Saraswat Education Society's
Sridora Caculo College of Commerce and Management Studies,
Khorlim Mapusa - Goa
B.C.A (Semester III) EXAMINATION OCTOBER/NOVEMBER 2026

CSA-200 DATA STRUCTURES

Duration: 2 hrs **Max. Marks:** 60

*Instructions: 1) **All** questions are **Compulsory.***
2) Figures to the right indicate full marks.
*3)Write the **question number** correctly.*

Q1.A **Answer the following:** **(6X2=12)**

i) Define Binary tree.
ii) State any two examples of linear data structure.
iii) State any two applications of 2D array.
iv) State any two advantages of Binary search.
v) State any two basic operations of stack.
vi) Define complete graph.

Q2. A)i) Show the passes for insertion sort for the following data: 5,2,1,6,3,7,10. **(3)**

ii) Explain stack with a diagram. **(2)**

OR

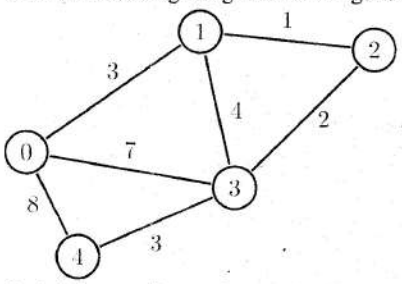
Q2.A)iii) Explain the binary Search algorithm. **(3)**

iv) List the advantages of linear queue. **(2)**

Q2.B)i) List & explain the characteristics of algorithm. **(5)**

ii) List the applications of 2D array . **(2)**

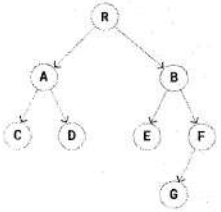
Q3. A)i) Solve the following using Kruskal's algorithm: **(3)**



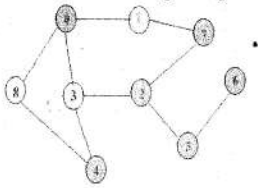
Q3.A)ii) Explain Isempty() operation. **(2)**

OR

Q3.A)iii) Compute the Inorder, preorder , postorder for the following : **(3)**

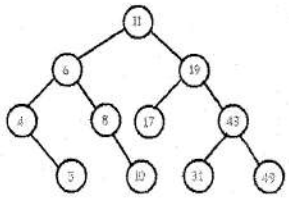


Q3.A)iv)	State the real life examples of doubly linked list.	**(2)**
Q3. B)i)	Explain the algorithm for adding a node in beginning and end in doubly linked list.	**(5)**
ii)	Explain why only one of them may be called a Minimum Spanning Tree.	**(2)**
Q4. A)i)	Explain enqueue operation().	**(3)**
ii)	Compare Algorithm with pseudo code	**(2)**
	OR	
Q4.A)iii)	Compare single linked list to circular linked list	**(3)**
iv)	Given the following 3D matrix 4 6 8 2 5 9 7 3 1 Perform the following changes: matrix[0][2] = 20 matrix[2][0] = 30 matrix[1][1] = 40	**(2)**
Q4. B)i)	Explain the algorithm for deleting a node in beginning and end in singly linked list.	**(5)**
ii)	Explain applications of queue.	**(2)**
Q5. A)i)	Construct expression tree for the following expression (a+b*c*f-g) – ((r*s+t) *u)	**(3)**
ii)	Solve the following using DFS:	**(3)**



OR

Q5. A)iii)	Elaborate the applications of graph.	**(3)**
iv)	Explain the DFS algorithm.	**(3)**
Q5. B)i)	**Solve the following**: find the i.Root of the tree ii.Degree of the tree iii.Height of the node 17 iv.level of node 10 v. sibling of node 49 vi.External nodes	**(6)**



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