

Vidya Vikas Mandal's
Shree Damodar College of Commerce & Economics, Margao-Goa
FYBCA Semester-II, Semester End Examination, April-May 2023
Data Structures (CAC-105)

Duration : 2 Hours

Marks : 60

Instructions: 1) Figures to the right indicate Full Marks.
2) All Questions are compulsory.

Q.1.A) Define the following:

5X1=05

- a. Postfix Expression
- b. Space Complexity
- c. Data Structure
- d. Primitive Data Structure
- e. Hashing

Q.1.B) Match the Following and Rewrite the Matched Pairs :

5X1=05

1) Binary Search	A) First In Last Out
2) Multidimensional Array	B) Divide and conquer
3) Linear Data Structure	C) Can hold a single value
4) Primitive Data Structure	D) Sequential access
5) Four Books Kept in a Box (Size of is same as the Book Size)	E) Matrix

Q.2. Answer the following:

- a) Specify the minimum and maximum index of an Array of Size 9. 02
- b) Explain any two operations performed on a queue data structure. 03
- c) Illustrate the steps of performing Binary Search to search a number 80 in the following array. 05

10	15	25	70	75	80	89
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Q.3. Answer the following:

- a) Show the Step-by-Step process of sorting the below given 4 02
numbers in ascending order, using any sorting method :

2,30,11,78

- b) Perform and show the steps for the following operations on a stack 03
of size 6.

(a) Push 23,56,7,14,10,4

(b) Pop 2 times

(c) Push 80,60,20

- c) Perform the following operations on a queue data structure of size 05
5:

i. Enqueue 7,10,12,15,20,25

ii. Check if Queue is Full

iii. Dequeue 2 times

Q.4. Answer the following:

- a) Show the structure of a node in Doubly Linked List. 02

- b) Mention two advantages of Linked List over Arrays. 03

- c) Perform the following operations on a Linear Linked List and show 05
the changes step by step:

(a) Create the first node with Value 45 and Address as 8899

(b) Insert two nodes at the end with value 25 and address as
5676 and value 7 and address as 8988.

(c) Delete the first node in the Linked List.

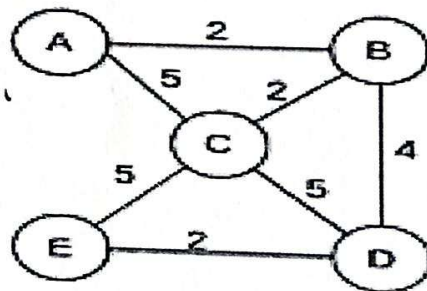
(d) Insert a node at the beginning with value as 66 and address
as 8899.

Q.5. Answer the following:

- a) What is Breadth First Search Traversal in a Graph? 02
- b) Construct a Graph with the following information given in an Adjacency Matrix as follows : 03

0	2	4
2	0	3
4	3	0

- c) Construct an Adjacency Matrix / Adjacency List for the following Graph: 05



Q.6. Answer the following:

- a) Write the algorithm for performing Linear Search. 02
- b) Construct a Binary search tree for the following data elements and find the balance of each node. 10, 7, 16, 20, 25, 4, 30 03
- c) Illustrate heap sort by constructing the min heap for the given input elements : 18, 25, 45, 75, 8, 20. 05
