University of Mumbai
Examination 2020

Program: **Information Technology**
Curriculum Scheme: Rev2019 C
Examination: DSE Semester III
Course Code: ITC302 and Course Name: DSAA

Time: 2 hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Process of inserting an element in stack is called _____
Option A:	Create
Option B:	Push
Option C:	Pop
Option D:	Add
2.	removing an element from stack is called _____
Option A:	Remove
Option B:	Pop
Option C:	Delete
Option D:	Evaluate
3.	if a user tries to remove an element from an empty stack it is called _____
Option A:	Underflow
Option B:	Overflow
Option C:	Empty
Option D:	Garbage value
4.	Pushing an element into stack already having five elements and stack size of 5, then stack becomes _____
Option A:	Overflow
Option B:	Overflow
Option C:	Userflow
Option D:	Crash
5.	Which of the following is not the application of stack?
Option A:	A parentheses balancing program
Option B:	b) Tracking of local variables at run time
Option C:	c) Compiler Syntax Analyzer
Option D:	d) Data Transfer between two asynchronous process
6.	What is the value of the postfix expression 6 3 2 4 + – *?
Option A:	1
Option B:	40
Option C:	74
Option D:	-18

7.	A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as _____
Option A:	Queue
Option B:	Stack
Option C:	Tree
Option D:	Linked list
8.	The data structure required for Breadth First Traversal on a graph is?
Option A:	Stack
Option B:	Array
Option C:	Queue
Option D:	Tree
9.	A queue follows _____
Option A:	FIFO (First In First Out) principle
Option B:	LIFO (Last In First Out) principle
Option C:	Ordered array
Option D:	Linear tree
10.	Circular Queue is also known as _____
Option A:	Ring Buffer
Option B:	Square Buffer
Option C:	Rectangle Buffer
Option D:	Curve Buffer
11.	A data structure in which elements can be inserted or deleted at/from both ends but not in the middle is?
Option A:	Queue
Option B:	Circular queue
Option C:	Dequeue
Option D:	Priority queue
12.	How many children does a binary tree have?
Option A:	2
Option B:	any number of children
Option C:	0 or 1 or 2
Option D:	0 or 1
13.	Which of the following is false about a binary search tree?
Option A:	The left child is always lesser than its parent
Option B:	The right child is always greater than its parent
Option C:	The left and right sub-trees should also be binary search trees
Option D:	In order sequence gives decreasing order of elements
14.	What is an AVL tree?
Option A:	a) a tree which is balanced and is a height balanced tree
Option B:	a tree which is unbalanced and is a height balanced tree
Option C:	a tree with three children
Option D:	a tree with atmost 3 children

15.	Why to prefer red-black trees over AVL trees?
Option A:	Because red-black is more rigidly balanced
Option B:	AVL tree store balance factor in every node which costs space
Option C:	AVL tree fails at scale
Option D:	Red black is more efficient
16.	A connected planar graph having 6 vertices, 7 edges contains _____ regions.
Option A:	15
Option B:	3
Option C:	1
Option D:	11
17.	Which of the following properties does a simple graph not hold?
Option A:	Must be connected
Option B:	Must be unweighted
Option C:	Must have no loops or multiple edges
Option D:	Must have no multiple edges
18.	Which of the following is true?
Option A:	A graph may contain no edges and many vertices
Option B:	A graph may contain many edges and no vertices
Option C:	A graph may contain no edges and no vertices
Option D:	A graph may contain no vertices and many edges
19.	What is a hash table?
Option A:	A structure that maps values to keys
Option B:	A structure that maps keys to values
Option C:	A structure used for storage
Option D:	A structure used to implement stack and queue
20.	If several elements are competing for the same bucket in the hash table, what is it called?
Option A:	Diffusion
Option B:	Replication
Option C:	Collision
Option D:	Duplication

Q2 **(20 Marks)**	**Solve any Two Questions out of Three 10 marks each**
A	Explain graph terminology with suitable diagram
B	Explain the different operation in linked list with algorithm and suitable diagram.
C	Explain DFS and BFS with proper example.

Q3 **(20 Marks)**	
A	**Solve any Two** **10 marks**
i.	Explain binary search tree.
ii.	Compare B tree and B+ tree.
iii.	Application of Stack and queue
B	**Solve any One** **10 marks**
i.	Explain Huffman encoding technique with example.
ii.	What is hashing and collision and also write methods to remove collision