Id	
Question	To represent hierarchical relationship between elements, Which data structure is suitable?
A	Dequeue
B	Priority
C	Tree
D	Graph
Answer	C
Marks	1
Unit	1

Id	
Question	The depth of complete binary tree is given by .....
A	$Dn = n \log_2 n$
B	$Dn= n\log_2 n+1$
C	$Dn = \log_2 n$
D	$Dn = \log_2(n+1)-1$
Answer	D
Marks	1
Unit	1
Id	
Question	A connected graph T without any cycles is called .....
A	free graph
B	no cycle graph
C	non cycle graph
D	circular graph
Answer	A
Marks	1
Unit	1

Id	
Question	In Binary trees nodes with no successor are called .....
A	End nodes
B	Terminal nodes
C	Final nodes
D	Last nodes
Answer	B
Marks	1
Unit	1

Id	
Question	Tree is ------- data structure?
A	Linear
B	Non-Linear
C	Both a & b
D	none
Answer	B
Marks	1
Unit	1
Id	
Question	In isolated vertex degree of vertex is-----
A	one
B	two
C	zero
D	three
Answer	C
Marks	1
Unit	1

Id	
Question	Which of the following statement about binary tree is CORRECT?
A	Every binary tree is either complete or full
B	Every complete binary tree is also a full binary tree
C	Every full binary tree is also a complete binary tree
D	A binary tree cannot be both complete and full
Answer	C
Marks	1
Unit	1
Id	
Question	Binary trees with threads are called as .....
A	Threaded trees
B	Pointer trees
C	Special trees
D	Special pointer trees
Answer	A
Marks	1
Unit	1
Id	
Question	In a 2-tree, nodes with 0 children are called .....
A	Exterior node
B	Outside node

C	Outer node
D	External node
Answer	D
Marks	1
Unit	1

Id	
Question	In a full binary tree, every internal node has exactly two children. A full binary tree with 2n+1 nodes contains
A	n leaf node
B	n internal nodes
C	n-1 leaf nodes
D	n-1 internal nodes
Answer	B
Marks	1
Unit	1

Id	
Question	A binary search tree is also known as:
A	B-tree
B	binary sorted tree
C	binary ordered tree
D	B+ tree
Answer	B
Marks	1
Unit	1

Id	
Question	A tree in which the degree of each node is either 0 or 2:
A	complete binary tree

B	binary search tree
C	strictly binary tree
D	none of the above
Answer	C
Marks	1
Unit	1

Id	
Question	The root node is_____
A	Terminal node
B	Internal nodes
C	Child node
D	None of the above
Answer	B
Marks	1
Unit	1

Topics: Binary tree- properties, converting tree to binary tree

Id	
Question	How many paths are there between every pair of vertices in a binary tree?
A	Two
B	One
C	Three
D	None
Answer	B
Marks	1
Unit	1

Id	

Question	In binary tree, the number of vertices is _____ more than number of edges.
A	Three
B	Two
C	One
D	Four
Answer	C
Marks	1
Unit	1
Id	
Question	A binary tree with two or more vertices has at least _____ leaves.
A	Two
B	Three
C	One
D	Four
Answer	A
Marks	1
Unit	1
Id	
Question	The maximum number of nodes of level *i* in a binary tree is _____ for *i*>=1.
A	2^{i+1}
B	3^{i-1}
C	3^{i+1}
D	2^{i-1}
Answer	D
Marks	1
Unit	1

Id	
Question	The maximum number of nodes of depth *d* in a binary tree is _____ for *d*>=1.
A	2^{d-1}
B	3^{d-1}
C	3^{d+1}
D	2^{d+1}
Answer	A
Marks	1
Unit	1
Id	
Question	While converting the general tree to binary tree the links are added from each node to _____.
A	Its immediate right child
B	Its immediate left child
C	Its leaf node
D	None of these
Answer	B
Marks	1
Unit	1
Id	
Question	The degree of each node is general tree can be _____.
A	At most two
B	Exactly two
C	More than two
D	Exactly three
Answer	C
Marks	1
Unit	1

Id	
Question	The number of edges in a simple, n-vertex, complete graph is _____.
A	n*(n-2).
B	n*(n-1).
C	n*(n-1)/2.
D	n*(n-1)*(n-2)
Answer	C
Marks	1
Unit	1
Id	
Question	A binary tree can be converted in to its mirror image by traversing it in _____.
A	Inorder
B	Preorder
C	Postorder
D	Anyorder
Answer	B
Marks	1
Unit	1

Topics: Binary tree traversals- inorder, preorder, post order, level wise -depth first and breadth first.

