University Institute of Engineering & Technology

(Recognised Under Section 2(f) and 12B of UGC)

Kurukshetra University, Kurukshetra

THEORY EXAMINATION – FEB 2021	
B.TECH – CSE **Subject:** Data Structure and Algorithms **PAPER :** (PC-CS-201)	**SEMESTER - III** **MM: 56** **Time : 3 Hrs 15 Min**

INSTRUCTIONS TO BE FOLLOWED

- **Allotted time for examination is 3 hours 15 minutes that includes time for downloading the question paper, writing answers, scanning of answer sheets and E-mailing the PDF files to the designated Email ID.**
- **For CSE-A Regular Students, the Email ID is:- btech3rdcsea@kuk.ac.in**
- **For CSE-B Regular Students, the Email ID is:- btech3rdcseb@kuk.ac.in**
- **The candidates will be required to attempt 75% of the question paper (maximum) by choosing to their any best questions accumulating 56 marks.**
- **The PDF files should be saved as Roll No. and Subject Code. Proper attention should be given while sending the email and in the subject line, the Roll Number and Subject Code should be mentioned.**
- **Maximum Page Limit should be 20 (Twenty) for attempting the question paper on A4 sheets which could be downloaded and printed from the sample sheets given in the Kurukshetra University Examination guidelines.**
- **Over-attemptation should be avoided.**
- **Handwriting should be neat and clean and diagrams should be clear and contrasted.**
- **The candidate should not write their Mobile No. otherwise Unfair Means Case will be made.**
- **While attempting the paper, the candidate will use blue/black pen only.**
- **Before attempting the paper, the candidate will ensure that he/she has downloaded the correct question paper. No complaint for attempting wrong question paper by the candidate will be entertained.**
- **Candidate must ensure that he/she has put his/her signature on each page of the answer sheet used by him/her. Answer sheet without the signature of the candidate will not be evaluated.**

PART-A

Q. No. – 1 Answer the following questions. **15x1=15**

(i)	What do you understand by the term 'Data Structures'.
(ii)	Define array.
(iii)	Name any two linear data structues.
(iv)	What is meant by linear search from an array?
(v)	Give the name of the graph traversals.
(vi)	What do you undrestand by the term ' Rear 'in context to queue.
(vii)	What do you Balance factor.
(viii)	What is reverse polish notation?
(ix)	What do you understand by the directed graph ?
(x)	What is overflow condition in context to stack.
(xi)	In Stack insertions are done at the _____ .
(xii)	Stack is based upon the principle of _____ .
(xiii)	Give the post fix equivalent of A+B/C.
(xiv)	Give example of RR rotaion in AVL tree.
(xv)	Define minimum-spanning tree.

PART-B

2	Write an algorithm for Binary search from array.
3	Explain the algorithm for insertion of an element in a sequential queue.
4	Explain the advantages of using linked list.
5	Explain the binary tree traversals with the help of an example.

PART-C

6	(a)What are sparse matrice? Explain. (b) solve the following sequence with bubble sort . 45,89,23,11,56,77,88,90
7	Illustrate the Radix sort algorithm with the help of suitable example.
8	Sort the following numbers 56, 90, 33, 22, 29,12 using quick sort algorithm.
9	Explain linear queue and its operations.
10	Describe the algorithm for insertion of an element in singly linked list at the end.
11	Explain the circular linked list and its operations with suitable diagram.
12	Draw the binary tree from the following orders: (In- Order) D B F E A G C L J H K (Post -Order) D F E B G L J K H C A
13	(a) Write a short note on AVL tree rotaions while insertions. (b) Discuss breadth first Graph traversal with the help of suitable example.