M.C.A. (SEM - I)

PROGRAMMING WITH C

(NOV-18)

(Time: 3 Hours) **Total Marks: 100**

N.B. (1) Question No. 1 is compulsory.
(2) Attempt any four from the remaining six questions.
(3) Figures to the right indicate full marks.

Q.1 (a) What is flowchart? Explain its basic symbols with an example. [10]
(b) What is a preprocessor, what are the advantages of preprocessor? [10]

Q.2 (a) What are arrays? Write the syntax to declare, initialize and access two dimensional arrays. [10]
(b) Write a program in C to calculate factorial of a number. [10]

Q.3 (a) Write a Program to display the following Pattern: [10]

```
        A
      A B A
    A B C B A
  A B C D C B A
A B C D E D C B A
```

(b) What are control statements? Demonstrate usage of if-else construct through an example program. [10]

Q.4 (a) Clearly differentiate between function prototype, function definition and function call along with an example. [10]
(b) Explain getchar() & putchar() functions with examples. Differentiate between scanf() and gets() functions. [10]

Q.5 (a) Write a program in C to find the symmetry of the matrix. [10]
(b) Explain different modes of accessing a file. [10]

Q.6 (a) What is recursive function? Write a program to demonstrate recursive function. [10]
(b) Explain structures. Illustrate with an example structure initialization. Write the syntax for array of structures. [10]

Q.7 Write short Notes on: (Any four) [20]
a) Pointers
b) File operations
c) Ternary operator
d) Strings
e) Continue & Break statement

M.C.A. (SEM - I)

SYSTEM ANALYSIS DESIGN

(NOV-18)

Q. P. Code: 37826

Time: 3 Hours **Total marks:100**

1) Question number1 compulsory
2) Answer any four questions out of remaining
3) All questions carry equal marks

Q1

a) Explain level 0 and level1 DFD of a Hospital management system with a neat diagram 10

b) What is feasibility study? Explain different types of feasibility studies 10

Q2

a) Explain Waterfall Model in detail 10

b) Describe the prototype model in details. 10

Q3

a) Explain the need of Warnier Orr Diagrams and HIPO chart 10

b) What are structured walkthrough, how can they be carried out. 10

Q4

a) Compare and black box testing and white box testing 10

b) Explain the role of System analyst 10

Q5

a) Distinguish between validity and reliability .how are they related. 10

b) Explain ER diagram with the help of an example 10

Q6

a) What is implementation /how does it differ from conversion? Elaborate 10

b) Explain extreme programming in detail 10

Q7 20

Write short notes on the following(any four)

a) Transactional analysis
b) Data dictionary
c) Structure chart
d) Decision tree
e) Spiral model

M.C.A. (SEM - I)

COMPUTER ORGANISATION & ARCHITECTURE

(NOV-18)

(3 Hours) [Total marks:100]

Note (1) Q1. is compulsory, attempt any four out of remaining six.
(2) All question carry equal marks.
(3) Answer to sub-questions should be grouped together.

Q1.	(a)	Simplify the Boolean function F(A,B,C,D) = ∑(0,3,4,5,6,7,9,11,13,14,15) and draw the logic circuit diagram using the basic logic gate.	5
	(b)	Explain Full Adder with Logic diagram.	5
	(c)	Define flip flop. Explain the working of SR FF with logic diagram.	5
	(d)	Design a combinational circuit whose output is high for even numbers of 1's as input. Assume that input to the circuit is 4-bit A3 A2 A1 A0.	5
Q2.	(a)	Compare RISC and CISC architecture.	10
	(b)	Explain system bus. Write different bus arbitration methods.	10
Q3.	(a)	Compare and contrast Interrupt Driven I/O, DMA and Programmed I/O.	10
	(b)	Explain in detail about instruction cycle. Draw its state diagram.	10
Q4.		Difference the following : (a) Micro-Programmed and Hard wired Control Unit. (b) Sequential and Combinational Circuit.	20
Q5.	(a)	Explain different RAID levels in detail.	10
	(b)	What is an I/O Module? Discuss with the help of a diagram, the functioning of I/O module.	10
Q6.	(a)	What is a multiplexer? Design 8:1 lines multiplexer.	10
	(b)	Explain cluster computer architecture.	10
Q7.		Explain any two in details: (a) DMA (b) Memory hierarchy (c) SMP	20

