Vivekananda College of Engineering & Technology,Puttur
[A Unit of Vivekananda Vidyavardhaka Sangha Puttur ®]
Affiliated to VTU, Belagavi & Approved by AICTE New Delhi

| CRM08 | Rev 1.10 | ‹CSE› | ‹25/11/2020› |

CONTINUOUS INTERNAL EVALUATION– 2

Dept:CSE	Sem / Div:3/ A & B	Sub:Data Structures and its Applications	S Code:18CS32
Date:01/12/2020	Time: 2:30-4:00 pm	Max Marks: 50	Elective:N

Note: Answer any 2 full questions, choosing one full question from each part.

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QN		Questions	Marks	RBT	COs
		PART A			
1	a	Give the node structure and C functions for the following operations on a singly linked list of integers. (i) Create a list. (ii) Assume the list contains 3 nodes with data 10,20,30. Insert a node with data 40 at the end of the list. (iii) Insert a node with data 50 between the nodes having data values 10 and 20. (iv) Display the singly linked list	9	L3	CO3
	b	Write an algorithm to add 2 polynomials using circular singly linked list (CSLL).And also represent the given polynomial using CSLL. $P(x, y, z) = 6x^2y^2z-4yz^5+3x^3yz+2xy^5z-2xyz^3$	8	L3	CO3
	c	Explain memory allocation using Garbage collection with examples. Write a note on overflow and underflow condition.	8	L2	CO3
		OR			
2	a	What are the advantages of doubly linked list over singly linked list? Write a C function to perform the following operations on double linked list. (i) Inserting a node at the beginning. (ii) Deleting a node at the end. (iii) Inserting an item at a specified location.	9	L3	CO3
	b	How can an ordinary queue be represented using a singly linked list? Write C functions for linked implementation of ordinary queue insertion and deletion.	8	L3	CO3
	c	Define sparse matrix. Give the sparse matrix representation of linked list for a given matrix. $$A = \begin{bmatrix} 0 & 10 & 0 & 0 \\ 3 & 0 & 0 & 5 \\ 8 & 0 & 2 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 8 & 0 \end{bmatrix}.$$	8	L2	CO3
		PART B			
3	a	Draw a binary tree for the following expression (10+12*15) +((5*15+20)*5) Traverse the above generated tree using inorder, preorder and postorder. Also write Cfunction for each of traversal methods.	9	L3	CO3
	b	What is a tree? Explain with example	8	L2	CO3

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CONTINUOUS INTERNAL EVALUATION– 2

		i) Binary tree ii) Strictly binary tree iii) Complete binary tree iv) Skewed binary tree			
	c	Explain Binary tree using Array representation and linked representation by taking one example. Which representation is more suitable and why?	8	L2	CO3
OR					
4	a	Construct binary tree form following inorder and preorder sequence and also write post order traversal sequence inorder: 5,10,12,11,18,22,26,30,31,35,44,50,66,70,80 preorder:30,11,10,5,12,22,18,26,50,35,31,44,70,66,80	9	L2	CO3
	b	Represent the following tree using i) Left Child- Right Sibling Representation ii) Degree-Two tree (Left child-Right child Representation) 	8	L2	CO3
	c	Write functions to illustrate: i) Copying of binary trees ii) Testing equality of binary trees	8	L3	CO3

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