Paper Code & Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | |

Odd Semester Examination-2016

B.Tech (SEMESTER - III)

DATA STRUCTURES

[Time : 3 Hours] **[Maximum Marks :100]**

Note : Attempt **all** questions.

1. Attempt **any four** questions : [5×4=20]

   (a) Discuss time & space complexity. Also discuss best, worst & average case for finding a given no from an array of integers.

   (b) Write a program in C to implement Stack using Linked List.

   (c) Write an Algorithm to evaluate Postfix Expression. Convert the following infix expression into Equivalent Postfix Expression.

   Q : ((A + B) * D) ↑ (E – F)

(d) What is Recursion? Explain the significance of Recursion. Write an recursive function to print Fibonacci Number upto the given no.

(e) What are advantages & disadvantages of Array? Show how to implement two stack in one array.

2. Attempt **any four** questions : [5×4=20]

(a) Discuss the various operation of queues ? List its Application.

(b) What is priority queue? Explain priorty queue by taking suitable example.

(c) What do you understand by linked list? What are its advantages & disadvantages over an Array? Write a Program to reverse a singly linked list.

(d) Explain circular queue. Also explain difference between circular & linear queue.

(e) Explain Garbage Collection & Compaction?

3. Attempt **any two** questions : [10×2=20]

(a) Discuss Binary Search Tree. Explain Insertion & Deletion in Binary Search Tree by taking an example with Algorithm.

(b) Explain Huffman Algorithm? Also discuss it with proper example.

(c) What is threaded Binary tree? How it can be represented in Computer Memory ?

4. Attempt **any two** questions : [10×2=20]

(a) Write pseudo Code for Heap Sort. Analyze its running time. Perform Heap Sort on following list of integers :

21, 1, 34, 28, 6, 85, 23, 17, 22, 80, 11, 2, 7, 25

(b) What is Hash Table? Explain its purpose. How the use of Hash Table is more beneficial as compared to its contemporary technique?

(c) Can we use Binary search tree technique anywhere? Justify your answer. Analyze Best, Average and Worst case Behaviour of Binary Search. Show the steps of Binary Search for finding 28 in given list of numbers :

2, 7, 12, 15, 18, 20, 22, 26, 28, 30, 33, 36, 39, 40, 45, 50.

5. Attempt **any two** questions : [10×2=20]

(a) How the files are organized on physical storage media? Explain in detail.

(b) What is text file? How it is different from other types of files. List the other advantages & disadvantages of sequential, direct & indexed file organization.

(c) Explain B Tree & B+ Tree Index File with proper example?

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