Unit III

1 Define a graph.

2 Define the following with respect to graph with examples :
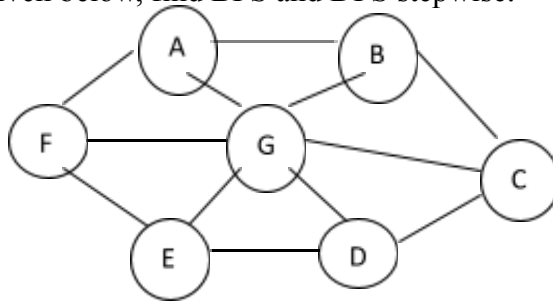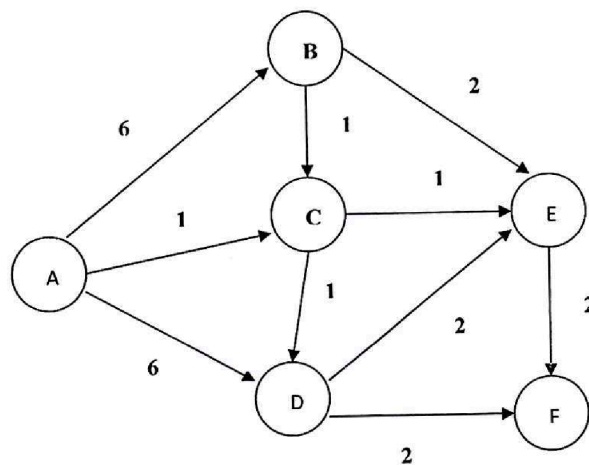(*i*) Degree of node
(*ii*) Isolated node
(*iii*) Path
(*iv*) Cycle.

3 For the graph given below, find BFS and DFS stepwise.

4. For the graph given below find minimum spanning tree using Prim's algorithm. Show stepwise

representation
5. Define a graph. For the given adjacency matrix draw the graph and its adjacency list :

	A	B	C	D	E	F	G	H
A	0	1	1	0	0	0	0	0
B	1	0	0	0	1	0	0	0
C	1	0	0	1	0	1	0	0
D	0	0	1	0	0	0	0	1
E	0	1	0	0	0	0	1	0

F	0	0	1	0	0	0	1	1
G	0	0	0	1	0	1	0	0
H	0	0	0	1	0	1	0	0

6. What are graph storage structures?

7. Explain the graph traversal techniques with suitable example.

8. What is minimum spanning tree ? Write *three* applications of this.

9. Explain topological sorting with suitable example.

Unit IV

1. What is AVL tree? Explain, what are its transformation.

2 Create AVL tree for the following data:
23,11,45,34,22,78,54

3. Compare OBST and AVL tree.

4. Define AVL tree. For the given data, build an AVL tree and show the balance factor and type of rotation at each step :
64, 1, 44, 26, 13, 110, 98, 85

5. Distinguish between Huffman's tree, OBST and AVL in terms of their definition and application.

6. Create an AVL tree for the following data :
30, 31, 32, 23, 22, 28, 24, 29, 26, 27, 34, 36.

7. Write a pseudo C/C++ code for LL,RR,LR and RL rotations for AVL tree.

8. Draw a maximum height AVL tree with 9 nodes.

9. Enlist various static and dynamic tree tables. Explain when to select the static tree tables and dynamic tree tables.

10. Write a C/C++ pseudo code for insertion of an element into an AVL tree.

11. Draw a maximum height AVL tree with 7 nodes.

12. Define AVL tree. For the given data, build an AVL tree and show the balance factor and type of rotation at each

45, 23, 78, 22, 90,9,12,6,87

13. Write a C++ code for rotateleft and rotateright fumction in AVL.

14. Write a C/C++ pseudo code for deletion of an element into an AVL tree

Unit V

1. Sort the following numbers in ascending order using heap sort.Show the sorting stepwise :
77, 62, 14, 9, 30, 21, 80, 25, 70, 55

2. Define B+ tree and structure of internal and leaf node.

3.What is heap ? Explain max and min heap and write its any *two* applications.

4.Write a C/C++ pseudo code to sort a heap using heap sort.

5.Explain the steps to be build a tree of order 5 for the following data :
78, 21, 14, 11, 97, 85, 74, 63, 45, 42, 57, 20, 16, 19, 32, 30, 31.

6. Define B tree and structure of a B tree node.

7.Sort the following data in ascending order using heap sort :
6, 5, 3, 1, 8, 7, 2, 4.

8. Write a pseudo code c/c++ to insert the node in B-tree. Explain with suitable example.

9.Create a 3 way B tree by inserting the following data one at a time :

 5, 3, 21, 9, 1, 13, 2, 7, 10, 12, 4, 8

10.   Create   a   B+   tree   of   order   3   for   the   data   given   below.
55,10,40,20,12,15,90,80,45,52,25,22,85,95,65

11. Write a pseudo C/C++ code to delete the node in B tree.

12. Define the term heap trees. Write a pseudo C/C++ code to insert the element in Max Heap.

13. Define the term heap trees. Write a pseudo C/C++ code to insert the element in Min Heap

14. Write a C/C++ pseudo code for searching   an element into an AVL tree

Unit VI

1.Write a program in 'C' for sequential file and perform the following operations :
(*i*) Copy all data from one file to another
(*ii*) Count number of characters in a file
(*iii*) Count number of words in file
(*iv*) Search a particular word in a file.

2. State advantages and disadvantages of sequential file, index sequential file and direct file.

3. Explain with example primitive functions for file handling in C.

4. What is directed file organization? Write its *two* advantages and *two* disadvantages

5.What are different types of indices?

6. What are *four* differences in between sequential and random access file?

7. What are external storage devices? Explain in brief any *four.*

8.What is file? Explain the types of file.

9. Explain various file opening modes with respect to text and binary files.

10. Explain the features of a sequential file. Write a 'C' program to copy contents of one file to another file using command line arguments.

11. Compare sequential file and index sequential file.

12. Compare relative file and direct file.