4]**

b) Write a PHP program to accept file name read it content and sort it on marks. (File contains rao, name, marks). **[4]**

c) What is DOM? Write purpose of load ( ) in DOM. **[2]**

P.T.O.

Q5) Attempt all the questions

a) Explain prepare & execute statements. **[4]**

b) Write a php program to accept email id from user validate it and then send email. **[4]**

c) How to set permissions of files? Example. **[2]**

Q6) Attempt all the questions

a) Write short note on Json-responses. **[4]**

b) Write a PHP script to accept text from user and draw a filed rectangle and write text on it. **[4]**

c) Write any two string decomposing functions. **[2]**

Q7) Attempt all the questions

a) Explain serialization. Explain _ _ sleep ( ) & _ _ wakeup ( ) functions in context with serialization. **[5]**

b) Consider following relations. **[5]**

item (ino, name, price)

Supplier (sno, name, contact)

item - suppler is m-m relationship.

Write a PHP program to accept supplier name and print item details supplied by the supplier.

Q8) Attempt all the questions

a) Write a short note on images with text. **[5]**

b) Write a PHP program to accept person name, contact on first page, accept SSC, HSC, Graduation marks on second page. Print name, contact & marks on third page. [Hint session or cookie]. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2898

[Total No. of Pages : 2

[4838] - 502

M.C.A. (Under Science Faculty)

CA - 502 : Principles of Programming languages

(Semester - V) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Neat diagrams indicate full marks.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) Answer the Following

a) Explain in detail compilation, pure-interpretation and Hybrid Compilation. **[4]**

b) What is back tracking? Explain it with suitable example. **[4]**

c) Give characteristics of following language paradigm. **[2]**

i) Imperative languages

ii) Logic Languages

iii) Functional Languages

iv) Object oriented languages

with one example each.

Q2) Answer the Following

a) Explain LET and LET* forms in LISP. **[4]**

b) Evaluate the following : **[4]**

i) (CAR ' (A B C))

ii) (append ' ((A B) C) ' (D (E F)))

iii) (Cad r ' (A B C))

iv) (sqrt (+ (* 3 3) (* 4 4)))

c) What is short - circuit evaluation? Give an example. **[2]**

P.T.O.

Q3) a) What is mean by bounded and unbounded iteration? Give proper examples of each. **[4]**

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

c) What is mean by type checking? **[2]**

Q4) a) Explain cut predicate in PROLOG. Explain types of cuts with proper example. **[4]**

b) What is mean by Generic subprogram? Give proper examples of Generic subprogram in Java, C ++. **[4]**

c) What is mean by co-routine? **[2]**

Q5) a) Explain symbol Table with proper example. **[4]**

b) Write a PROLOG program to find factorial of a given number. **[4]**

c) Define bound and free variables in prolog. **[2]**

Q6) a) Explain implementation of multiple inheritance. **[4]**

b) Explain use of 'this' operator in C++. **[4]**

c) What are constructors and destructors used in C++. Give example. **[2]**

Q7) a) Write a short note on static scope. **[5]**

b) What is mean by subroutine closure? Explain in detail. **[5]**

Q8) a) What is mean by Iterator? Explain with example. **[5]**

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

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Total No. of Questions : 8]

SEAT No. :

P2899

[Total No. of Pages : 2

[4838] - 503

M.C.A. (Under Science Faculty)

CA - 503 : Data Mining and Data Warehousing

(Semester - V) (2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data if necessary.***

Q1) a) Explain any four data mining functionalities. **[4]**

b) Explain methods for handling noisy data in data cleaning. **[4]**

c) Define accuracy. **[2]**

Q2) a) Write short note on Bootstrap. **[4]**

b) What is linear regression? How non-linear regression equation transform to linear regression. **[4]**

c) Define base cuboid. **[2]**

Q3) a) Describe issues handle during data integration. **[4]**

b) Explain types of association rule. **[4]**

c) Define data mart. **[2]**

Q4) a) Write a short note on data structures use in clustering. **[4]**

b) Explain methods use to fill - up missing values. **[4]**

c) Which are the test options available in weka? **[2]**

P.T.O.