Id	
Question	One can determine whether a Binary tree is a Binary Search Tree by traversing it in ____.
A	Preorder
B	Inorder
C	Postorder
D	None of the above

Answer	B
Marks	1
Unit	1

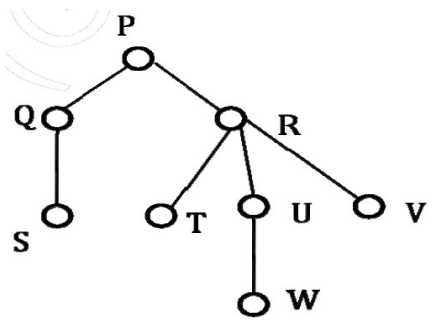
Id	
Question	A binary tree can be converted in to its mirror image by traversing it in
A	Inorder
B	Preorder
C	Postorder
D	Anyorder
Answer	B
Marks	1
Unit	1
Id	
Question	What is common in three different types of traversals (Inorder, Preorder and Postorder)?
A	Root is visited before right subtree
B	Left subtree is always visited before right subtree
C	Root is visited after left subtree
D	All of the above
Answer	B
Marks	1
Unit	1

Id	
Question	The inorder and preorder traversal of a binary tree are d b e a f c g and a b d e c f g, respectively. The postorder traversal of the binary tree is:

A	d e b f g c a
B	e d b g f c a
C	e d b f g c a
D	d e f g b c a
Answer	A
Marks	1
Unit	1
Id	
Question	Which of the following pairs of traversals is not sufficient to build a binary tree from the given traversals?
A	Preorder and Inorder
B	Preorder and Postorder
C	Inorder and Postorder
D	None of the Above
Answer	B
Marks	1
Unit	1

Id	
Question	Which traversal of tree resembles the breadth first search of the graph?
A	Preorder
B	inorder
C	Postorder
D	Level order
Answer	D
Marks	1
Unit	1

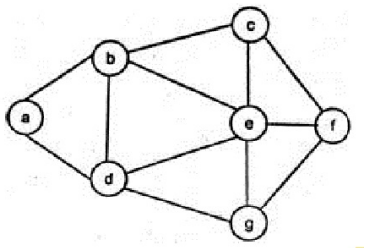
Id	
Question	Which of the following tree traversal uses a queue data structure?
A	Preorder
B	inorder
C	Postorder
D	Level order
Answer	D
Marks	1
Unit	1

Id	
Question	Which of the following cannot generate the full binary tree?
A	Preorder and Inorder
B	Preorder and Postorder
C	Inorder and Postorder
D	None of the Above
Answer	D
Marks	1
Unit	1
Id	
Question	Consider the following rooted tree with the vertex P labeled as root: 

	The in-order traversal is:
A	SQPTRWUV
B	SQPTURWV
C	SQPTWUVR
D	SQPTRUWV
Answer	A
Marks	1
Unit	1

Id	
Question	Level order traversal of a rooted tree can be done by starting from the root and performing
A	preorder traversal
B	inorder traversal
C	depth first search
D	breadth first search
Answer	D
Marks	1
Unit	1

Id	
Question	The following three are known to be the preorder, inorder and postorder sequences of a binary tree. But it is not known which is which. MBCAFHPYK KAMCBYPFH MABCKYFPH Pick the true statement from the following.

A	I and II are preorder and inorder sequences, respectively
B	I and III are preorder and postorder sequences, respectively
C	II is the inorder sequence, but nothing more can be said about the other two sequences
D	II and III are the preorder and inorder sequences, respectively
Answer	D
Marks	1
Unit	1
Id	
Question	Consider the following sequence of nodes for the undirected graph given below. a b e f d g c a b e f c g d a d g e b c f a d b c g e f A Depth First Search (DFS) is started at node a. The nodes are listed in the order they are first visited. Which all of the above is (are) possible output(s)? 
A	1 & 3 only
B	2 & 3 only
C	2, 3 & 4 only
D	1, 2 & 3 only
Answer	B
Marks	1
Unit	1

Topics: Operations on binary tree

Id	

Question	Following function is supposed to calculate the maximum depth or height of a Binary tree -- the number of nodes along the longest path from the root node down to the farthest leaf node:
	`int maxDepth(struct node* node)`
	`{`
	`  if (node==NULL)`
	`  return 0;`
	`  else`
	`  {`
	`  /* compute the depth of each subtree */`
	`  int lDepth = maxDepth(node->left);`
	`  int rDepth = maxDepth(node->right);`
	`  /* use the larger one */`
	`  if (lDepth > rDepth)`
	`  return X;`
	`  else return Y;`
	`  }`
	`}`
	What should be the values of X and Y so that the function works correctly?

