

M.C.A [SEM – I]
Programming with C
(DEC- 2017)

Q.P. Code :22067

[Time: Three Hours]

[Marks:100]

Please check whether you have got the right question paper.

- N.B:
1. Question No.1 is Compulsory.
 2. Answer any 4 questions from question no.2 to 7
 3. All questions carry equal marks.

- Q.1** a) Give a brief note about the elements in a pointer data type. What are the advantages and disadvantages of pointers **10**
- b) What is a preprocessor, what are the advantage of preprocessor? **10**
- Q.2** a) What is malloc () & calloc () ? Explain difference between malloc () & calloc () with example. **10**
- b) List any 3 file handling functions. Explain in detail. **10**
- Q.3** a) Write a program using recursive function to print sum of digits of a given number. **10**
- b) What is mean by user-defined data type? Give a C program example which uses user defined data type. **10**
- Q.4** a) What is the purpose of static, auto and register variables in C? **10**
- b) Explain what is pointer? Explain with suitable example. **10**
- Q.5** a) What are different parameter passing mechanisms in C? Give examples. **10**
- b) What are static variable? Compare with standard local variable. **10**
- Q.6** a) Write a program to pass an array to a function which returns the sum of the elements of the array. **10**
- b) What is meant by Macros? List constructs in C for preprocessing **10**
- Q.7** Write Short note on **any Four:** **20**
- a) Difference between Call by reference & Call by Value
 - b) Difference between union & Structure
 - c) Difference between Continue & Break
 - d) Difference between Buffered and unbuffered files
 - e) Difference between typedef and typecast

M.C.A [SEM – I]
System Analysis Design
(DEC- 2017)

Q. P. Code: 27909

(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 level1 DFD of a Hospital management system with a neat diagram 10
(b) Explain various fact finding techniques 10
2. (a) Compare Spiral Model and Waterfall Model and explain when to use each 10
(b) Explain the importance of Input and Output design 10
3. (a) Explain the need of Structured Walkthrough along with its procedure? 10
(b) Explain different types of documentation 10
4. (a) What is SRS? Explain the role of system analyst in it 10
(b) Explain the strategic approach to software testing 10
5. (a) Explain Structure chart and its types 10
(b) Explain the importance of ER diagram with an example 10
6. (a) Explain different Extreme Programming practices and principles 10
(b) With the help of an example explain Normalization and its types 10
7. Write short notes on (any **four**):- 20
 - (a) Black box testing
 - (b) Structured English
 - (c) RAD
 - (d) Data dictionary
 - (e) Warnier Orr diagram

M.C.A [SEM – I]
Computer Organization and Architecture
(DEC- 2017)

Q. P. Code: 26566

(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) Explain Half Adder with Logic diagram. 5
(b) Define flip flop. Explain the working of JK FF with logic diagram. 5
(c) Simplify the Boolean function $F(W,X,Y,Z) = \sum(1,3,5,6,7,8,10,11,15)$ using four variable map in sum of product form. Also draw the circuit diagram of the simplified equation. 5
(d) Construct a logic circuit using AND, OR and NOT gates 5
 $F = (A + B)' (A + C) (B + C)'$
- Q2. (a) List and explain different addressing modes with suitable examples 10
(b) Discuss the role of a Bus in computer organization. Explain various bus interconnection structures. 10
- Q3. (a) Compare and contrast Interrupt Driven I/O, DMA and Programmed I/O. 10
(b) Explain fetch cycle, indirect cycle and interrupt cycle with the help of diagram. 10
- Q4. Difference the following 20
(a) Micro-Programmed and Hard wired Control
(b) SRAM vs. DRAM
- Q5. (a) What is RAID? Explain any 4 RAID levels in detail. 10
(b) Explain the structure and working of a Control Unit. 10
- Q6. (a) Explain memory hierarchy with the help of diagram. 10
(b) Define Cluster. Explain different clustering methods in detail. 10
- Q7. Explain any two in details: 20
(a) Superscalar processors
(b) Cache Memory
(c) SMP

M.C.A [SEM – I]
Discrete Mathematics
(DEC- 2017)

Q.P. Code :25166

[Time: Three 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.

- Q.1**
- a) (i) Obtain a principal disjunctive normal form of : $(\neg P \neg Q) \rightarrow (P \leftrightarrow Q)$ **05**
- (ii) Show that $(\mathbb{Z}, +)$ is isomorphic to $(\mathbb{T}, +)$ **05**
- 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 or a monoid determine whether it is commutative. **10**
Set $S = \{1, 2, 3, 6, 9, 18\}$ where $a * b = \text{L.C.M.}(a, b)$.
- Q.2**
- a) (i) Determine whether the following form is tautology or contradiction **05**
 $(P \rightarrow (Q \rightarrow R)) \rightarrow ((P \rightarrow Q) \rightarrow (P \rightarrow R))$ **05**
- (ii) What are quantifiers? Explain with examples.
- 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**
- Q.3**
- a) (i) Using method of mathematical induction show that sum of the cubes of three consecutive integers is divisible 9. **05**
- (ii) Show that the conclusion D follows from the premises **05**
 $(A \rightarrow B) \wedge (A \rightarrow C), \quad \neg(B \wedge C), \quad D \vee A$
- 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: **05**
- (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 $a_n - 2a_{n-1} = 3 \times 2^n$ **05**

