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. How the AVL trees are different Binary trees?

2. Write briefly about working principle of Priority Queue.

3. How do space complexity affect performance of a program?

4. Define Data Structure.

5. Write name of Best Sorting Algorithm. What are its time and space complexities?

6. What are applications of Graphs?

7. Write down the necessary condition for a tree to become binary search tree.

8. Define Hashing.

9. What do you understand by shortest path in a graph?

10. List various types of linked lists and define advantage of using linked list.

SECTION-B

11. What are various operations applicable for graphs? Discuss.

12. What is the role of data structures in computer science? Discuss different mathematical notations and time space tradeoff of data structures.

13. Elaborate following :

    a) Enqueue and Dequeue operations.

    b) Circular and doubly link list.

14. What are the various steps involved in insertion sort? Explain with example.

15. What is the benefit of using AVL Trees as data structure?

SECTION-C

16. What are the applications of Stack? Discuss different stack operations. Elaborate by evaluating any sample postfix expression using stack.

17. How binary search trees are helpful in information searching in comparison to other data structures? How they are different from AVL Trees?

18. Compare selection sort and quick sort algorithm. Explain their working.

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.