PAPER ID-411533

Subject Code: KOE035

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM III) THEORY EXAMINATION 2021-22
BASIC DATA STRUCTURE AND ALGORITHMS

ime: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2*10 = 20**

Qno	Questions	CO
(a)	What is **big oh** in asymptotic notation?	1
(b)	Write the application of sparse matrix.	1
(c)	What is the condition if circular queue is full?	2
(d)	Write the two advantages of circular singly linked list over singly linked list.	2
(e)	Differentiate internal sorting and external sorting also enlists the name of one sorting techniques of each.	5
(f)	What is difference between tree and graph?	4
(g)	Show the maximum number of node in a binary tree of height h is **2^{h+1}-1.**	3
(h)	What is difference between polish notation and reverse polish notation?	2
(i)	Write the advantages of B^+ tree?	3
(j)	How to select Pivot element in quick short?	5

SECTION B

2. Attempt any *three* of the following: **10*3 = 30**

Qno	Questions	CO
(a)	What is difference between static and dynamic memory allocation?	1
(b)	Write an algorithm to evaluate postfix expression using stack.	2
(c)	How to delete a node in binary search tree? Explain with the help of example.	3
(d)	Explain Dijiskatra Algorithm with the help of example.	4
(e)	Binary search is more efficient than Linear search. Justify your answer.	5

SECTION C

3. Attempt any *one* part of the following: **10*1 = 10**

Qno	Questions	CO
(a)	In 2-D array, each element of an array X [5] [4] requires 4 bytes storage. Base address of X is 80. Determine the location of X [3] [2]. When the array is stored at Row major order and column major order.	of 1
(b)	Write a program in 'C' to implementation of reverse singly linked list.	2

4. Attempt any *one* part of the following: **10 *1 = 10**

Qno	Questions	CO
(a)	Convert the following infix expression into postfix expression using stack. A*(B+D)/E-F*(G+H/K)	2
(b)	Write a program in **'C'** to implementation of QUEUE.	2

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5. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	Write an algorithm to in-order tree traversal of binary tree. Also Construct the binary tree of the following given traversal order In-order : M, E, P, A, Q, T, R, C, F, K. Post-order: M, P, E, Q, R, C, T, K, F, A.	3
(b)	Construct the steps to configure a B- tree of order 5 for the following data: 78, 21, 11, 97, 85, 74, 63, 45, 42, 57, 20, 16, 19, 32, 30, 31	3

6. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	Discuss the breadth first search traversal algorithm with example.	4
(b)	What is Minimum cost of spanning tree? Explain kruskal's algorithm with example.	4

7. Attempt any *one* part of the following: 10*1 = 10

Qno	Questions	CO
(a)	Write a quick sort algorithm. Use quick sort algorithm to sort the following element: 15, 22, 30, 10, 15, 64, 1, 3, 9, and 52.	5
(b)	Write short notes on the following: (i) Priority Queue. (ii) Threaded binary tree	5