Q.4 a) (i) Find a particular solution of recurrence relation $a_n = 200a_{n-1} - 100$ with initial condition $a_0 = 1$. **05**

(ii) Let $a_n = \begin{cases} 0 & 0 \leq n \leq 2 \\ 2^{-n} + 3 & n \geq 3 \end{cases}$ Find Δa_n , where Δ denotes the forward difference. **05**

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**

Q.5 a) (i) Define $f: (Z, +) \rightarrow (5Z, +)$ as $f(x) = 5x$, where $5Z = \{5n: n \in Z\}$. Verify that f is an isomorphism. **05**

(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. **05**

b) (i) Let $H = \begin{bmatrix} 1 & 1 \\ 0 & 1 \\ 1 & 0 \\ 0 & 1 \end{bmatrix}$ be a parity check matrix. Determine the group code $e_H: B^2 \rightarrow B^4$. **05**

(ii) consider the (2,5) group encoding function define by
 $e(00) = 00000$, $e(01) = 01101$, $e(10) = 10011$, $e(11) = 11110$
 Decode the word 01101 using maximum likelihood decoding function. **05**

Q.6 a) (i) Consider the (2,6) encoding function e defined by **05**

$$\begin{array}{ll} e(00) = 000\ 000 & e(01) = 011\ 110 \\ e(10) = 101\ 011 & e(11) = 111\ 000 \end{array}$$

Let d be an associated maximum likelihood function. How many errors will (e, d) correct? **05**

(ii) Let $V = \{v_0, w, a, b, c\}$ $S = \{a, b, c\}$ and let \mapsto be the relation on V^* given by

1. $v_0 \mapsto aw$
2. $w \mapsto bbw$
3. $w \mapsto c$

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. **10**
 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 $w = 11011$.

- Q.7** a) Determine whether the relation R on a set A is reflective, irreflexive, 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) $(10100)_2 \div (100)_2 = ?$

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) What do you understand by Law of Demand? What factors are important in explaining the law of demand? 10
b) “Economics of scale may be either internal or external they may be technical, managerial, financial or risk – bearing” – Elucidate. 10
- Q 2.** a) Define managerial Economics. What are the roles and functions of Management? Explain. 10
b) Explain the methods of Demand Forecasting? 10
- Q 3.** a) What do you mean by performance appraisal? Explain any two methods of performance appraisal? 10
b) What are the various Leadership theories? Explain theory X and theory Y in details. 10
- Q 4.** a) What is Break Even Point? Explain in details. 10
b) What is Planning? Explain the features and importance of planning. 10
- Q 5.** a) Explain the four P’s of Marketing with suitable examples. 10
b) Distinguish between “delegation of authority” and “decentralization”. What should be done to ensure effective delegation of authority in a business enterprise? 10
- Q 6.** a) Monopolistic competition does not offer equilibrium in the short run to the industry. Why? 10
b) Explain the function of law of supply. 10
- Q 7** Write short notes on: (Any 4) 20
a) Market Research
b) Compensation
c) Product Mix
d) Market Mix
e) HRM
f) Motivation

M.C.A [SEM – I]
Introduction to Web Technology
(DEC- 2017)

Q. P. Code: 25543

[Total Marks :100]

- N.B** (1) Question No.1 is **compulsory**.
(2) Answer any **four** questions from Question Nos. **2 to 7**.
(3) Figures to the right indicate full marks.

1. Attempt any FOUR questions (20)
 - a) Session object
 - b) Definition List in HTML
 - c) POST and GET method
 - d) String object in JavaScript
 - e) Text-level tags in HTML.

2. (a) Write Html code to accept input from user for course registration input includes name, age, course id, email id. Write JavaScript for validating data. (10)
(b) Explain Array as Object in JavaScript with at least four methods. (10)

3. (a) Write short notes on DHTML and XHTML. (10)
(b) Explain Request and Response object used in ASP. (10)

4. (a) What is Cookies? Explain along with example. (10)
(b) Explain user-defined objects and user-defined functions in JavaScript along with example. (10)

5. (a) Write a short note of Web Application Development Cycle. (10)
(b) Write a HTML code to demonstrate <frameset>. What are the advantages and disadvantages of using frames? (10)

6. (a) Explain date object in JavaScript with atleast five methods. (10)
(b) Explain add Event Listener and remove Event listener with suitable example. (10)

7. (a) What is CSS? Explain different types of CSS with example. (10)
(b) Explain different types of website with suitable example. (10)
