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**W—384—2018**

**FACULTY OF COMPUTER SCIENCE**

**B.Sc. (IT) (First Year) (Second Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2018**

**COMPUTER SCIENCE**

**Paper IV**

**(Analysis of Algorithm and Data Structure)**

**(Tuesday, 04-12-2018)**

**Time : 10.00 a.m. to 12.00 noon**

**Time—2 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 for the following : 10
- (1) ..... is something that has certain attributes or properties which may be assigned values.
- (A) Entity (B) Group  
(C) Value (D) Item
- (2) The logical or mathematical model of a particular organization of data is called .....
- (A) Data organization (B) Data structure  
(C) Data model (D) Information model
- (3) ..... is a single elementary unit of information representing an attribute of an entity.
- (A) Data (B) File  
(C) Field (D) Record

**P.T.O.**

- (4) Finding the locations of all records which satisfy one or more conditions are known as .....
- (A) Traversing (B) Inserting  
(C) Deleting (D) Searching
- (5) Queue is a ..... system.
- (A) FIFO (B) LILO  
(C) LIFO (D) FILO
- (6) Arranging elements in some logical order is called as .....
- (A) searching (B) sorting  
(C) inserting (D) merging
- (7) A linked list is also known as .....
- (A) Two-way list (B) Multiway list  
(C) One-way list (D) None of these
- (8) In a linked list when START = NULL, then ..... situation occurs.
- (A) NULL (B) Overflow  
(C) Both (A) and (B) (D) Underflow
- (9) Maximum number of nodes in a binary tree of depth K is .....
- (A)  $2K-1$  (B)  $2K + 1$   
(C)  $2K$  (D) None of these
- (10) A complete graph with  $n$  nodes will have ..... edges.
- (A)  $n(n + 1)/2$  (B)  $n(n + n)/2$   
(C)  $n(n/n)/2$  (D)  $n(n - 1)/2$

**(Theory)**

2. (a) Explain linked list with an example 5  
(b) Explain algorithm as a technology. 5
- Or*
- (a) Explain mathematical notations. 5  
(b) Explain control structure. 5

3. (a) Explain traversing a linked list. 5  
(b) Explain memory representation of queue. 5  
*Or*  
(c) Write an algorithm for searching a linked list when list is unsorted. 5  
(d) Explain PUSH operation of stack. 5
4. (a) Explain memory representation of binary tree with an example. 10  
*Or*  
(b) Explain memory representation of graph. 10