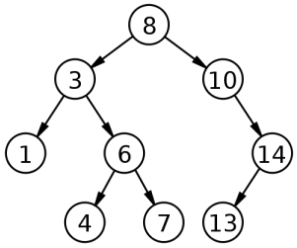
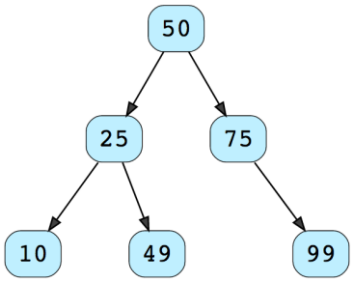
GIET UNIVERSITY, GUNUPUR – 765022

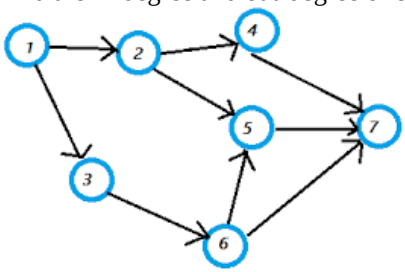
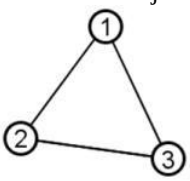
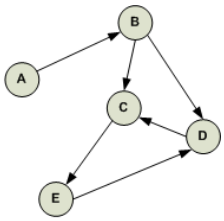
B. Tech –2nd Semester (2024-2025):

BESBS 2040– DSA LAB VIVA QUESTIONS

EACH QUESTION OF 2 MARKS

SL NO	Questions
1	In a Linear Queue When the Front= NULL and Rear=NULL then what does it mean? a) The Queue is FULL b) The Queue contains only one element c) The Queue is Empty d) The Queue does not exist
2	Given an infix expression: (P+Q-R/T). What is its equivalent postfix notation? a) PQ+RT/- b) PQ+R-T/ c) P+QR-/T d) PQRT+-/
3	Which of the following formula is used to calculate Rear value during insertion in a circular queue? a) Rear=Rear-1 b) Rear=(Front+1)%Size of Queue c) Rear=(Rear-1)%Size of Queue d) Rear=(Rear+1))%Size of Queue
4	What is the value of the postfix expression 6 3 2 4 + – *: a) 1 b) 40 c) 74 d) -18
5	List out the situations when the stack overflow and underflow occurs.
6	State the difference between row-major order and column major order of matrix memory representation.
7	What are the overflow and underflow conditions of a circular queue?
8	The following sequence of operations are performed on an empty stack: PUSH (1), PUSH (0), PUSH (0), PUSH (1) , POP, POP, PUSH(1), PUSH(0), POP Write the sequence of the popped out items.
9	following sequence of operations is performed on an empty stack: PUSH (Q), PUSH (W), PUSH (E), PUSH (R) , POP, POP, PUSH (T), POP Write down the sequence of the popped out items.
10	following sequence of operations is performed on an empty QUEUE OF SIZE 5: INSERT (Q), INSERT (W), INSERT (E), INSERT (R) , DELETE(),DELETE(), INSERT (T), DELETE(), DELETE(). Write down the sequence of the deleted items.
11	A linked list in which the link part of last node contains the address of 1st node is called? a) single linked list b) linked stack c) circular single linked list d) linked queue
12	Which of the following sorting method requires insertion of an element in appropriate location? a) bubble sort b) selection sort c) insertion sort d) radix sort
13	The difference between single linked list and double linked list is_____ a) Double linked list requires more memory for each node b) Single linked list is used for better traversing of elements c) Single linked list is used to travers in backward direction d) None of these
14	We can apply backward traversing of elements in a double linked list? a) True b) False
15	In Bubble sort method the adjacent elements are compared repeatedly for sorting process. a) True b) False
16	Write the steps to count the number of nodes of a single linked list.
17	State the difference between linear search and binary search.
18	Assume PTR2 is pointing to the last node of a circular singly linked list and PTR1 is pointing to its previous node. Now write the steps to delete the last node.
19	A binary tree in which each parent contains exactly two child nodes called_____ a) Complete binary tree b) skew binary Tree b) Strictly binary tree d) Almost complete binary tree
20	What is the height of a skew binary if the total no. of nodes available in tree is 10? a) 11 b) 10 c)9 d) 8
21	What is the degree of a leaf node? a) 0 b) 1 c) 2 d) none of these
22	How many nodes will be there in a Full Binary Tree having 4 levels? a) 15 b) 31 c)4 d)8
23	What is the degree of a node which is connected with 5 child nodes in a tree? a) 0 b) 5 c) 4 d) 6