M.C.A. (SEM - I)

DISCRETE MATHEMATICS

(NOV-18)

Duration 3 hours **Total 100 marks**

N.B: 1) Question No. 1 is compulsory.
2) Attempt any four out of remaining six questions.
3) Figures to the right indicate full marks.

Q1. (a) Check whether the following are logically equivalent or not: 5
$p \rightarrow (\sim q \rightarrow p) \equiv \sim p \rightarrow (p \rightarrow q)$

(b) Using mathematical induction Show that 5
$1^2 + 2^2 + \ldots\ldots + n^2 = [n(n+1)(2n+1)]/6, \quad n \geq 1.$

(c) Obtain the disjunction normal form 5
$\sim(P \vee Q) \leftrightarrow (P \wedge Q)$

(d) Suppose that f is defined recursively by f(0)=2 and 5
f(n+1) = 3f(n) +2. Find f(1), f(2), f(3) and f(4).

Q2. (a) Let R be an equiv. relation on the set A={1,2,3,4,5} defined by 10
R={(1,1),(2,2),(3,3),(4,4),(5,5),(1,4),(4,1), (2,4),(4,2),(1,2),(2,1)}.
Determine its equivalence classes of R & find A/R.

(b) Let A= {1,2,3,6,12,18}.Consider a relation R on A as a R b iff 'a 10
divides b'. Show that R is partial order relation. Draw the Hasse diagram of Poset (A, R).

Q3. (a) Determine the validity of the following argument: 5
If I go to my class tomorrow then I must get up early, and if I go to dance tonight I will stay up late. If I stay up late and get up early, then I will be forced to exist on only five hours of sleep. I simply cannot exist on only five hours of sleep. So I must either miss my class tomorrow or not go to the dance.

(b) Determine whether the following is a tautology, contradiction and a 5
contingency with the help of truth table:
$(P \rightarrow Q) \rightarrow (P \wedge Q)$

(c) Consider (3,6) encoding function e: $B^3 \rightarrow B^6$, defined by 10
e(000)=0000 00 e(100)=100 101
e(001)=0011 00 e(101)=1010 01
e(010)=010 011 e(110)=1101 10
e(011)=0111 11 e(111)=111 010
show that this encoding function is a group code.

Q4. (a) Consider (2, 4) encoding function e. 10
e(00)=0000 e(10)=1011
e(01)=0110 e(11)=1100
Find the minimum distance of e. How many errors will e detect?

(b) Determine whether the following set together with the binary operation is a semigroup, a monoid or neither. If it is a monoid, specify the identity. If it is a semigroup of a monoid determine whether it is commutative. 10
A= set of all positive integers.
a * b = max{a,b} i.e. bigger of a and b

Q5. (a) Let R and S be the following relations on A={1,2,3}, 10
R={(1,1),(1,2),(2,3)(3,1)(3,3)} and S={(1,2),(1,3),(2,1),(3,3)}. Find
1. RoS
2. SoS
3. RUS
4. R∩S
5.

(b) State the "Tower of Hanoi" problem and obtain the corresponding recurrence relation indicating the suitable initial conditions(s). Solve the recurrence relation obtained. 10

Q6. (a) Consider group G = {1, 2, 4, 7, 8, 11, 13, 14} under multiplication modulo 15. 10
i. Find multiplication table of G
ii. Find 2^{-1}, 7^{-1}, 11^{-1}
iii. Find the order of the subgroups generated by 2, 7 & 11.

