MCA (SEM-I)

PROGRAMMING WITH C

(MAY- 2018)

Q. P. Code: 30990

Total Marks: 100

(3 Hours)

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)	Explain the character set & basic data types in C language along the size in bytes of each type.	[10]
Q.2	(a)	What are control statements? Demonstrate usage of if-else construct through an example program.	[10]
	(b)	Write a program in C to calculate factorial of a number.	[10]
Q.3	(a)	Explain break statement and continue statement with an example.	[10]
	(b)	What are arrays? Write the syntax to declare, initialize and access two dimensional arrays.	[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) a) Pointers b) File operations c) Unions d) Strings e) Static variables	[20]

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MCA (SEM-I)

SYSTEM ANALYSIS DESIGN

(MAY- 2018)

Q. P. Code: 37837

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

N.B.: (1) Question **no. 1** is **compulsory**
(2) Answer any **four** of the remaining **six** questions
(3) **All** questions carry **equal** marks

1. (a) Explain Level 0 and level 1 DFD for an Online Food Ordering System 10

   (b) Explain SRS in detail with an example 10

2. (a)Explain different types of Feasibility study. 10

   (b) Explain different Fact finding techniques 10

3. (a) Explain different types of software testing 10

   (b) Explain Warnier Orr Diagrams and HIPO chart 10

4. (a) What do you mean by Functional Technical Review? 10

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

5. (a) Compare Iterative and Rad model 10

   (b) Explain structure chart in detail 10

6. (a)Compare black box and white box testing methods 10

   (b) Explain the role and responsibilities of a System analyst 10

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

   (a) CASE tools

   (b) Decision tree

   (c) Extreme programming

   (d)Data dictionary

   (e) Spiral model

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MCA (SEM-I)

COMPUTER ORGANIZATION AND ARCHITECTURE

(MAY- 2018)

Q.P. CODE: 36408

(Time: 3 Hours) **[Total marks: 100]**

Note (1) Question No. 1 is compulsory.
(2) Attempt any four out of remaining six questions.
(3) Answer to sub-questions should be grouped together.

Q1.	(a)	Using K-Maps, simplify the following expression in four variables A, B, C, D. Draw logic diagram for the obtained solution. $F(A,B,C,D) = \Sigma(0,1,2,5,8,9,10)$	5
	(b)	State major functions of control unit.	5
	(c)	Draw the instruction cycle state diagram.	5
	(d)	Explain the working of full adder.	5
Q2.	(a)	Explain memory hierarchy. What is cache memory? Why is it needed?	10
	(b)	What are flip-flops? Explain J-K flip flop in detail.	10
Q3.	(a)	Discuss 8 to 1 multiplexer using truth table. Draw its implementation using the appropriate gates.	10
	(b)	With reference to parallel processing explain SISD, SIMD, MISD and MIMD. What is their significance in practical parallel processing approaches?	10
Q4.	(a)	Difference the following I. Sequential Vs Combinational circuits II. RISC Vs CISC	10
	(b)	Explain six stage instruction pipelines. How would you deal with conditional branching?	10
Q5.	(a)	Discuss superscalar processors and instruction issue policies in detail.	10
	(b)	Discuss various addressing modes with examples.	10
Q6.	(a)	Compare programmed I/O with interrupt driven I/O. What technique would you suggest to overcome the drawback of Programmed I/O and Interrupt driven I/O.	10
	(b)	What are shift registers? Explain different types of shift registers.	10
Q7.		Write short note on <u>any two</u> of the following (a) Clusters (b) Bus interconnection structure (c) Asynchronous counters	20

MCA (SEM-I)

DISCRETE MATHEMATICS

(MAY- 2018)

Q.P. Code : 04486

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

Please check whether you have got the right question paper.

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

1. (a) i) Obtain a principal disjunctive normal from of : $(\neg P \vee \neg Q) \rightarrow (P \leftrightarrow Q)$ **5**

ii) Given A = {1,2,3,4,5,6} and relation R is defied on A such that aRb iff a+b =7. Draw digraph of the relation. **5**

(b) Determine whether the following set together with the binary operation is a semigroup, a monoid or neither. If its is a monoid, specify the identity. If it is a semigroup or a monoid determine whether it is commutative. **10**
Set S = {1,2,3,6,9,18} where $a * b$ = L.C.M (a,b).

2. (a) i) Determine whether the following form is tautology or contradiction **5**
$(P \rightarrow (Q \rightarrow R)) \rightarrow ((P \rightarrow Q) \rightarrow (P \rightarrow R))$

ii) What are quantifiers? Explain with examples. **5**

(b) Let A be a collection of subsets of a set S. Show that $(A, \subseteq)$ is a poset, where $\subseteq$ represents the set inclusion. Draw the Hasse diagram when S = {a,b,c}. **10**

3. (a) i) Using method of mathematical induction show that sum of the cubes of three consecutive integers is divisible by 9. **5**

ii) Show that the conclusion D follows from the premises **5**
$(A \rightarrow B) \wedge (A \rightarrow C), \quad \neg(B \wedge C), \quad D \vee A$

(b) i) Let P(x) denotes "x is even", Q(x) denotes "x is a prime number" and R(x,y) denotes "x+y is even". The variables x and y represent positive integers. Determine the truth values of the following: **5**

