

N.B.:

- 1) Q4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SEPARATE answer books
- 6) Draw a labeled diagram WHEREVER necessary

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Describe syntactical and semantical errors in a program with example.
- b) Differentiate between local variable and global variable?

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) What is the difference between iteration and recursion control structures? Explain with examples.
- b) How the elements of an array stored in a memory? Why array index starts with 0 in c?

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Explain string manipulation functions 1. strlen() 2. strcpy() 3. strncpy() 4. strcat() with examples
- b) What is linked list? Write a code to insert, remove, add an item in a list.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) What is linker? How it works?
- b) Write short note on pre increment and post increment operations with example
- c) Break and continue statement in c
- d) Two dimensional arrays
- e) the purpose of string.h function
- f) Pointer arithmetic
- g) Enlist the differences between Structure and Union

SECTION - II

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) Write a program to display first 10 natural numbers and their sum.
- b) write a program to display sum of series $1+1/2+1/3+1/4+\dots\dots\dots+1/n$.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Write a program to find sum of two matrices.
- b) Write a program to find table of any number.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) Write a program to check prime number by using function
- b) Write a program to swap values of two numbers without using third variable.

M.C.A. SEMESTER-I (CBCS 2018) : WINTER - 2018

SUBJECT: COMPUTER ORGANIZATION AND ARCHITECTURE

Day: Friday
Date: 16/11/2018

W-2018-1915

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B.:

- 1) Q.4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q. 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q. 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SEPARATE answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Explain applications of Computers in various fields.
- b) What is combinational circuit? Discuss full adder in brief.

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Explain the functioning of four bit synchronous binary counter with help of diagram.
- b) Briefly describe the design of control unit of basic computer.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Discuss any two mapping techniques associated with cache memories with their relative merits and demerits.
- b) Describe handshaking method of asynchronous data transfer in detail.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Hacking
- b) Multiplexer
- c) Assembly language
- d) CISC
- e) Programmed I/O

SECTION -II

Q.5) Answer the following: (12 Marks X 1= 12)

The sequential circuit has two D flip flops A and B, two inputs x and y and one output z. The flip flop input equations and circuit output is as follows.

$$D_A = x'B + yA$$

$$D_B = xB + y'A$$

$$z = y'B + x'A$$

- i.) Draw logic diagram.
- ii.) Tabulate state table.
- iii.) Draw state diagram.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Convert the following numerical arithmetic expressions into reverse polish notations and show the stack operation for evaluating the numerical result.
 - i.) $(3+4) * [10*2+6 +8 -2]$
 - ii.) $(5+6)* [(3+4) * (7-3)]$
- b) Using DeMorgan's theorem show that:
 - i.) $(A+B)' (A'+B')'=0$
 - ii.) $A+A'B+A'B'=1$

Q.7) Explain the following: (12 Marks X 1 = 12)

Explain the functioning of four bit arithmetic circuit with help of diagram in detail.

M.C.A. SEMESTER-I (CBCS 2018) : WINTER - 2018

SUBJECT: DATABASE MANAGEMENT SYSTEMS

Day: Monday
Date: 19/11/2018

W-2018-1916

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B.:

- 1) Q.4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SEPARATE answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) What are the roles and responsibilities of database administrator in a database environment?
- b) What is ER modeling? What are its drawbacks? What led to the development of Enhanced ER Model?

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) When is the concept of Weak entity used in data modeling? Explain the terms Owner entity, Weak entity, identifying relationship and Partial key.
- b) List the physical storage medias available. Give the speed with which data can be accessed on each medium.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is a timestamp? How does the system generate timestamps? Discuss the timestamp ordering protocol for concurrency control.
- b) List and explain the commonly accepted threats to database security.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Types of DBMS Interfaces
- b) Mapping Cardinalities
- c) Lossy vs. Lossless Decomposition
- d) Primary Storage vs. Secondary Storage
- e) Serial and non serial schedules
- f) Digital signatures.
- g) Types of Transparencies

SECTION - II

Q.5) Answer the following: (12 Marks X 1 = 12)

Normalize the following data up to Third Normal Form.

Employee Number, Employee Name, Gender, Date of Birth, Date of Joining, Salary, City, Age, Department Code, Department Name, Project Code, Project Description, Project Supervisor.

Note: Make assumptions wherever necessary.

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Explain all the operations on B+ tree by taking sample example.
- b) What is shadow page recovery scheme? How does it compare with the log-based recovery techniques in terms of ease of implementation and overhead costs?

