Q.P. Code: 12264

Second Semester B.C.A. Degree Examination
October / November 2019
(New Scheme 2016-17 Onwards)
(BCB 440) DATA STRUCTURES USING 'C'

Time : 3 Hours Max. Marks : 80

PART - I

Answer the following questions: **(1x5=5)**

1. Define non primitive data structure.
2. Which expression does not contain brackets?
3. Define self referential structure.
4. Define expression tree.
5. What is Hashing?

PART - II

Answer any FIVE of the following questions : **(5x15=75)**

6. a) Write a note on structure.

   b) Define Data Structures. Explain the different types of data structures with example.

   c) What is a stack ? Explain the algorithms for PUSH and POP operations.

7. a) Convert the following infix expression to postfix expression.
   (i) a + b * (d + e)/f (ii) m * (n - 0)/p * Q. **05**

   b) Write a C program to convert the infix expression to postfix expression. **05**

   c) Write a C program to solve tower of Hanoi Problem. **05**

8. a) Explain the algorithms to insert and delete an item from ordinary queue. **05**

   b) List the advantages of circular queue over ordinary queues. Write the algorithm to inset an item into circular queue. **05**

   c) List the differences between ordinary queue and doubles ended queues. **05**

9. a) What is linked list ? How do we represent an node in C ? Write an algorithm to delete a node in singly linked list at front end? **05**

   b) Write the algorithms for inserting a node at front end and rear end of singly linked list. **05**

   c) List the advantages and disadvantages of linked list over arrays. **05**

10. a) What is a Binary Tree? Explain the following tree terminologies with an examples.

   (i) Child node (ii) Percenters (iii) Root (iv) Leaf node **05**

   b) Explain with an example how do we inset an element into Binary Search Trees?

   05

   c) Write a C program for tree traversals. **05**

11. a) What is Searching? List the differences between Linear search and Interpolation search. **05**

   b) With an example, explain Binary Search. **05**

   c) With an algorithm explain shell sort. **05**

12. a) Explain the radix sort with an examples. **05**

   b) Write the algorithm for selection sort. **05**

   c) With an example, explain heap sort. **05**

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