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Unit - IV

8. (i) Define : 8

(a) Graph

(b) Multigraph

(c) Complete graph

(d) Connected graph

(e) Tree graph

(ii) Explain various ways of graph traversal by giving suitable example. 8

9. (i) Explain binary tree with the help of examples. Discuss the properties of binary tree that need to be considered. 8

(ii) Explain various methods of representing graphs in memory by giving suitable example. 8

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B.C.A. 3rd Semester Examination,

February-2022

DATA STRUCTURE - I

(BCA-202)

Time allowed : 3 hours (Maximum marks : 80)

*Note : Question No. - 1 will consist of total 8 parts (short - answer type questions) covering the entire syllabus and will carry 16 marks. In addition to the compulsory question, there will be four units i.e. unit-I to unit-IV. Question No.-1 will be compulsory. In addition question student will have to attempt four more questions selecting one question from each unit.*

1. (i) State any two differences between static and dynamic memory allocation. 8 × 2 = 16
- (ii) How do you insert an element in an array ?
- (iii) What do you mean by stack overflow ?
- (iv) What are the limitations of simple queue ?
- (v) Explain any two array operation with an example.
- (vi) Explain about the singly linked list.
- (vii) How do you push and pop elements in a stack ?
- (viii) Define data structures.

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Unit - I

2. Differentiate between :

16

- (i) Linear and Non-Linear data structure
  - (ii) Homogenous and Non-Homogenous data structure
  - (iii) Primitive and Non-Primitive data structure
  - (iv) Static and Dynamic data structure
3. (i) Explain Big-Oh notation with the help of example. 8
- (ii) Briefly describe the notation of : 8
- (a) The complexity of an algorithm
  - (b) The space time trade off of algorithms

Unit - II

4. (i) Define array as data structure and its operations. 8
- (ii) Compare linked list with array in respect of both advantages and disadvantages. 8

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5. Write notes on the following : 16

- (a) Doubly Linked List
- (b) Priority Queues

Unit - III

6. (i) Describe a method to convert an infix expression into a postfix expression with the help of a suitable example. 8

(ii) What do you mean by preorder traversal of a tree? 8

7. (i) What is a doubly linked list? Explain the following operation on a doubly linked list : 8

- (a) Create
- (b) Insert
- (c) Delete

(ii) Write and explain to convert infix to postfix expression. Give example to support your answer. 8

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