

60350

B.Sc. 4th Semester (Hons) Common with Id No.
60350 B. Sc. Old Scheme Examination, May-2016

MATHEMATICS

Paper-BHM-246 Opt. (i)

Data Structures Using C

Time allowed : 3 hours] [Maximum marks : 60

*Note : Attempt one question from each section and
Q. No. 9 is compulsory. All questions carry equal
marks.*

Section-I

1. What do you understand by Data Structure ? Give various data structure operation.
2. (a) Write the algorithm of insert and delete operation of circular queue.
(b) What is a stack ? Describe any two applications of stack.

Section-II

3. (a) Explain the sparse array. How can you store the sparse array in memory ? Explain by giving suitable example.
(b) Explain the various methods of representation a binary tree in memory.
4. (a) Write the algorithm for traversal using stack.
(b) Explain the Deletion operation in AVL search tree by using example.

60350-P-2-Q-9-(16)

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Section-III

5. (a) Explain Dijkstra Algorithm for shortest path.
(b) Explain Prim's algorithm for minimum spanning tree by using example.
6. (a) Define B-tree. Explain the deletion operation of B-tree by using suitable example.
(b) Build a B-tree of degree 3. Suppose it needs to contain the following keys or values.
10, 20, 15, 30, 40, 25, 35, 50

Section-IV

7. Explain selection sort algorithm and write its run time complexity in Best, Average and Worst case.
8. Explain Merge sort? What is basic condition for using merge sort? Write its run time complexity.

Section-V

9. (a) Define complete graph
(b) Define Regular graph
(c) Derive the formula to find the address of elements of one-dimensional array.
(d) Define inverted list.
(e) Define m-ary tree.
(f) Define Threaded List.