



C09-CM-305/C09-IT-305

3231

**BOARD DIPLOMA EXAMINATION, (C-09)**  
**OCT/NOV—2016**  
**DCME—THIRD SEMESTER EXAMINATION**  
**DATA STRUCTURES THROUGH C**

Time : 3 hours ]

[ Total Marks : 80

---

**PART—A**

3×10=30

**Instructions** : (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Write difference between data type and abstract data type.
2. List any three linear data structures.
3. State the purpose of dummy header.
4. Explain how a node is deleted from a singly-linked list with an example.
5. What are the advantages of doubly-linked list?
6. List the applications of stack.
7. What are the applications of trees?
8. List the operations that can be performed on a binary tree.
9. Write the principle of selection sort.
10. Write the time complexity of linear search.

\*

**PART—B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

- 11.** Write a program for inserting a node into a singly-linked list.
- 12.** Write the program for the creation of a doubly-linked circular list.
- 13.** Write the procedure for evaluation of a postfix expression and explain it with an example.
- 14.** Explain how a matrix can be represented as a sparse matrix in memory with example.
- 15.** Explain the procedure for the conversion of general tree to binary tree.
- 16.** Explain how to construct a tree for the given in-order and post-order traversal output.  
In-order : H D I B J E A F K C L G M  
Post-order : H I D J E B K F L M G C A
- 17.** Write the algorithm and program for bubble sort.

\*

- 18.** (a) Explain the method of insertion sort.  
(b) Write a program for implementing binary search.

\*\*\*