B.C.A. Part–II (Semester–III) Examination

DATA STRUCTURE

Paper—3ST1

Time : Three Hours] [Maximum Marks : 60

Note :— (1) All questions carry equal marks.

(2) All questions are compulsory.

1. (a) What is data structure ? Explain different data structure operations with example. 6

(b) Explain implementation of stack in computer memory in detail. 6

OR

2. (a) Write traversing algorithm for array with suitable example. 6

(b) Convert the following expressions into prefix operation :

(i) (A * B + (C/D)) – F

(ii) (A + B – D)/(E–F) + G

(iii) (A – B/C) * (D * E–F) 6

3. (a) What is recursion ? Explain the types of recursion with example. 6

(b) Write a recursion algorithm to find the factorial of given number. 6

OR

4. (a) Write an algorithm to generate the following Fibonacci series using recursion :

1,1,2,3,5,8..... 6

(b) What is recursion ? Explain simulation recursion. 6

5. (a) What is queue ? Explain the algorithm to insert the element into queue. 6

(b) What is linked list ? Explain the algorithm to insert the node into linked list at given information. 6

OR

6. (a) What is linked list ? Explain linked list with its advantages and disadvantages. 6

(b) Write an algorithm to delete the element from the queue. 6

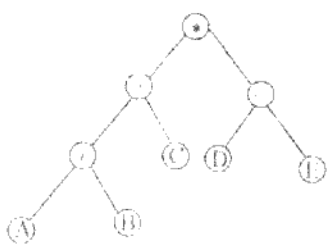
7. (a) What is tree ? Explain its family. 6

(b) Draw a tree to represent : 6

$$E = [a + (b-c)] * [(d-e)/(f + g - h)]$$

OR

8. (a) State preorder and postorder traversing of given binary tree : 6



(b) Explain binary tree with diagramatic representation. 6

9. (a) What is sorting ? Explain selection sort algorithm with suitable example. 6

(b) Explain indexed search techniques with example. 6

OR

10. (a) What is searching ? Explain binary search algorithm with example. 6

(b) Explain insertion sort algorithm with example. 6