Total No. of Questions : 5]

SEAT No. :

PB-1461

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[6226]-302
S.Y. B.B.A. (Computer Application)
CA - 302: DATA STRUCTURE
(2019 Pattern) (CBCS) (Semester-III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***All questions are compulsory.***

2) ***Figures to the right indicate full marks.***

Q1) **Attempt any Eight of the following: (Out of Ten)** **[8 × 2 = 16]**

a) What are the different types of graph?

b) How to measure performance of an algorithm?

c) What is a circular queue?

d) List out different types of data structures

e) What is the level of a node?

f) What is meant by tree traversal?

g) What is sorting? State its techniques

h) What is DFS?

i) What are the advantages of a linked list over an array?

j) What is a binary tree? List its types.

Q2) **Attempt any FOUR of the following: (Out of Five)** **[4 × 4 = 16]**

a) What is a height-balanced tree? Explain RR and RL rotations with an example.

b) Explain bubble sort technique with an example

c) Explain BFS with example.

d) What is the queue? Explain different operations performed on queue.

e) Explain Binary search method with an example.

P.T.O.

Q3) **Attempt any FOUR of the following: [Out of Five]** **[4 × 4 = 16]**

a) Write a function for preorder traversal of the tree.

b) Write a C program for static Implementation of stack.

c) Write a function to delete the first node from a singly linked list.

d) Write a function to create a doubly circular linked list.

e) Write a program to dynamically allocate memory for an array of integers and then print the elements of the array.

Q4) **Attempt any FOUR of the following: [Out of Five]** **[4 × 4 = 16]**

a) What is the priority queue? Explain it with an example.

b) Construct an AVL tree for given data: WED, TUE, MON, SAT, THUR, FRI

c) Sort the following data by using quick sort. 10, 5,75, 62, 49, 58

d) Construct Binary search tree of following data 10, 12, 5, 4, 20, 8, 7, 15, 13

e) Write a 'C' program for dynamic implementation of stack.

Q5) **Write any two of the following: (Out of three)** **[2 × 3 = 6]**

a) Convert the following expressions into prefix

i) (A+B)*(C–D)

ii) P + (Q*R)(S–T)

b) Define the following terms

i) Directed graph

ii) Parent node

iii) Complete binary tree

c) What is degree of vertex? Find in degree & out degree of following graph for each Vertex