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

R—350—2017

FACULTY OF SCIENCE

B.Sc. (Second Semester) EXAMINATION

APRIL/MAY, 2017

COMPUTER SCIENCE

Paper IV

(Analysis of Algorithm and Data Structure)

(MCQ + Theory)

(Thursday, 4-5-2017) **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

1. Choose suitable option : 10

(1) ..... refers to a single unit of value.

(*a*) Data item (*b*) Record

(*c*) File (*d*) Information

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

(*a*) STACK (*b*) TREE

(*c*) LINKED LIST (*d*) Queue

(3) Processing each element in the linked list is called ..... operation.

(*a*) Merging (*b*) Inserting

(*c*) Traversing (*d*) Sorting

P.T.O.

(4) When START = NULL situation occurs in a linked list, it is called ..... .

(*a*) Overflow (*b*) Minflow

(*c*) Maxflow (*d*) Underflow

(5) STACK works on ..... principle.

(*a*) LIFO (*b*) FILO

(*c*) LILO (*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 POP means ..... .

(*a*) Insertion (*b*) Searching

(*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) If every node u in graph G is adjacent to every other node v in G, the graph is called ..... .

(*a*) Complete (*b*) Simple

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

(10) In directed graph G, a directed edge $e = u, v$ is called ..... .

(*a*) edge (*b*) node

(*c*) path (*d*) arc

Theory

2. (*a*) Explain with suitable example, memory representation of linked list. 10

Or

(*b*) Write an algorithm to insert a new element on STACK. 5

(*c*) Explain binary tree with diagram. 5

3. (*a*) Explain memory representation of STACK and queue. 10

Or

(*b*) Write an algorithm to insert a new element at the beginning of linked list. 5

(*c*) Explain POP operation of STACK. 5

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

(*a*) Basic data structure operations

(*b*) Garbage collection

(*c*) Warshall's algorithm

(*d*) Queue Insertion.