A	X = lDepth, Y = rDepth
B	X = lDepth + 1, Y = rDepth + 1
C	X = lDepth - 1, Y = rDepth -1
D	None of the above
Answer	B
Marks	1
Unit	1

Id	

Question	What does the following function do for a given binary tree?
	`int fun(struct node *root)`
	`{`
	`  if (root == NULL)`
	`  return 0;`
	`  if (root->left == NULL && root->right == NULL)`
	`  return 0;`
	`  return 1 + fun(root->left) + fun(root->right);`
	`}`

A	Counts leaf nodes
B	Counts internal nodes
C	Returns height where height is defined as number of edges on the path from root to deepest node
D	Return diameter where diameter is number of edges on the longest path between any two nodes.
Answer	B
Marks	1
Unit	1

Id	

Question	Consider the following C program segment
	`struct CellNode`
	`{`
	`  struct CelINode *leftchild;`
	`  int element;`
	`  struct CelINode *rightChild;`
	`}`
	
	`int Dosomething(struct CelINode *ptr)`
	`{`
	`  int value = 0;`
	`  if (ptr != NULL)`

	{
	if (ptr->leftChild != NULL)
	value = 1 + DoSomething(ptr->leftChild);
	if (ptr->rightChild != NULL)
	value = max(value, 1 + DoSomething(ptr->rightChild));
	}
	return (value);
	}
	The value returned by the function DoSomething when a pointer to the root of a non-empty tree is passed as argument is ___

A	The number of leaf nodes in the tree
B	The number of nodes in the tree
C	The number of internal nodes in the tree
D	The height of the tree
Answer	D
Marks	1
Unit	1

Id	
Question	The operation of processing each element in the list is known as .....
A	Sorting
B	Merging
C	Inserting
D	Traversal
Answer	D
Marks	1
Unit	1

Id	

Question	TREE[1]=NULL indicates tree is .....
A	Overflow
B	Underflow
C	Empty
D	Full
Answer	C
Marks	1
Unit	1

Id	
Question	A full binary tree with n leaves contains
A	n nodes
B	log2n nodes
C	2n - 1 nodes
D	2n+1 nodes
Answer	C
Marks	1
Unit	1

Id	
Question	A binary search tree is also known as:
A	B-tree
B	binary sorted tree
C	binary ordered tree
D	B+ tree
Answer	B
Marks	1
Unit	1
Id	

Question	A tree in which the degree of each node is either 0 or 2:
A	complete binary tree
B	binary search tree
C	strictly binary tree
D	none of the above
Answer	C
Marks	1
Unit	1

Id	
Question	The root node is_____
A	Terminal node
B	Internal nodes
C	Child node
D	None of the above
Answer	B
Marks	1
Unit	1

Topics: Binary Search Tree (BST), BST operations

Id	
Question	What is the worst case time complexity for search, insert and delete operations in a general Binary Search Tree?
A	O(n) for all
B	O(Logn) for all
C	O(Logn) for search and insert, and O(n) for delete
D	O(Logn) for search, and O(n) for insert and delete
Answer	A
Marks	1
Unit	1

Id	
Question	In delete operation of BST, we need inorder successor (or predecessor) of a node when the node to be deleted has both left and right child as non-empty. Which of the following is true about inorder successor needed in delete operation?
A	Inorder Successor is always a leaf node
B	Inorder successor is always either a leaf node or a node with empty left child
C	Inorder successor may be an ancestor of the node
D	Inorder successor is always either a leaf node or a node with empty right child
Answer	B
Marks	1
Unit	1

Id	
Question	How many distinct binary search trees can be created out of 4 distinct keys?
A	4
B	14
C	24
D	42
Answer	B
Marks	1
Unit	1

Id	
Question	Which of the following traversal outputs the data in sorted order in a BST?
A	Preorder
B	Inorder

C	Postorder
D	Level order
Answer	B
Marks	1
Unit	1

Id	
Question	The following numbers are inserted into an empty binary search tree in the given order: 10, 1, 3, 5, 15, 12, 16. What is the height of the binary search tree (the height is the maximum distance of a leaf node from the root)?
A	2
B	5
C	3
D	6
Answer	C
Marks	2
Unit	1

