University of Mumbai

Examination 2020 under cluster ___ (Lead College Short name)

Program: Information Technology
Curriculum Scheme: Rev2016
Examination: Second Year Semester III
Course Code: _____ and Course Name: Data Structure and Analysis

Time: 1 hour | Max. Marks: 50

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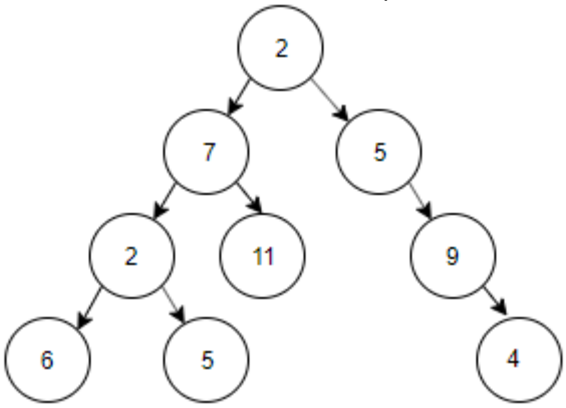
For the students:- All the Questions are compulsory and carry equal marks .

Q1.	Merge sort uses which of the following technique to implement sorting?
Option A:	backtracking
Option B:	greedy algorithm
Option C:	divide and conquer
Option D:	dynamic programming
Q2.	What is the worst case time complexity of LSD radix sort?
Option A:	O(nlogn)
Option B:	O(wn)
Option C:	O(n)
Option D:	O(n + w)

Q3.	What is the output of the following code?
	`void my_recursive_function(int n)`
	`{`
	`   if(n == 0)`
	`   return;`
	`   printf("%d ",n);`
	`   my_recursive_function(n-1);`
	`}`
	`int main()`
	`{`
	`   my_recursive_function(10);`
	`   return 0;`
	`}`

Option A:	10
Option B:	1
Option C:	10 9 8 .... 1 0
Option D:	10 9 8 ...1
Q4.	What is compaction?
Option A:	a technique for overcoming internal fragmentation
Option B:	a paging technique
Option C:	a technique for overcoming external fragmentation
Option D:	a technique for overcoming fatal error
Q5.	Which of the following is not a technique to avoid a collision?

Option A:	Make the hash function appear random
Option B:	Use the chaining method
Option C:	Use uniform hashing
Option D:	Increasing hash table size
Q6.	In Huffman coding, data in a tree always occur?
Option A:	roots
Option B:	Leaves
Option C:	Left sub trees
Option D:	Right sub trees
Q7.	What is the worst case time complexity of a quick sort algorithm?
Option A:	O(N)
Option B:	O(N log N)
Option C:	O(N2)
Option D:	O(log N)
Q8.	In the following scenarios, when will you use selection sort?
Option A:	The input is already sorted
Option B:	A large file has to be sorted
Option C:	Large values need to be sorted with small keys
Option D:	Small values need to be sorted with large keys
Q9.	Consider the usual algorithm for determining whether a sequence of parentheses is balanced.The maximum number of parentheses that appear on the stack AT ANY ONE TIME when the algorithm analyzes: (()(())(())) are:
Option A:	1
Option B:	2
Option C:	3
Option D:	4 or more
Q10.	What is the value of the postfix expression 6 3 2 4 + – *?
Option A:	1
Option B:	40
Option C:	74
Option D:	-18
Q11.	Consider an implementation of unsorted singly linked list. Suppose it has its representation with a head pointer only. Given the representation, which of the following operation can be implemented in O (1) time? i) Insertion at the front of the linked list ii) Insertion at the end of the linked list iii) Deletion of the front node of the linked list iv) Deletion of the last node of the linked list

Option A:	I and II
Option B:	I and III
Option C:	I, II and III
Option D:	I, II and IV
Q12.	The data structure required for Breadth First Traversal on a graph is?
Option A:	Stack
Option B:	Array
Option C:	Queue
Option D:	Tree
Q13.	If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed?
Option A:	ABCD
Option B:	DCBA
Option C:	DCAB
Option D:	ABDC
Q14.	A data structure in which elements can be inserted or deleted at/from both the ends but not in the middle is?
Option A:	Queue
Option B:	Circular Queue
Option C:	Dequeue
Option D:	Priority Queue
Q15.	For the tree below, write the pre-order traversal. 
Option A:	2, 7, 2, 6, 5, 11, 5, 9, 4
Option B:	2, 7, 5, 2, 6, 9, 5, 11, 4
Option C:	2, 5, 11, 6, 7, 4, 9, 5, 2
Option D:	2, 7, 5, 6, 11, 2, 5, 4, 9