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V—348—2017

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

NOVEMBER/DECEMBER, 2017

(CBCS Pattern)

COMPUTER SCIENCE

Paper IV

(Analysis of Algorithm and Data Structure)

(MCQ + Theory)

(Wednesday, 13-12-2017)   **Time : 10.00 a.m. to 12.00 noon**

Time—2 Hours   *Maximum Marks—40*

N.B. :— (*i*)   *All* questions are compulsory.

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

(*iii*)   Assume suitable data if necessary.

MCQ   10

1.   Choose suitable option :

(1)   .... is a single elementary unit of information.

(A)   field   (B)   value

(C)   record   (D)   file

(2)   .... is a non-linear type of data structure.

(A)   Linked list   (B)   Tree

(C)   Stack   (D)   Queue

(3)   Finding the location of the record with a given key value is ....

(A)   Traversing   (B)   Sorting

(C)   Searching   (D)   Inserting

P.T.O.

(4) In linked list, the situation when START = NULL is called ....

    (A) MINFLOW   (B) MAXFLOW

    (C) OVERFLOW   (D) UNDERFLOW

(5) Queue works on .... principle.

    (A) FIFO   (B) LIFO

    (C) Both (A) and (B)   (D) None of these

(6) In stack, the condition TOP = NULL will indicate that STACK has .... items.

    (A) One   (B) Zero

    (C) Two   (D) None of these

(7) In STACK, the term POP indicates ....

    (A) Insertion   (B) Traversing

    (C) Deletion   (D) None of these

(8) In tree T, the line drawn from a node N to a successor is called ....

    (A) Leaf   (B) Path

    (C) Branch   (D) Edge

(9) In a graph, when there is a path between any *two* nodes, then the graph is called ....

    (A) Connected   (B) Complete

    (C) Simple   (D) Multigraph

(10) A directed graph G is said to be simple if G has no .... edges.

    (A) Horizontal   (B) Parallel

    (C) Both (A) and (B)   (D) None of these

Theory

2. (*a*) Explain array representation of STACK and device algorithms for PUSH and POP operations.   10

Or

(b) Write an algorithm to traverse a linked list. 5

(c) Explain array representation of queue. 5

3. (a) Explain memory representation of binary tree with suitable diagram. 10

Or

(b) Write an algorithm for delete the node following a given node, in a linked list. 5

(c) Explain divide and conquer approach. 5

4. Write short notes on (any *two*) : 10

(a) Warshall's Algorithm

(b) Basic data structure operations

(c) Queue deletion

(d) Memory representation of linked list.