B. Sc. DEGREE END SEMESTER EXAMINATION – MARCH/APRIL 2018

SEMESTER **- 2:** SUBJECT**- B. Sc. COMPUTER APPLICATIONS (CORE COURSE)**

COURSE: **15U2CRCAP4, DATA STRUCTURES USING 'C'**

(Common for Regular 2017 / Supplementary - Improvement 2016 / 2015 Admission)

Time: Three Hours   Max. Marks: 75

PART A

Answer **all** questions. Each question carries **1** mark

1. What are the three basic Logical /Boolean operations in data structures?

2. How many values can be held by an array A(0..M, 1..N)?

3. Write an example for FIFO architecture.

4. Name any two applications of a stack.

5. When does the dynamic memory allocation occur?

6. What is the minimum number of fields with each node of a doubly linked list?

7. What is degree of a tree?

8. A complete binary tree of level 4 has how many nodes?

9. What is logical record in a file?

10. What do you mean by updating a file?

                                                                                                                (1 x 10 = 10)

PART B

Answer **any eight** questions. Each question carries **2** marks

11. Define data structures? Give an Example.

12. What is the sparse form representation of the elements in sparse matrix?

13. Develop the Pop operation procedure in a stack organization.

14. Mention the properties of a deque.

15. What is dynamic memory reallocation procedure?

16. Define the top of a stack in a linked stack.

17. What is forest? Example.

18. Discuss the difference between terminal nodes and non-terminal nodes.

19. Define a strictly binary tree with the help of a diagram.

20. What is hash function?   (2 x 8 =16)

PART C
Answer **any five** questions. Each question carries **5** marks.

21. Explain the memory representation of a two dimensional arrays.

22. Develop an algorithm to evaluate a postfix expression using the operand stack.

23. What are multiple queues? Explain.

24. Develop an algorithm to delete an element from a doubly linked list.

25. Compare the static & dynamic memory allocation techniques.

26. What is recursion? Discuss the procedure using a stack.

27. What is tree traversal? Develop the procedure for in-order tree traversal. Trace with a suitable example.

28. Explain the linked file organization.

(5 x 5 = 25)

PART D
Answer **any two** questions. Each question carries **12** marks.

29. What is linear search? Compare it with binary search. Explain both with proper algorithms.

30. Explain the infix to postfix conversion procedure with the operator stack. Illustrate with an example.

31. What is garbage collection? Explain. Discuss the marking procedure with proper algorithm.

32. Explain binary tree. Develop the procedure to generate a binary search tree. Also, illustrate with suitable example.

(12 x 2 = 24)

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