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V—330—2017

FACULTY OF SCIENCE

B.Sc. (I.T.) (Second Semester) EXAMINATION

NOVEMBER/DECEMBER, 2017

COMPUTER SCIENCE

Paper IV

(Analysis of Algorithm and Data Structure)

(MCQ + Theory)

(Friday, 8-12-2017) **Time : 10.00 a.m. to 12.00 noon**

Time—2 *Hours* *Maximum Marks*—40

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

(*ii*) Assume suitale data if necessary.

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

MCQ 10

1. Choose the *correct* answer :

(1) ..... is something that has certain attributes or properties which may be assigned values.

(A) Entity (B) Field

(C) Record (D) File

(2) ..... is a collection of records of the entities in a given entity set.

(A) Field (B) File

(C) Information (D) Field value

(3) In data structure, accessing and processing is sometimes called ..... .

(A) Inserting (B) Merging

(C) Visiting (D) Deleting

P.T.O.

(4) Data elements of a linked list are called as ..... .

(A) Fields (B) Records

(C) Items (D) Nodes

(5) When an item is removed from stack, the condition TOP = NULL is called ..... .

(A) Underflow (B) Overflow

(C) Downflow (D) Upflow

(6) The pointer variable ..... contains the location of the front element of the queue.

(A) Top (B) Front

(C) Open (D) Rear

(7) ..... structure is mainly used to represent hierarchical relationship between elements.

(A) Stack (B) Queue

(C) Tree (D) Linked list

(8) A complete graph with n nodes will have ..... edges.

(A) $n + (n - 1)/2$ (B) $n - (n - 1)/2$

(C) $n(n + 1)/2$ (D) $n(n - 1)/2$

(9) A graph is connected if and only if there is a simple path between any ..... nodes in G.

(A) Two (B) One

(C) Four (D) Three

(10) A connected graph T without any cycles is called ..... graph.

(A) Labelled (B) Weighted

(C) Multi (D) Tree

Theory

2. (*a*) Explain algorithm as a technology. 5

(*b*) Explain data structure operations. 5

Or

(*c*) Explain concept of linked list. 5

(*d*) Write an algorithm for traversing a linked list. 5

3. (*a*) Explain the concept of STACK with an example. 5

(*b*) Write an algorithm to delete an element from queue. 5

Or

(*c*) Give memory representation of queue. 5

(*d*) Write an algorithm for PUSH operation of STACK. 5

4. (*a*) What is binary tree ? Explain linked representation of binary tree. 10

Or

(*b*) Explain Warshall's algorithm. 10