This question paper contains **3** printed pages]

Y—462—2019

FACULTY OF COMPUTER SCIENCE

B.Sc. (F.Y.) (Second Semester) (Backlog) EXAMINATION

NOVEMBER/DECEMBER, 2019

(CBCS Pattern)

COMPUTER SCIENCE

Paper IV

(Analysis of Algorithm and Data Structure)

(MCQ + Theory)

(Friday, 13-12-2019) **Time : 10.00 a.m. to 12.00 noon**

Time— Two Hours *Maximum Marks*—40

N.B. :— (*i*) Attempt *All* questions.

(*ii*) Assume suitable data, if necessary.

(*iii*) Figures to the right indicate full marks.

(MCQ)

1. Select the *correct* alternative of the following : 10

(*i*) The logical or mathematical model of a particular organization of data is called :

(*a*) Logical model (*b*) Mathematical model

(*c*) Control structure (*d*) Data structure

(*ii*) A procedure having finite number of steps arranged in particular order to solve given problem is called :

(*a*) Subroutine (*b*) Function

(*c*) Algorithm (*d*) None of these

P.T.O.

(*iii*) Data structure.....allows deletion from front and insertion from rear.

(*a*) Queue (*b*) Stack

(*c*) Array (*d*) All of these

(*iv*) Array data structure store .....data elements.

(*a*) Non-homogeneous (*b*) Homogeneous

(*c*) Both (*a*) and (*b*) (*d*) None of these

(*v*) .....is an example of non-linear data structure.

(*a*) Array (*b*) Queue

(*c*) Graph (*d*) None of these

(*vi*) A graph G is said to be .....if there is a path between any two of its nodes.

(*a*) Connected (*b*) Disconnected

(*c*) Both (*a*) and (*b*) (*d*) None of these

(*vii*) The algorithm that cells itself directly or indirectly is known as :

(*a*) Inversion (*b*) Progression

(*c*) Recursion (*d*) None of these

(*viii*) .....is a FIFO data structure.

(*a*) Stack (*b*) Queue

(*c*) Graph (*d*) Tree

(*ix*) Accessing and processing each element exactly once is :

(*a*) Inserting (*b*) Deleting

(*c*) Traversing (*d*) All of these

(*x*) .....is a LIFO data structure.

(*a*) Queue (*b*) Stack

(*c*) Tree (*d*) Array

(Theory)

2. (*a*) Discuss divide and conquer technique with suitable example. 5

(*b*) What is data structure ? Discuss various mathematical notations and functions used in algorithm. 5

Or

(*c*) What is linked list ? Give its memory representation. 5

(*d*) Discuss various data structure operations. 5

3. (*a*) What is stack ? Explain with example PUSH and POP-operation. 5

(*b*) What is binary tree ? Give memory representation of binary tree. 5

Or

(*c*) Describe threaded binary tree. 5

(*d*) What is graph ? Describe memory representation of graph. 5

4. (*a*) What is a queue ? Write algorithm for insertion and deletion of an item from the queue. 10

Or

(*b*) Discuss Warshell's algorithm. 10