Q5) a) Describe Holdout method. **[4]**

b) Write short note on clustering methods. **[4]**

c) State five number summary use to draw boxplot. **[2]**

Q6) a) Explain steps to construct frequent pattern conditional table from FP-tree. **[4]**

b) Write short note on partitioning algorithms. **[4]**

c) State contents of confusion matrix. **[2]**

Q7) a) Explain metadata contents of Data warehouse architecture. **[5]**

b) Write short-note on chi-square test. **[5]**

Q8) a) Describe non-parametric methods. **[5]**

b) Find frequent Item-set by Apriori method.

Given minimum support_count = 3. **[5]**

TID	Item
1	A, B, C
2	D, A, C, B
3	C, A, B
4	B, A, D
5	D
6	D, B
7	A, D, B
8	B, C

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Total No. of Questions : 8]

SEAT No. :

P2900

[Total No. of Pages : 2

[4838] - 504

M.C.A. (Under Science Faculty)

CA - 504 : SOFTWARE PROJECT MANAGEMENT

(2013 Pattern) (Semester - V)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Attempt any five out of eight questions.***

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

3) ***All questions carry equal marks.***

Q1) a) What are project phases & Project Life Cycle. **[4]**

b) What are inputs helpful for developing project charter. **[4]**

c) What are tripal constraints of software project management. **[2]**

Q2) a) Summarize the different processes involved in project scope management. **[4]**

b) Explain CPM method in project time management. **[4]**

c) Define project charter. **[2]**

Q3) a) Write a short note on type of cost estimate. **[4]**

b) What are different aspects that affect quality planning? How? **[4]**

c) Define scope creep. **[2]**

P.T.O.

Q4) a) Give short note on stakeholder management. **[4]**

b) What are the major outcomes for quality control. **[4]**

c) Define PDM. State its use in project time management. **[2]**

Q5) a) What are different techniques used for improving project communication. **[4]**

b) State & explain various categories of Risk. **[4]**

c) Define cost management plan. **[2]**

Q6) a) What are information gathering techniques used for risk identification? **[4]**

b) Give short note on SOW. **[4]**

c) What is OBS? **[2]**

Q7) a) Give roles of project manager. State the different skills that he should possess. **[5]**

b) Write a short note on Deming & his Fourteen points of quality management. **[5]**

Q8) a) Describe how the probability / Impact matrix is used for qualitative Risk analysis. **[5]**

b) What are the main processes involved in project quality management. **[5]**

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Total No. of Questions : 8]

SEAT No. :

P2901

[Total No. of Pages : 2

[4838] - 505

M.C.A. (Science Faculty)

CA - 507 : IMAGE PROCESSING

(2013 Pattern) (Semester - V)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***All questions carry equal marks.***
5) ***Assume suitable data, if necessary.***

Q1) a) Differentiate various distance measures between any two pixels 'p' and 'q'.

b) Discuss various sharpening spatial filters in detail.

c) How does morphological open and close work?

[4 + 4 + 2]

Q2) a) What do you mean by Mach band pattern and simultaneous contrast?

b) Explain unsharp masking and high boost filtering in detail.

c) Prove that erosion and dilation are duals of each other with respect to set complementation and reflection.

[4 + 4 + 2]

Q3) a) Explain how first-order derivatives are useful in image processing.

b) Discuss different types of edge models.

c) What is interpolation? How is it useful in image processing?

[4 + 4 + 2]

P.T.O.

Q4) a) How notch filters work? Explain.

b) Explain edge-based segmentation in detail.

c) Give 4-directional chain code. How it is useful?

[4 + 4 + 2]

Q5) a) Explain translation and rotation property of 2-D discrete fourier transform in detail.

b) Write an approach based on Hough transform.

c) Write equations used for thinning and thickening.

