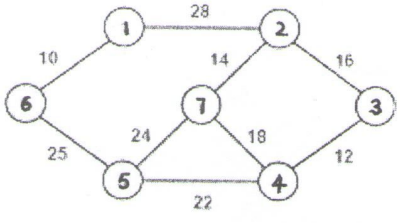
K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

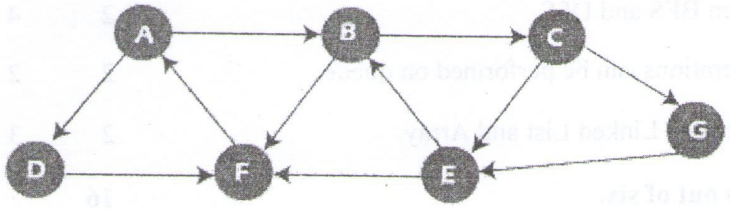
Subject Code: EXDLC5054 Subject Name: Data Structure and Algorithms Date: 05/12/2023

Nov – Dec 2023
B.Tech : Electronics and Telecommunication Engineering

Examination: TY Semester: V
Course Code: EXDLC5054 and Course Name: Data Structure and Algorithms
Duration: 2.5 Hours Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

Q. No	Question	Max. Marks	CO	BT Level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Explain different operations performed on stack.	2	2	U
ii)	Explain linear and nonlinear operations on data structures.	2	1	U
iii)	Explain single source shortest path algorithm	2	6	U
iv)	Explain array implementation of queue.	2	3	U
v)	Explain Binary search method.	2	5	U
vi)	Explain difference between BFS and DFS.	2	4	U
vii)	What are the different operations can be performed on queue.	2	2	U
viii)	What is the difference between Linked List and Array.	2	3	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	What are different types of data structures? Explain with examples?	4	1	U
ii)	Explain Hashing-Concept, Collision resolution Techniques	4	5	U
iii)	Explain Binary Tree Application.	4	3	U
iv)	Construct the minimum spanning tree for the given graph using Prim's algorithm. 	4	4	Ap

v)	Explain Travelling salesman problem	4	6	U
vi)	Explain Stack as an ADT, and Stack operation	4	2	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Analyze the 0/1 knapsack problem		6	An
ii)	What are performances Characteristics of algorithms? Explain Complexity of algorithm with example?		1	An
iii)	Explain in doubly and circular link list insertion and delete operation with suitable example and pseudo code.		3	U
Q.4	**Solve any two questions out of three.**	**16**		
i)	Explain Bubble Sort algorithm, Discuss with an example.		5	An
ii)	Obtain the path using Breadth First Search and Depth First Search for the following graph. 		4	Ap
iii)	Discuss the Algorithm used for Infix to Postfix conversion For the given infix expression : **((AX + (B * CY)) / (D - E))** convert it to Prefix expression.		2	Ap

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