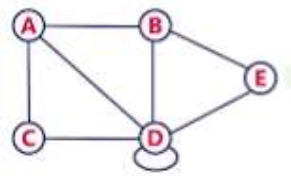
Department of Computer Science and Engineering,
Anna University, Chennai- 600025
CS23302 – Data Structures and Algorithms (R 2023)
Practical
August – December 2024
Year/Sem/Batch : II/III/ N & Q

Exercise: 08	GRAPHS AND SPANNING TREE	18 – Oct - 2024

Observation (5 Marks)

1. List the different types of graphs
2. What are the two ways to represent graphs?
3. Represent the following graph in adjacency matrix and adjacency list.



4. Write 5 BFS and DFS traversal for the above graph.
5. Suppose that G is a directed graph with N vertices. What's the maximum number of edges that G can have? Assume that a vertex cannot have an edge pointing to itself, and that for each vertex u and v, there is at most one edge (u, v).
6. Suppose the graph G is an undirected graph and assume that no vertex is adjacent to itself, and at most one edge connects any pair of vertices. What's the maximum number of edges that G can have compared to the directed graph of G?
7. What's the minimum number of edges that a connected undirected graph with N vertices can have?
8. Which is most space-efficient and time efficient if you have a lot of edges and very few edges in your graph? Justify
    - Adjacency matrix
    - Adjacency lists
9. Differentiate Dense graph with Sparse graph
10. Define Spanning tree and draw all possible spanning tree for the above graph.

Execution (15 Marks)

1. (a) Write an iterative code for DFS traversals, using adjacency matrix representation for the given graph.
2. (b) Write an iterative code for BFS traversals, using adjacency list representation for the given graph.