24	A Binary Tree in which the left child value of a parent node is smaller and right child value of it is greater is called _____ a) AVL Tree b) Height Balanced Tree a) Binary Search Tree d) Max Heap Tree
25	The number of edges from the root to the node is called _____ of the tree. a) Height b) Depth c) Length d) Width
26	What is an AVL tree? a) a tree which is balanced and is a height balanced tree b) a tree which is unbalanced and is a height balanced tree c) a tree with three children d) a tree with at most 3 children
27	If binary trees are represented in arrays, what formula can be used to locate a left child, if the node has an index i? a) 2i+1 b) 2i+2 c) 2i d) 4i
28	The balance factor of a node in a binary tree is defined as _____ a) addition of heights of left and right subtrees b) height of right subtree minus height of left subtree c) height of left subtree minus height of right subtree d) height of right subtree minus one
29	State the difference between a Tree and a cyclic Graph.
30	Given binary tree:  What are the terminal nodes? What are the internal nodes? How many NULL pointers exist? What are the nodes available at level 2?
31	Construct a binary tree when the sequence of nodes given as: Inorder : B A C G E H D F Postorder : B G H E F D C A
32	A sequence of elements given below. Construct a Binary Search Tree. 70, 20, 10, 40, 60, 90, 75
33	Construct an AVL tree for the given list of elements: 40, 30, 20, 10,5
34	Construct a Binary Search Tree by taking the following sequence of alphabets: D, E, A, F, B, C, G
35	Given binary tree:  What are the leaf nodes ? What are the non-leaf nodes ? How many levels exist ? What is the maximum degree available in this tree ?

36	In a max-heap, element with the greatest key is always in which node? a) Leaf node b) First node of left sub tree c) root node d) First node of right sub tree
37	Which of the following is used to represent a graph in memory? a) rectangular matrix b) diagonal matrix c) Scalar matrix d) adjacency matrix
38	In which traversal method of a graph, stack is used? a) Breadth First Search b) Depth First Search c) Binary Search d) Linear Search
39	Which of the following is a standard hash function given below ? a) division method b) searching method c) insertion sort d) Heap sort
40	Which of the following will specify whether there exists a path or not between any pair of vertices? a) path matrix b) diagonal matrix c) Scalar matrix d) adjacency matrix
41	In which hashing method each Hash Key is divided using a prime number to generate Hash Address? a) mid square method b) chaining c) folding method d) division method
42	A graph in which the no. of nodes are 10 and edges are 15 then the incidence matrix will be of: a) 10X10 size b) 15X15 size c) 10X15 size d) none of these
43	In which traversal method of a graph, queue is used? a) Breadth First Search b) Depth First Search c) Binary Search d) Linear Search
44	Construct a Min-Heap tree for a given list of elements: 80,60,30,40,20,10
45	Find the in-degree and out-degree of each vertex of the graph given below: 
46	What is the adjacency matrix of the graph given below: 
47	Find the in-degree and out-degree of each vertex of the graph given below: 
48	What is a Cyclic graph? Draw a diagram of a Cyclic graph.
49	What is a weighted Graph? Draw a diagram of weighted graph.
50	What is mid-square method in hashing?