



**MBR-003-0072005** Seat No. \_\_\_\_\_

**M. C. A. (Sem. II) Examination**

**April / May - 2018**

**P - 2050 : Data Structure & Algorithm**

**Faculty Code : 003**

**Subject Code : 0072005**

Time :  $2\frac{1}{2}$  Hour]

[Total Marks : 70

- 1 The following questions from unit – 1 :
- (a) Attempt the following objective questions : 4
- (1) List primitive Data Type.
  - (2) How many types of data structure ?
  - (3) Link list is collection of data elements: true or false ?
  - (4) The patters of search are \_\_\_\_\_ then given text.
- (b) Attempt any **one** out of two from the following : 2
- (1) What is data structure ?
  - (2) What are the major data structures used in the following areas: RDBMS, Network data model and Hierarchical data model ?
- (c) Attempt any **one** out of two from the following : 3
- (1) List out the areas in which data structures are applied extensively.
  - (2) What is String Manipulation ?
- (d) Attempt any **one** out of two from the following : 5
- (1) List and explain Linear Data Structure.
  - (2) Explain pattern matching.

- 2** The following questions from unit – 2 :
- (a) Attempt the following objective questions : **4**
- (1) Whether Linked List is linear or non-linear data structure ?
  - (2) List different types of Linked List.
  - (3) To delete a node in singly linked list, the \_\_\_\_\_ node is required.
  - (4) What will be the value of top, if there is a size of stack. STACK\_SIZE is 5 ?
- (b) Attempt any **one** out of two from the following : **2**
- (1) What is linear data structure ?
  - (2) What are common operations that can be performed on a data-structure ?
- (c) Attempt any **one** out of two from the following : **3**
- (1) What is a linked-list ?
  - (2) What operations can be performed on stacks ?
- (d) Attempt any **one** out of two from the following : **5**
- (1) Why do we use queues ? Explain with example.
  - (2) How to create link list ? Give example by writing code.
- 3** The following questions from unit – 3 :
- (a) Attempt the following objective questions : **4**
- (1) Tree is a \_\_\_\_\_ data structure.
  - (2) \_\_\_\_\_ non-linear data structure compared to arrays, linked lists, stack and queue.
  - (3) Tree is a collection of elements called \_\_\_\_\_.
  - (4) If node has no children, it is called \_\_\_\_\_.
- (b) Attempt any **one** out of two from the following : **2**
- (1) What is Sparse Matrix ?
  - (2) Define Depth of Node and Degree of Node.

- (c) Attempt any **one** out of two from the following : 3
- (1) List Advantages of Tree.
  - (2) List and explain various application of trees.
- (d) Attempt any **one** out of two from the following : 5
- (1) Write an algorithm or program for pre order and post order traversal of tree.
  - (2) Write an algorithm of program for binary tree creation.
- 4 The following questions from unit – 4 :
- (a) Attempt the following objective questions : 4
- (1) Partition and exchange sort is \_\_\_\_\_.
  - (2) \_\_\_\_\_ is the method used by card sorter.
  - (3) If the number of records to be sorted is small, then \_\_\_\_\_ sorting can be efficient.
  - (4) The easiest sorting is \_\_\_\_\_.
- (b) Attempt any **one** out of two from the following : 2
- (1) What is Sorting ?
  - (2) What is Searching ?
- (c) Attempt any **one** out of two from the following : 3
- (1) Explain bubble sort.
  - (2) Explain merge sort.
- (d) Attempt any **one** out of two from the following : 5
- (1) Explain Binary search with its algorithm or program.
  - (2) Differentiate merge sort with quick sort.

- 5** The following questions from unit – 5 :
- (a) Attempt the following objective questions : **4**
    - (1) Name the variants of knapsack Problem.
    - (2) The 0-1 Knapsack problem can be solved using Greedy algorithm : true or false ?
    - (3) The Knapsack problem is an example of \_\_\_\_\_.
    - (4) Greedy algorithms chiefly solve \_\_\_\_\_ problems.
  - (b) Attempt any **one** out of two from the following : **2**
    - (1) What is knapsack Problem ?
    - (2) Explain the applications of greedy method.
  - (c) Attempt any **one** out of two from the following : **3**
    - (1) Explain greedy methods to solve the problem.
    - (2) Write a note on spanning trees.
  - (d) Attempt any **one** out of two from the following : **5**
    - (1) Explain working of Fractional Knapsack Problem.
    - (2) Write a note on Job sequencing problem.
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