Id	
Question	The preorder traversal sequence of a binary search tree is 30, 20, 10, 15, 25, 23, 39, 35, 42. Which one of the following is the postorder traversal sequence of the same tree?
A	10, 20, 15, 23, 25, 35, 42, 39, 30
B	15, 10, 25, 23, 20, 42, 35, 39, 30
C	15, 20, 10, 23, 25, 42, 35, 39, 30
D	15, 10, 23, 25, 20, 35, 42, 39, 30
Answer	D
Marks	2
Unit	1

Id	
Question	Which of the following traversals is sufficient to construct BST from given traversals 1) Inorder 2) Preorder 3) Postorder?
A	Any one of the given three traversals is sufficient
B	Either 2 or 3 is sufficient
C	2 and 3
D	1 and 3
Answer	B
Marks	1
Unit	1
Id	
Question	While inserting the elements 71, 65, 84, 69, 67, 83 in an empty binary search tree (BST) in the sequence shown, the element in the lowest level is
A	65
B	67
C	69
D	83
Answer	B
Marks	1
Unit	1
Id	
Question	How many distinct BSTs can be constructed with 3 distinct keys?
A	5
B	6
C	4
D	9
Answer	A
Marks	1

Unit	1
Id	
Question	If a node in BST has two children, then its inorder predecessor has _____.
A	No left child
B	No right child
C	Two children
D	No child
Answer	B
Marks	1
Unit	1

Topics: Threaded binary tree- concepts, threading

Id	
Question	A threaded binary tree is a binary tree in which every node that does not have right child has a thread to its
A	Pre-order successor
B	In-order successor
C	In-order predecessor
D	Post-order successor
Answer	B
Marks	1
Unit	1
Id	
Question	Binary trees with threads are called as .....
A	Threaded trees
B	Pointer trees
C	Special trees
D	Special pointer trees
Answer	A

Marks	1
Unit	1
Id	
Question	In a binary tree, certain null entries are replaced by special pointers which point to nodes higher in the tree for efficiency. These special pointers are called _____
A	Leaf
B	Branch
C	Path
D	Thread
Answer	D
Marks	1
Unit	1
Id	
Question	A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a Link) _____Successor.
A	Preorder
B	Inorder
C	Postorder
D	Levelorder
Answer	B
Marks	1
Unit	1
Id	
Question	Which of the following statement is correct?
A	A threaded Binary tree is a binary tree in which every node that does not have a left child has a THREAD (in actual sense, a link) to its INORDER successor.
B	A threaded Binary tree is a binary tree in which every node that

	does not have a right child has a THREAD (in actual sense, a link) to its PREORDER successor.
C	A threaded Binary tree is a binary tree in which every node that does not have a left child has a THREAD (in actual sense, a link) to its INORDER successor.
D	A threaded Binary tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its POSTORDER predecessor.
Answer	B
Marks	1
Unit	1
Id	
Question	In threaded binary tree, the NULL pointers are replaced by _____.
A	Preorder successor or Predecessor
B	Inorder successor or predecessor
C	NULL pointer are not replaced
D	Postorder successor or predecessor
Answer	B
Marks	1
Unit	1

Id	
Question	In a threaded binary tree which nodes have NULL child pointers,
A	All leaf nodes
B	Nodes other then leaf nodes
C	Root Node
D	None of the nodes
Answer	A
Marks	1
Unit	1

Id	
Question	Which of the following statement is true about dummy node of threaded binary tree?
A	The left pointer of dummy node points to itself while the right pointer points to the root of tree.
B	The left pointer of dummy node points to the root node of the tree while the right pointer points itself i.e. to dummy node.
C	The left pointer of dummy node points to the root node of the tree while the right pointer is always NULL.
D	The right pointer of dummy node points to itself while the left pointer is always NULL.
Answer	B
Marks	1
Unit	1

Id	
Question	Which of the following statement is correct?
A	A Threaded Binary Tree is a binary tree in which every node that does not have a left child has a THREAD (in actual sense, a link) to its INORDER successor.
B	A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its PREORDER successor.
C	A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its INORDER successor.
D	A Threaded Binary Tree is a binary tree in which every node that does not have a right child has a THREAD (in actual sense, a link) to its POSTORDER successor.
Answer	C
Marks	1
Unit	1

