University of Mumbai
Examination 2020 under cluster APSIT

Program: Computer Engineering
Curriculum Scheme: Rev2016
Examination: Second Year Semester III
Course Code: CSC305 and Course Name: Data Structures

Time: 1 hour Max. Marks: 50

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For the students :- All the Questions are compulsory and carry equal marks .

Q1.	The Separation of data structures and their operations from the implementation of the data structures in memory and functions is called _____.
Option A:	Data Abstraction
Option B:	Data bifurcation
Option C:	Data extraction
Option D:	Data encapsulation
Q2.	Which data structure can be used suitably to solve the Tower of Hanoi problem?
Option A:	Queue
Option B:	Stack
Option C:	Priority Queue
Option D:	Tree
Q3.	The postfix form of the expression is (A+B) * (C*D-E) * F/G is
Option A:	AB+CD*E-FG/**
Option B:	AB+CD*E-*F*G/
Option C:	AB+CD*E-F**G/
Option D:	AB+CDE*-*F*G/
Q4.	A Circular queue is empty if
Option A:	front=rear-1
Option B:	rear=front-1
Option C:	front=rear+1
Option D:	rear=front
Q5.	The result of the postfix expression 5 3 * 9 + 6 / 8 4 / + is :
Option A:	6
Option B:	8
Option C:	9
Option D:	10
Q6.	The Deque in which deletion is allowed at one end is called
Option A:	Priority Queue
Option B:	Output restricted Deque
Option C:	Input restricted Deque
Option D:	Circular Queue
Q7.	Recursion is considered to be memory-intensive because
Option A:	Recursive functions tend to declare many local variables.

Option B:	Previous function calls are still open when the function calls itself and the activation records of these previous calls still occupy space on the call stack.
Option C:	Many copies of the function code are created.
Option D:	It requires large data values.
Q8.	A structure that points to the structure of same data type is called
Option A:	pointer of structure
Option B:	struct
Option C:	Cross referential structure
Option D:	Self-Referential Structure
Q9.	How many pointers are contained as data members in the nodes of a circular, doubly linked list of integers with five nodes?
Option A:	5
Option B:	8
Option C:	10
Option D:	15

Q10.	What is the output of following function for start pointing to first node of following linked list?
	
	1->2->3->4->5->6
	
	void fun(struct node* start)
	{
	if (start == NULL)
	return;
	printf("%d ", start->data);
	if(start->next != NULL)
	fun(start->next->next);
	printf("%d ", start->data);
	}

Option A:	1 4 6 6 4 1
Option B:	1 3 5 1 3 5
Option C:	1 2 3 5
Option D:	1 3 5 5 3 1
Q11.	To create a linked list, we can allocate space and make something point to it, by writing: struct node *pointer-variable; Which of the following statement will correctly allocate the space
Option A:	pointer-variable= malloc(sizeof(struct node));
Option B:	pointer-variable = malloc(sizeof(struct struct node));
Option C:	pointer-variable = alloc(sizeof(struct node));
Option D:	pointer-variable = alloc(sizeof(*struct node));
Q12.	Linked lists are best suited
Option A:	Scenario1: If the size of the structure and the data in the structure are constantly changing

Option B:	Scenario2: For relatively permanent collections of data
Option C:	Both the scenarios
Option D:	None of the two scenarios
Q13.	Which of the following statement is false?
Option A:	The length of a path is one less than the no. of nodes in the path
Option B:	Children of the same parent is said to be siblings
Option C:	The height of a node in a tree is the length of the longest path from the node to leaf
Option D:	The total number of nodes in a tree is called its degree.
Q14.	What is the correct order, to traverse a non-empty binary tree in preorder 1. Traverse the left subtree in post order 2. Visit the root 3. Traverse the right subtree in post order
Option A:	1,2,3
Option B:	2,3,1
Option C:	2,1,3
Option D:	3,2,1
Q15.	Consider the set of Integers given below:10, 20, 30, 25, 27, 7, 4, 23, 26, 21 How many (i) Single rotations (ii) Double rotations do you need to construct a fully balanced AVL tree?
Option A:	(i) 3 (ii) 0
Option B:	(i) 3 (ii) 1
Option C:	(i) 1 (ii) 2
Option D:	(i) 0 (ii) 3
Q16.	The method one uses to replace the node being deleted by the rightmost node in its left sub tree or left most node in its right sub tree. What does the above statement (algorithm segment) intend to do?
Option A:	Deleting a node from a binary search tree, if deleting node is a leaf node.
Option B:	Deleting a node from a binary search tree, if deleting node has both a left and a right child.
Option C:	Deleting a node from a binary tree if the deleting node has one child.
Option D:	Deleting a node from an AVL, if deleting node has both a left and a right child.
Q17.	In an AVL tree, at what condition the balancing is to be done? 1) balance factor greater than 1 2) balance factor less than 1 3) balance factor equal to 2.
Option A:	1 and 3
Option B:	1 and 2
Option C:	2 and 3
Option D:	1,2 and 3
Q18.	The basic idea behind Huffman coding is to
Option A:	compress data by using fewer bits to encode fewer frequently occurring characters
Option B:	expand data by using fewer bits to encode more frequently occurring characters
Option C:	compress data by using fewer bits to encode more frequently occurring characters
Option D:	compress data by using more bits to encode more frequently occurring characters

Q19.	Dag refers to
Option A:	Distributed acyclic graph
Option B:	Denoted acyclic graph
Option C:	Directed acyclic graph
Option D:	Double Acyclic Graph
Q20.	A person wants to go different places in the world. He has listed them down all. But there are some places where he wants to visit before some other places. Which application of graph can be used to determine that?
Option A:	Depth First Search
Option B:	Breadth First Search
Option C:	Topological Sort
Option D:	Dijkstra's Shortest path algorithm
Q21.	A lady wants to visit some places. He starts from a vertex and then wants to visit every place connected to this vertex and so on. Which algorithm should she use?
Option A:	Breadth First Search
Option B:	Depth First Search
Option C:	Prim's Algorithm
Option D:	Kruskal's Algorithm
Q22.	Binary Search can be categorized into which of the following?
Option A:	Brute Force technique
Option B:	Divide and conquer
Option C:	Greedy algorithm
Option D:	Dynamic programming
Q23.	The technique that builds a linked list of all items whose keys hash to the same values is:
Option A:	Chaining
Option B:	Addressing
Option C:	Resolving
Option D:	Hashing
Q24.	Which of the following is a /are hash function(s)? (a) Shortest path(b) Folding(c) Mid-square(d)Modulo Division
Option A:	a,c,d
Option B:	a,b,c
Option C:	c,d
Option D:	b,c,d
Q25.	The function that transforms a key into a _____ is called a hash function.
Option A:	Key index
Option B:	Data Table
Option C:	Table index
Option D:	Record