

- 1-d. Process of inserting an element in the stack is called. CO2 1
- Enque
 - Insert
 - Push
 - Pop
- 1-e. In a circular linked list. CO3 1
- Components are all linked together in some sequential manner
 - There is no beginning and no end
 - Components are arranged hierarchically
 - Forward and backward traversal within the list is permitted
- 1-f. Linked lists are not suitable to for the implementation of _____. CO3 1
- Insertion sort
 - Radix sort
 - Polynomial addition
 - Binary search
- 1-g. In a full binary tree if number of internal nodes is n, then total number of nodes N are. CO4 1
- $N = 2*n$
 - $N = n + 1$
 - $N = n - 1$
 - $N = 2*n + 1$
- 1-h. In what tree, for every node the height of its left subtree and right subtree differ at least by one? CO4 1
- Binary search tree
 - AVL tree
 - Threaded binary tree
 - Complete tree
- 1-i. A graph with all vertices having equal degree is known as a _____. CO5 1
- Mutli Graph
 - Regular Graph
 - Simple Graph
 - Complete Graph
- 1-j. A vertex with degree one in a graph is called _____. CO5 1
- A leaf
 - Adjacency list
 - Pendent vertex
 - None of these

2. Attempt all parts:-

- Differentiate between linear data structure and non-linear data structure. CO1 2
- Write the overflow condition in circular queue. CO2 2
- Differentiate between array and linked list. CO3 2
- Write the difference between height of binary tree and depth of binary tree. CO4 2
- Write the possible number of edges in a complete graph if number of nodes are 10. CO5 2

SECTION-B

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3. Answer any five of the following:-

- Given the base address of an array A[1300.....1900][[-5.....5] as 1020 and the size of each element is 2 bytes in the memory, find the address of A[1700][2] in (i) Row major order and (ii) column major order. CO1 6
- Define a sparse matrix. Suggest a space-efficient representation for space matrices. CO1 6
- Define Recursion. Write a python program to calculate factorial of number using recursive functions. CO2 6
- Define Priority queue. Write all possible applications where priority queue can be used. Also write the condition of underflow and overflow of priority queue. CO2 6
- Write a function to delete a given node in a singly linked list. CO3 6
- Mention differences among strictly binary tree, complete binary tree and almost complete binary tree. CO4 6
- Explain the concept of minimum cost in graph data structure. What is its use? CO5 6

SECTION-C

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4. Answer any one of the following:-

- Explain non-linear data structure in detail with example. CO1 10
- Write program in python to multiply two matrices. Order of matrices must be entered by user at run time. CO1 10

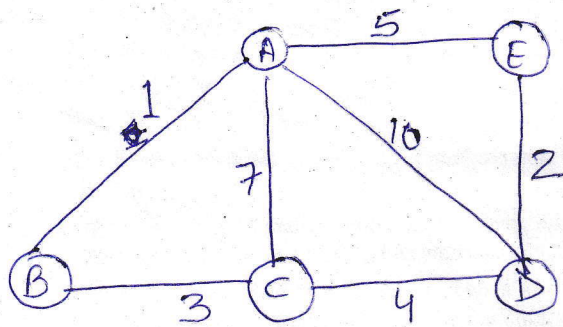
5. Answer any one of the following:-

- Explain the advantages and disadvantages of Single Circular linked List. Write the python function to insert a number in the beginning of single circular link list. CO2 10
- Discuss the representation of polynomials of a single variable using a linked list. Write 'Python' functions to add two such polynomials represented by a linked list. CO2 10

6. Answer any one of the following:-

- Write a program which performs insertion and deletion as per user choice in a queue. CO3 10
- Use the merge sort algorithm to sort the following elements in ascending order. CO3 10
12,3,5,7,2,1,8,9,6

7. Answer any one of the following:-



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