[4 + 4 + 2]

Q6) a) Explain different types of high-pass filters in detail.

b) How to compute shape numbers? Give suitable example.

c) Give an image, how to extract connected components from it?

[4 + 4 + 2]

Q7) a) Prove that median filter is non linear with the help of suitable example.

b) Give steps for filtering in the frequency domain.

[5 + 5]

Q8) a) Write applications of image processing in various bands of Electromagnetic Spectrum.

b) Explain working of adaptive, local noise reduction filter in detail.

[5 + 5]

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Total No. of Questions : 8]

SEAT No. :

P2902

[Total No. of Pages : 2

[4838] - 506

M.C.A. (Science) (Semester - V)

CA - 508 : E-Commerce

(2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer five questions from following.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) a) Compare and contrast between Traditional commerce and E-commerce. **[4]**

b) Describe the evolution of internet in detail? **[4]**

c) Which protocol is used by REST full services? **[2]**

Q2) a) Explain the different models of E-commerce? **[4]**

b) Differentiate between the following : **[4]**

i) Hypertext & Hypermedia.

ii) HTTP & HTTPD

c) What are web services? **[2]**

Q3) a) Explain the strategies for web-auction? **[4]**

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

i) E - money

ii) Smart card

P.T.O.

c) Define terms : **[2]**

i) Routers

ii) Gateways

Q4) a) Explain prepaid & postpaid e-payment system? **[4]**

b) What are the different measures to ensure security? **[4]**

c) "Trojan Horse is a program that performs not only a desired task but also includes unexpected malicious functions". Justify. **[2]**

Q5) a) Explain the layered architecture of ED1? **[4]**

b) What is virtualization? Explain techniques? **[4]**

c) Why do we need Hadoop? **[2]**

Q6) a) Compare and contrast intranets, extranets & internet as a whole. **[4]**

b) What is HDFS? List some features of HDFS? **[4]**

c) What is cloud? **[2]**

Q7) a) Discuss whether the use of third party analytics creates opportunites to leak personal information. **[5]**

b) Write a short note on following : **[5]**

i) ISDN

ii) ATM

Q8) a) Why we need cyber law? Explain any 5 reasons. **[5]**

b) Write a short note on : **[5]**

i) WAP

ii) Virtual communities

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Total No. of Questions : 8]

SEAT No. :

P2903

[Total No. of Pages : 2

[4838] - 507

M.C.A. (Under Science Faculty) (Semester - V)

CA - 509 : Mobile Computing

(2013 Pattern)

Time : 3 Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Answer any five questions.***

2) ***Neat diagrams must be drawn wherever necessary.***

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

Q1) a) What are requirements needed for mobile IP? **[4]**

b) Explain advantages and disadvantages of message oriented middleware. **[4]**

c) What is server program? **[2]**

Q2) a) Explain need of small cells in cellular system. **[4]**

b) Explain any 2 protocols in Bluetooth protocol stack. **[4]**

c) Explain, "Why three tier architecture is better?" **[2]**

Q3) a) What is wireless transaction protocol (WTP)? **[4]**

b) What is WIMAX? **[4]**

c) How is wireless link maintained in ITCP? **[2]**

P.T.O.

Q4) a) Explain use of VLR and HLR is GSM. **[4]**

b) Explain the advantage of selective retransmission in mobile TCP. **[4]**

c) What are supplementary services in GSM? **[2]**

Q5) a) What is IP in IP Encapsulation? **[4]**

b) What is Wireless data protocol (WDP)? **[4]**

c) What is mobile station (MS)? Explain. **[2]**

Q6) a) What is Mobile TCP (M-TCP)? **[4]**

b) What are resources in android? **[4]**

c) List applications of context aware system. **[2]**

Q7) a) What are recent developments in client technologies? **[5]**

b) Explain components of SMS architecture. **[5]**

Q8) a) What are features of mobile phones? **[5]**

b) Explain reverse tunneling. **[5]**

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