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) What is the goal of encryption? What process is involved in encrypting data and then recovering it at the other end?
- b) Discuss in detail the architecture of data warehouse with a neat diagram.

M.C.A. SEMESTER-I (CBCS 2018) : WINTER - 2018

SUBJECT: DISCRETE STRUCTURES

Day: Thursday
Date: 22/11/2018

W-2018-1917

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B.:

- 1) Q4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SEPARATE answer books.
- 6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Verify the validity of the following argument
"All men are mortal. Socrates is a man, therefore Socrates is a mortal".
- b) Define Partition of set. Let $S = \{1,2,3,4,5,6,7,8\}$ find all the partitions

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) If Q is the sets of all rational and $f:Q \rightarrow Q$ is a mapping defined by $f(x) = 2x+3, \forall x \rightarrow Q$
Then prove that f is one one-onto.
- b) Show that n^2 is not $o(n)$.

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) Explain all Logic Gate with suitable example.
- b) By mathematical induction prove that $2+5+8+\dots+(3n+1) = n \frac{(3n+1)}{2}$.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Quantifier
- b) Cartesian Products
- c) Growth of function
- d) Pseudorandom number
- e) K-map simplification
- f) Permutation and combination
- g) Types of Grammar

SECTION - II

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) To prove that $A-(B \cup C) = (A-B) \cap (A-C)$.
- b) Construct the Truth Table for the following statement $[p \rightarrow (q \rightarrow r)] \rightarrow [(p \rightarrow q) \rightarrow (q \rightarrow r)]$

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) Describe Linear search algorithm also describe the average case performance of the linear search algorithm, assuming that the element x is in the list.
- b) Draw the Hasse diagram for the "greater than or equal to" relation on $\{0,1,2,3,4,5\}$.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) How many numbers between 1000 and 10000 can be formed with the digits 1,3,5,7,9 each digit being used only once in each number.
- b) Construct NFA $(\{p,q,r,s\}, \{0,1\}, \delta, p, \{s\})$ to its equivalent DFA where δ is show in table.

Σ	0	1
Q		
p	p, q	p
q	r	r
r	s	-
s	s	s

M.C.A. SEMESTER-I (CBCS 2018) : WINTER - 2018

SUBJECT: MANAGEMENT FUNCTIONS

Day: Monday
Date: 26/11/2018

W-2018-1918

Time: 02.00 PM TO 05.00 PM
Max. Marks: 60

N.B.:

- 1) Q4 from Section I is COMPULSORY.
- 2) Answer ANY TWO questions from Q 1, 2, 3 in Section I.
- 3) Answer ANY TWO questions from Q 5, 6, 7 in Section II.
- 4) All questions CARRY EQUAL marks.
- 5) Answers to Both the sections to be written in SEPARATE answer books
- 6) Draw a labeled diagram WHEREVER necessary

SECTION - I

Q.1) Answer the following: (6 Marks X 2 = 12)

- a) Is management an exact science? Substantiate your answer with examples
- b) Define decision making and explain the process of decision making that affects the efficiency of the business decision

Q.2) Answer the following: (6 Marks X 2 = 12)

- a) Briefly explain the factors determining the degree of decentralization of authority.
- b) What are the basic elements of effective coordination?

Q.3) Explain the following: (6 Marks X 2 = 12)

- a) What is the difference between an organization structure and a functional structure? Which should be developed first? Discuss.
- b) What is leadership? Explain characteristics of different leadership styles.

Q.4) Write short notes on the following: Attempt ANY THREE (4 Marks X 3 = 12)

- a) Objectives of Management
- b) Decision making process
- c) Organizational process
- d) Co ordination
- e) Compensation
- f) Types of communication
- g) Necessity of management study

SECTION - II

Q.5) Answer the following: (6 Marks X 2 = 12)

- a) Explain modern approaches to decision making under uncertainty.
- b) Explain with appropriate example – what is the result likely to be when an executive assigns a responsibility for performance but fails to delegate adequate authority with the responsibility?

Q.6) Answer the following: (6 Marks X 2 = 12)

- a) What is formal and informal organization, illustrate with suitable example.
- b) Rates of employee *retention* among different departments: of a IT co. are increasing day by day , so how will you discover the reason and get remedy over it.

Q.7) Explain the following: (6 Marks X 2 = 12)

- a) What practical application of the principles and techniques of management controls can you make in your own organization? Why?
- b) Present your views for and against the social responsibility of business.

261118-e-mgt-kolhapur