Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 18

B.Tech. (IT) (2018 Batch) (Sem.–3)

DATA STRUCTURE & ALGORITHMS

Subject Code : BTIT-301-18

M.Code : 76391

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Write briefly :

1. What is the Degree of a Graph?
2. What is a weighted graph?
3. What is a B tree?
4. What is difference between LIFO and FIFO structure?
5. Is there a header node in a link list?
6. What is a height balanced tree?
7. What is the height of a tree?
8. What is the complexity of an algorithm?
9. What are the operations possible on BST?
10. How a tree is represented in memory?

SECTION-B

11. Suppose a sequence of numbers is given like: 15, 11, 16, 17, 29, 22, 10, 25, 45, 34. How these numbers will be sorted using: Selection Sorting?

12. What do you understand by generalized lists? How is dynamic memory allocation and deletion done?

13. How minimal spanning tree for a graph is generated. Explain with an algorithm.

14. What is the post fix and prefix representation of the following expression

    (A * (b + C)) + (b/d)*a + z

15. Construct the binary tree for the following expression :

    $(5x + 5)(3x - y)$

    Give the sequence obtained when tree is traversed in post order form.

SECTION-C

16. Suppose a binary tree T is in the memory. Write a recursive algorithm which find the number of nodes in T and which finds the depth of T.

17. Let there be two Polynomials A and B of your Choice. How the addition of those two polynomials will take place using link list? Show it diagrammatically also.

18. What are the various operations possible on a Circular link list? Explain with the algorithm.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.