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Total No. of Pages: 02

Total No. of Questions: 09

B.TECH(3D ANIMATION & GRAPHICS,CSE, IT) (Sem.-3rd)

DATA STRUCTURE

Subject Code: BTCS-304

Paper ID: [A1126]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. Section –A, is Compulsory.
2. Attempt any four questions from Section-B.
3. Attempt any two questions from Section-C.

Section –A

(10x2=20)

Q.1.

- (a) What is meant by an abstract data type?
- (b) Differentiate between Stack and Queue?
- (c) What are the advantages in the array implementation of list?
- (d) What is the usage of stack in recursive algorithm implementation?
- (e) What is a circular queue and its use?
- (f) What condition is checked to determine if pointer, P has moved past the end of the list?
- (g) Evaluate: (a) $1\ 24\ 3\ +\ * \ 41\ -$ (b) $25\ 7\ * \ 14\ -\ 6\ +$
- (h) Define the term sparse matrix. How they are stored in memory.
- (i) List out the different types of hashing functions?
- (j) What is meant by strongly connected in a graph?

Section –B

(4x5=20)

- Q. 2. Define the terms: static and dynamic data structures. List some of the static and dynamic data structure in C.
- Q. 3. What is traversing? Write an algorithm for traversing a link list?
- Q. 4. What Criteria is used for evaluating the suitability of a particular data structure for a given application.
- Q. 5. Make a binary search tree and a heap tree from the given data.
23 7 92 6 12 14 40 44 20 21
- Q. 6. What is Graph. Describe in brief the various methods used to represent Graphs in memory.

Section –C

(2x10=20)

- Q. 7. What is the advantage and average efficiency of quick sort? Apply Quick sort on the following data and show the contents of the array every pass:
48 7 26 44 13 23 98 57 100 5 32

- Q. 8. Write the algorithms for the following:
- (a) Deleting an element from a doubly link list.
 - (b) Inserting an element in a priority queue.
 - (c) To reverse a string of characters using stack.
 - (d) To search an element in a sorted array.
- Q. 9. Define AVL and B-trees and their applications? Explain various operations used for balancing a binary tree with the help of a suitable example?

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