M.C.A. SEMESTER-I (CBCS 2018) : SUMMER - 2019

SUBJECT: C PROGRAMMING

Day: Monday
Date: 15/04/2019

S-2019-2149

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 SAME answer books.
6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

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

a) Explain the process of compilation of any C language program with suitable example.
b) What are the arithmetic operators?

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

a) Give the difference between if-then statement and switch statement with example.
b) What is an array? Why array is used in c program? Explain one dimensional array.

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

a) Explain the following for C function arguments and return values.
    1. C function with arguments and with return value
    2. C function with arguments and without return value
b) What is pointer? Explain the concept of pointer to arrays.

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 unary and binary operators.
c) Nested loops.
d) Memory leaks and logical errors in dynamic memory allocation.
e) Passing structure to function.

SECTION - II

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

a) Write a C Program to find sum of two numbers.
b) Write a program to find greatest of three numbers.

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

a) Write a program reads characters until a newline is entered and store them in an array and terminates the string with a NULL character and then prints out the string.
b) Write a program to find square of a number using functions

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

a) Write a program to convert binary number to decimal and vice versa using functions.
b) Explain enumerated data types in C.

*****

M.C.A. SEMESTER-I (CBCS 2018) : SUMMER - 2019
SUBJECT: COMPUTER ORGANIZATION AND ARCHITECTURE

Day: Tuesday
Date: 30/04/2019

S-2019-2150

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 SAME answer books.
6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

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

a) Give the applications of Computer in various fields.
b) What is combinational Circuit? Draw the full adder circuit and explain its operation.

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

a) Draw the circuit of 4 bit synchronous binary counter and give its functioning.
b) Explain the working of Interrupt cycle with help of flow chart.

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

a) Discuss the different mapping techniques used in cache memories and their relative merits and demerits.
b) With a neat diagram explain the working of DMA.

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

a) Computer security
b) Shift micro-operations
c) Types of Interrupt
d) RISC
e) Arithmetic pipeline

SECTION - II

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

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

$D_A = x'C + A'B'$

$D_B = x'B + xC$

$Dc = AB + xA'$

$y = x + x'B$

a) Draw logic diagram.
b) Tabulate state table.
c) Draw state diagram.

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

a) Convert the following numerical arithmetic expression into reverse polish notations and show the stack operation for evaluating the numerical result.

i.) (3+3) (2+2+5) (3*6)

ii.) (5+4)* [(5+4) * (7-5)]

b) Simplify the following Boolean functions using K-map.

i.) $F(A,B,C,D)=\sum(4,6,7,15)$

ii.) $F(A,B,C,D)=\sum(3,7,11,13,14,15)$

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

Draw the block diagram of Arithmetic logic shift unit and explain the working of it with help of function table.

*****

M.C.A. SEMESTER-I (CBCS 2018) : SUMMER - 2019

SUBJECT: DATABASE MANAGEMENT SYSTEMS

Day: Monday
Date: 22/04/2019

S-2019-2151

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 SAME 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 different types of database users? Discuss the main activities of each.
b) Explain CODD's Rules that qualify DBMS as a relational DBMS.

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

a) Compare Hierarchical, Network and Relational data models in the terms of its merits and demerits.
b) What are the main goals of the RAID technology?

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

a) What is need of lock in DBMS? Explain shared lock and exclusive lock with the help of example.
b) What is data quality management? Explain the process of ensuring and managing quality data.

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

a) Database Schema v/s Database State
b) Referential Integrity
c) Candidate Key
d) Static hashing vs. Dynamic hashing
e) Stable storage structure
f) Database authorization
g) Distributed vs. Centralized database

SECTION - II

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

Construct an ER Diagram for a University Database and convert it into relational tables.
A University has many departments and each department has multiple instructors, one among them is head of the department. An instructor belongs to only one department, each department offers multiple courses, each of which is taught by a single instructor. A student may enroll for many courses offered by different departments.

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

a) Explain all the operations on B+ tree by taking sample example.
b) Why we need to do recovery in DBMS? Explain various method used for that.

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

a) What are the elements to be considered in designing access control policies of a complex E-commerce application?
b) What is the reason for constructing separate data warehouse to perform online analytical processing?

*****

M.C.A. SEMESTER-I (CBCS 2018) : SUMMER - 2019

SUBJECT: DISCRETE STRUCTURES

Day: Wednesday
Date: 24/04/2019

S-2019-2152

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 SAME answer books.
6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

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

a) How can this English sentence be translated into a logical expression "you can access the Internet from campus only if you are a computer science major or you are not a freshman".

b) Define partially ordered Relations with example.

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

a) If $f(x) = x^2-2x$ and $g(x) = 2x+1$. Find gof and fog.

b) Describe an algorithm for finding the maximum value in a finite sequence of integers.

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

a) Draw Hasse diagram representing the partial ordering {(a, b) | 'a divides b') on {2,3,4,5,6,7,12,14}.

b) Using mathematical induction to show that $1+4+7+ \ldots\ldots + (3n-2) = 2n(3n-1)$.

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

a) Tautology and Fallacies
b) Domain and Range of relation with example
c) Application of Function
d) Sorting Method
e) Boolean operation
f) Mathematical Induction
g) Limitation of finite machine

SECTION - II

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

a) Define Equivalence Relation.
Let I be the set of all integers Let us define a relation R in I, such that xRy holds if f X-Y is divisible by 5, $x \in I$, $y \in I$ i.e. R $\{(x,y) : x \in I, y \in I$ x-y is divisible by 5$\}$

b) If the function f: R→R be given by $f(x) = x^2-2x-3$ and g: R→R be defined by $g(x) = 3x-9$ find (gof) x and (fog)x.

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

a) Describe the time complexity of searching algorithm.

b) Solve the recurrence relation $a_n = -3a_{n-1}-3a_{n-2}-a_{n-3}$ With initial conditions $a_0 = 1$, $a_1 = 2$, $a_2 = -1$.

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

a) In how many different ways can eight identical cookies be distributed among three distinct children if each children receives at least two cookies and no more than four cookies.

b) Design Mealy machine to find 2's complement of a given binary number.

*****

M.C.A. SEMESTER-I (CBCS 2018) : SUMMER - 2019

SUBJECT: MANAGEMENT FUNCTIONS

Day: Saturday
Date: 27/04/2019

S-2019-2153

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 SAME answer books.
6) Draw a labeled diagram WHEREVER necessary.

SECTION - I

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

a) "Management is oldest of the arts and youngest of the sciences". Discuss
b) Explain the planning? Distinguish between long range and short range planning?

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

a) Explain the concept of functional authority. How do you delegate it? Discuss.
b) What is your interpretation of the meaning of the word Coordination?

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

a) 'Performance appraisal can provide an indication of training need and direction for leadership development'. Illustrate.
b) Explain the steps in the process of controlling? Explain the types of control.

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

a) Important of Management Study
b) Planning process
c) Centralization verses Decentralization
d) Coordination
e) Compensation
f) Direction
g) Objectives of Management

SECTION - II

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

a) Do you subscribe to the view that MBO is a Pan-Asia for organizational ills?
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 commensurate with the responsibility?

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

a) What levels of management are responsible for major phases of coordination?
b) As a HR manager of a South Indian Electronic company, List out the problems, challenges and experiences that may encounter while retaining the productive employee.

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

a) 'Ineffective communication is the fault of the sender.' Discuss the communication process and three ways to ensure effective communication.
b) Assume that you are a Manager in soft Drink Company. What are the functions you and managers perform to attain the set goals?

*****