(b) Let V={v_0, w, a, b, c} S={a, b, c} 10
Let → be the relation on V^* given by the relaiton
1. $v_0 \rightarrow aw$ 2. $w \rightarrow bbw$ 3. $w \rightarrow c$
Consider the phrase structure grammar=(V, S, v_0, →)
i. Derive the sentence ab^4c. Draw the derivation tree.
ii. Derive the sentence ab^6c. Draw the derivation tree.
iii. Derive the sentence ab^8c. Draw the derivation tree.

Q7. (a) Find particular solution of the recurrence relation 10
$a_n - 5a_{n-1} + 6a_{n-2} = 8n^2$

(b) Perform the following: 10
i. $(254)_8=(?)_{10}$
ii. $(1010.11)_2=(?)_{10}$
iii. $(22.34)_{10}=(?)_2$
iv. 1010 X 1110=?
v. $(0101.11)_2-(01001.1)_2$=?

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M.C.A. (SEM - I)

PRINCIPLES OF ECONOMICS & MANAGERIAL

(NOV-18)

Q.P. Code : 19779

(Time : 3 Hours) **[Marks : 100]**

N.B.: (1) Question No.1 is compulsory.

(2) Attempt any four questions from question no. 2 to 7

(3) All questions carry equal marks.

1. a. Define Management.Describe various functions of management. 10

b. Explain Henri Fayol's principles of management. 10

2.a. Explain various steps involved in decision making process. 10

b.Describe functional organisation structure.What are its merits and demerits. 10

3.a. Define and explain law of supply. 10

b.Define and explain law of demand. 10

4. a. What is performance appraisal and explain its types. 10

b. What is centralization, decentralization and delegation of authority? 10

5. a. Discuss the contribution of Elton Mayo's to the development of management thoughts. 10

b. What are assumptions of Theory X and Theory Y 10

6. a. Explain Perfect and imperfect competition, Monopoly, Oligopoly &Monopolistic Competition. 10

b. Explain different methods of demand forecasting 10

7. Write short notes (Any 4) 20

i) Product life cycle

ii) Matrix Organisation Structure

iii) Marketing Mix

iv) Maslows Motivation Theory

v) HRM

vi) Types of Training

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M.C.A. (SEM - I)

INTRODUCTION TO WEB TECHNOLOGY

(NOV-18)

(3 Hours) **[Total Marks: 100]**

N.B.: 1) Question No.1 is **compulsory.**
2) Attempt any **four** from the remaining **six** questions.

1. (a) Discuss in detail the web development cycle and dynamic web content. **(10)**
   (b) What are the various types of lists in HTML? demonstrate each by taking an example of each and show how the lists can be nested. **(10)**

2. (a) Differentiate the following, **(10)**
      1. HTML and DHTML
      2. ASP and Java Script
   (b) Make a page with a heading and apply large, bold, italic and center effect across the top of the page. Also write a short paragraph for description of the heading with highlighting something in italics. **(10)**

3. (a) What is CSS? Explain with suitable example application of CSS Containers, Panels, Borders, Alerts, Colors. **(10)**
   (b) Discuss the CSS Fonts and explain with suitable example the font size classes. **(10)**

4. (a) What are Pseudo-classes? Discuss with suitable example. **(10)**
   (b) Explain in detail the ASP Request, Response and Session Object. **(10)**

5. (a) Discuss the handling of HTML events using JavaScript with examples. **(10)**
   (b) What are the types of web sites? Explain rules to be followed while page designing. **(10)**

6. (a) Create tables and format tables using basic table tags and different attributes. **(10)**
   (b) Explain JavaScript Date, Math, String , Event, Frame and Screen object **(10)**

7. Write Short Notes on ***any four***: - **(20)**
   a) JavaScript operators
   b) Web publishing
   c) XHTML
   d) Static and Dynamic Web Pages.
   e) Forms in HTML.