1) $\forall x P(x)$ 2) $\exists x \; Q(x)$ 3) $\forall x \exists y \; R(x,y)$

4) $\exists x \; \forall y \; R(x,y)$ 5) $\forall x \; (\neg Q(x))$

ii) Find the particular solution of $a_n - 2a_{n-1} = 3 \times 2^n$ **5**

4. (a) i) Use the method of homogeneous solutions to find a particular solution of recurrence relation $a_n = 200a_{n-1} - 100$ with initial condition $a_0 = 1$. **5**

ii) Let $a_n = \begin{cases} 0, & 0 \le n \le 2 \\ 2^{-n}, & n \ge 3 \end{cases}$ Find Δa_n, where Δ denotes the forward difference. **5**

(b) Obtain the recurrence relation for the maximum number of regions of a plane when there are n lines in the plane. Give suitable initial condition(s). Solve the recurrence relation. **10**

TURN OVER

5. (a) i) Define f: $(Z,+) \to (5Z,+)$ as f(x)=5x, where 5Z = {5n : n$\in$ Z}. Verify that f is an isomorphism. **5**

ii) Let G = {1, 2, 4, 7, 8, 11, 13, 14} be a group under 'multiplication modulo 15' Find the multiplication table of G. Find order of subgroups generated by 7. **5**

(b) **5**

i) Let H = $\begin{bmatrix} 1 & 1 \\ 0 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$ be a parity check matrix. Determine the group code $e_H: B^2 \to B^4$

ii) Consider the (2,5) group encoding function defined by **5**
e(00) = 00000, e(01) = 01101, e(10) = 10011, e(11) = 11110
Decode the word 01101 using maximum likelihood decoding function.

6. (a) i) Consider the (2,6) encoding function e defined by **5**
e(00) = 000 000 e(01) = 011 110
e(10) = 101 011 e(11) = 111 000
Let d be an associated maximum likelihood function. How many errors will (e,d) correct.

ii) Let V = {v_0, w, a, b, c} , S = {a, b, c} and let $\mapsto$ be the relation on V* given by **5**
1. $v_0 \mapsto$ 2. $w \mapsto$ 3. $w \mapsto$
Consider the phase structure grammar G = (V, S, $v_0, \mapsto$).
Derive the sentence ab^4c. Also draw the derivation tree.

(b) Draw the diagram of the machine M = (S,I,F) whose state transition table is shown. **5**
Given S = {s_0, s_1, s_2, s_3}, I = {0,1}

State	Input	
	0	1
S_0	S_0	S_1
S_1	S_0	S_2
S_2	S_0	S_0
S_3	S_2	S_1

Also list the values of F_w where w = 11011.

7. (a) Determine whether the relation R on a set A is reflective, irreflective, symmetric asymmetric, antisymmetric or transitive. Give necessary explanation to your answer. **10**
A = set of all positive integers, and aRb iff $a \leq b + 1$

(b) Perform the following. **10**

i) $(1010.110)_2 = (?)_{10}$

ii) $(414)_8 = (?)_{10}$

iii) $(1110)_2 - (1001)_2 = (?)_2$

iv) $(1001)_2 \times (1011)_2 = ?$

v) $(10100)_2 \div (100)_2 = ?$

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MCA (SEM-I)

PRINCIPLES OF ECONOMICS AND MANAGEMENT

(MAY- 2018)

Q. P. Code: 31086

(3 Hours) **Marks: 100**

N.B. 1) Question No. 1 is compulsory
2) Attempt any four from the remaining Questions No. 2 to No. 7.
3) Illustrate answers with proper example wherever necessary.

Q 1. a) Define Management. Explain various functions of Management? **10**

b) Explain Product Life Cycle in detail. **10**

Q 2. a) What is decision making? Explain its various steps. **10**

b) Explain Maslow's theory of motivation in detail **10**

Q 3. a) Briefly explain Steps/Stages in new product development process. **10**

b) Explain Marketing Mix with example. **10**

Q 4. a) What are assumptions of McGregor's theory X and theory Y **10**

b) What are advantages of management by objectives? **10**

Q 5. a) Describe the roles and responsibilities of an Economist. **10**

b) What is Performance Appraisal and Explain its Methods? **10**

Q 6. a) Define and explain law of Supply. **10**

b) Define and explain law of Demand. **10**

Q 7 Write short notes on: **(Any 4)** **20**

a) Features of Perfect and Imperfect Competition
b) Demand Forecasting
c) Internal Source of Recruitment
d) Oligopoly
e) Methods of Training
f) HRM

MCA (SEM-I)

INTRODUCTION TO WEB TECHNOLOGY

(MAY- 2018)

Q. P. Code: 25542

Total Marks: 100

(3 Hours)

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

1. (a) Write HTML code to accept input from a user for alumni registration portal. The required inputs First Name, Last Name, Gender, Date of Birth, Contact Number, Year of Passing **(10)**

   (b) What are the various form tags in HTML? **(10)**

2. (a) Using JavaScript write a function to test the entered number is prime number. **(10)**

   (b) How to maintain persistent behavior of the web application? Explain with suitable example **(10)**

3. (a) Explain with different methods the data object in JavScript. **(10)**

   (b) Describe in detail about CSS and explain with suitable example various types of CSS. **(10)**

4. (a) What is the difference between, **(10)**
   1. Form Get and Form Post
   2. Client side scripting and Server side scripting

   (b) Discuss with example various types of font properties in CSS **(10)**

5. (a) Write a short note browser and webmaster. **(10)**

   (b) Write a JavaScript program to print this pattern. **(10)**

```
1
22
333
4444
55555
666666
```

6. (a) What are the highlights of HTML, DHTML and XHTML for the web development? **(10)**

   (b) What is cookies? Explain with suitable example advantages of it. **(10)**

7. Write Short Notes on ***any four*** :- **(20)**
   a) Request and Response Object
   b) Type selector in CSS
   c) Data types in JavaScript
   d) Static and Dynamic Web Pages.
   e) Features of java script.