Roll No. ....

OLE-24032

B. Tech. 3rd Semester (CS & IT) Examination – April, 2021

DATA STRUCTURE USING 'C'

Paper : CSE-201-F

Time : Three Hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note :   Question No. **1** is *compulsory*. Remaining, attempt *one* question from *one* Unit. Attempt *five* questions in all.

1. Write short note on the following :

   (a) Priority Queue

   (b) Array of pointers

   (c) Binary tree and its types

   (d) Data and Information

UNIT – I

2. (a) What is an algorithm ? Define its complexity in term of time and space with suitable example.   10

(b) What is Stack ? Differentiate between stack and queue.   10

3. (a) What is searching ? Explain binary search algorithm with relevant example. How binary search better than linear search ? Explain.   15

(b) What are applications of Queues ? Explain in brief.   5

UNIT – II

4. (a) What are pointer variables ? Why we require pointer data structure ? Explain with suitable example.   10

(b) What is Dynamic memory allocation ? Which functions are available in C programming language for dynamic memory allocation ?   10

5. (a) What is linked list ? Explain various operations performed on linked list.   10

(b) Differentiate between doubly linked list and circular linked list in term of their applications. 10

UNIT – III

6. (a) What is Tree Traversal ? Explain with their representation. 10

(b) What is threaded binary tree ? Explain. 10

7. What is graph ? Explain its operations and applications in detail. 20

8. What is File Handling? Explain file organization in detail. 20

9. (a) What is AVL tree ? Explain. 10

(b) What is Set ? Explain its applications in data structure. 10