Id	
Question	By using _____we avoid the recursive method of traversing a Tree, which makes use of stacks and consumes a lot of memory and time.
A	Binary tree only
B	Huffman encoding
C	Heap data structure
D	Threaded binary tree
Answer	D
Marks	1
Unit	1

Id	
Question	A binary search tree is also known as:
A	B-tree
B	binary sorted tree
C	binary ordered tree
D	B+ tree
Answer	B
Marks	1
Unit	1

Id	
Question	A tree in which the degree of each node is either 0 or 2:
A	complete binary tree
B	binary search tree
C	strictly binary tree
D	none of the above
Answer	C
Marks	1

Unit	1

Id	
Question	The root node is_____
A	Terminal node
B	Internal nodes
C	Child node
D	None of the above
Answer	B
Marks	1
Unit	1

Id	
Question	A binary search tree is also known as:
A	B-tree
B	binary sorted tree
C	binary ordered tree
D	B+ tree
Answer	B
Marks	1
Unit	1
Id	
Question	A tree in which the degree of each node is either 0 or 2:
A	complete binary tree
B	binary search tree
C	strictly binary tree
D	none of the above
Answer	C
Marks	1

Unit	1

Id	
Question	The root node is_____
A	Terminal node
B	Internal nodes
C	Child node
D	None of the above
Answer	B
Marks	1
Unit	1

Topics: Case Study- Use of binary tree in expression tree-evaluation and Huffman's coding

Id	
Question	The prefix form of an infix expression A+B-C*D is _____
A	+AB-*CD.
B	-+A B C * D.
C	-+A B * C D.
D	- + *ABCD.
Answer	C
Marks	2
Unit	1
Id	
Question	One can convert an infix expression to a postfix expression using a _____.
A	Stack
B	Queue
C	Deque
D	None of these

Answer	A
Marks	1
Unit	1

Id	
Question	Which of the following types of expressions do not require precedence rules for evaluation?
A	fully parenthesised infix expression
B	postfix expression
C	partially parenthesised infix expression
D	more than one of the above
Answer	A
Marks	1
Unit	1

Id	
Question	What is the infix version of the following postfix expression? x 12 + z 17 y + 42 * / +
A	(x + 12 + z) / (17 + y * 42)
B	x + 12 + z / 17 + y * 42
C	x + 12 + z / (17 + y) * 42
D	x + 12 + z / ((17 + y) * 42)
Answer	D
Marks	2
Unit	1

Id	
Question	The prefix form of an infix expression p + q - r * t is?
A	+ pq - *rt
B	- +pqr * t
C	- +pq * rt
D	- + * pqrt
Answer	C
Marks	2
Unit	1

Id	
Question	The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, * is?
A	600
B	350
C	650
D	588
Answer	B
Marks	1
Unit	1
Id	
Question	Convert the following infix expressions into its equivalent postfix expressions: (A + B ⋀D)/(E - F)+G
A	(A B D ⋀ + E F - / G +)
B	(A B D +⋀ E F - / G +)
C	(A B D ⋀ + E F/- G +)
D	None
Answer	A
Marks	2

Unit	1
Id	
Question	Huffman coding technique is adopted for constructing the source code with _____ redundancy.
A	Maximum
B	Constant
C	Minimum
D	Unpredictable
Answer	C
Marks	1
Unit	1
Id	
Question	Binary Huffman coding is a
A	Prefix condition code
B	Suffix condition code
C	Both of the mentioned
D	None of the mentioned
Answer	A
Marks	1
Unit	1

Id	
Question	An alphabet consists of the letters A, B, C and D. The probability of occurrence is: P (A) = 0.4, P (B) = 0.1, P(C) = 0.2 and P (D) = 0.3. The Huffman code is:
A	A = 0, B = 111, C = 110, D = 10

B	A = 01, B = 111, C = 110, D = 10
C	A = 0, B = 11, C = 10, D = 111
D	A = 0, B = 111, C = 11, D = 101
Answer	A
Marks	2 or 4
Unit	1
Id	
Question	Huffman coding is an encoding algorithm used for
A	files greater than 1 Mbit
B	lossy data compression
C	lossless data compression
D	broadband systems
Answer	C
Marks	1
Unit	1
Id	
Question	The basic idea behind Huffman coding is to
A	compress data by using fewer bits to encode more frequently occurring characters
B	compress data by using more bits to encode more frequently occurring characters
C	expand data by using fewer bits to encode more frequently occurring characters
D	compress data by using fewer bits to encode fewer frequently occurring characters
Answer	A
Marks	2
Unit	1