P P SAVANI UNIVERSITY

Third Semester of Diploma Examination

November 2022

IDCE2011 Data Structure

30.11.2017, Wednsday **Time: 10:00 a.m. To 12:30 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

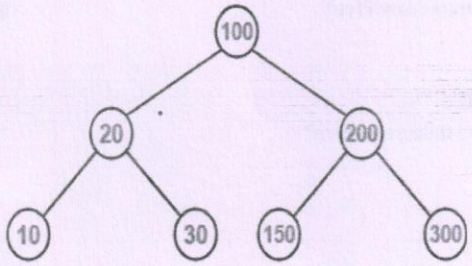
SECTION – I

Q - 1	MCQ/Short Question/Fill in the Blanks (Any Five)	**[05]**	**CO**	**BTL**
(i)	What is Row major array?		**2**	**1**
(ii)	Stack is also known as _____. a) LIFO b) FIOF c) FIFO d) GIFO		**3**	**1**
(iii)	What is primitive and non-primitive data structure?		**1**	**1**
(iv)	Define: string with example.		**2**	**6**
(v)	What is circular queue?		**3**	**1**
(vi)	Application of stack		**3**	**1**
(vii)	Full form of FIFO		**3**	**1**
Q - 2 (a)	What is Data Structure? Explain types of data structure.	**[05]**	**3**	**2**
Q - 2 (b)	Define array. Write a program of 3D array.	**[05]**	**2**	**6**
	OR			
Q - 2 (a)	What is Empty stack? Perform insert and delete operations on stack.	**[05]**	**3**	**3**
Q - 2 (b)	What is strrev ()? Write a program to perform string functions.(at least 3)	**[05]**	**2**	**6**
Q - 3 (a)	Write down algorithm of PUSH and POP on stack.	**[05]**	**3**	**3**
Q - 3 (b)	Define FIFO. Write down difference between LIFO & FIFO.	**[05]**	**3**	**2**
	OR			
Q - 3 (a)	What is concat () function? Write a c program to reverse the string.	**[05]**	**2**	**6**
Q - 3 (b)	Define structure. Show insertion operation of elements 9,7,8,1,-2 into single queue using array of 5 elements and perform deletion of first two elements with figure.	**[05]**	**3**	**5**
Q - 4	Attempt any one/two.	**[05]**		
(i)	What is column major array? Differentiate linear and non-linear data structure.		**1**	**4**
(ii)	Operations perform on circular queue with overflow & underflow conditions.		**3**	**3**

SECTION – II

Q - 1	MCQ/Short Question/Fill in the Blanks (Any Five)	**[05]**		
(i)	Which type of memory allocation is referred for Linked List?		**3**	**1**
(ii)	What does the dummy header in linked list contain?		**3**	**2**
(iii)	Mention what is the biggest advantage of linked lists?		**3**	**1**
(iv)	What is sorting?		**4**	**1**
(v)	What is a leaf node?		**3**	**1**
(vi)	What are Binary trees?		**3**	**1**
(vii)	What is the maximum number of nodes in a binary tree of height k?		**3**	**4**

Q - 2 (a)	Explain Dynamic memory allocation in brief.	**[05]**	**3**	**1**
Q - 2 (b)	Enlist the types of link list. Explain any two types in brief.	**[05]**	**3**	**1**
	OR			
Q - 2 (a)	Write the C program to insert a node in circular singly list at the beginning.	**[05]**	**3**	**6**
Q - 2 (b)	Explain Bubble sort with algorithm.	**[05]**	**4**	**3**
Q - 3 (a)	Write algorithm of insertion and deletion for AVL tree.	**[05]**	**3**	**3**
Q - 3 (b)	What is Radix sort? Write algorithm and example of radix sort.	**[05]**	**4**	**3**
	OR			
Q - 3 (a)	Find preorder traversal, postorder traversal and inorder traversal for given binary search tree.	**[05]**	**3**	**5**



Binary Search Tree

Q - 3 (b)	What is Linked list? Explain the types of linked list in brief.	**[05]**	**3**	**2**
Q - 4	**Attempt any one/two.**	**[05]**		
(i)	Create binary search tree for following elements. 1) 48,2,98,12,56,32,4,6 2) 13, 3, 4, 12, 14, 10, 5, 1, 8, 2, 7, 9, 11, 6, 18		**3**	**5**
(ii)	Find out Min-heap and Max-heap for given element. 1) 35 33 42 10 14 19 27 44 26 31		**3**	**5**

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CO : Course Outcome Number BTL : Blooms Taxonomy Level

Level of Bloom's Revised Taxonomy in Assessment

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create