Bachelor of Computer Application (B.C.A.) Semester-III Examination

DATA STRUCTURES

Paper—III

Time : Three Hours] [Maximum Marks : 50

N.B. :— (1) All questions are compulsory and carry equal marks.
(2) Draw neat and labelled diagrams wherever necessary.

EITHER

1. (a) What is data structure ? Explain different types of data structures. 5
   (b) Write an algorithm to insert an element in a linked list at the end. 5

   OR

   (c) Explain two way linked list and circular linked list. 5
   (d) Write an algorithm to search a specific item of information in a given circular header list. 5

   EITHER

2. (a) Write an algorithm to convert infix expression to postfix expression. 5
   (b) Write a recursive procedure for Tower of Hanoi problem. 5

   OR

   (c) Evaluate the following postfix expression
   $2 \uparrow 3 + 5 * 2 \uparrow - 12 / 6$. 5
   (d) What is stack ? Write an algorithm for PUSH and POP operations on STACK. 5

   EITHER

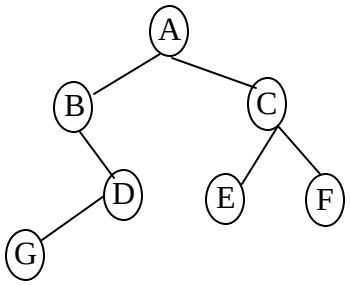
3. (a) Explain Dequeue and Priority Queue. 5
   (b) Write an algorithm for insertion sort with its complexity. 5

   OR

   (c) What is Hashing ? Explain four different methods of Hashing. 5
   (d) Write an algorithm for removing element from queue which is represented as linked list. 5

   EITHER

4. (a) Explain linked representation of graph. 5
   (b) Define Binary tree. Traverse the Binary tree in pre-order and post-order



5

   OR

   (c) Write an algorithm for Inorder traversal. 5
   (d) What is Heap ? Explain different types of Heaps with suitable example. 5

5. Attempt all :
   (a) Explain advantages of linked list over an array. 2½
   (b) Convert the following infix expression into prefix :
   ((A + B) * C – (D – E)) * (F + G) 2½
   (c) Explain Quicksort with an example. 2½
   (d) What is directed graph ? Write two differences of DFS and BFS traversing method. 2½