Total No. of Questions – [04]

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May 2024 (ENDSEM) EXAM

F.Y.B. TECH. (SEMESTER - II)

COURSE NAME: Fundamentals of Data Structure **Branch: Computer Engineering** **COURSE CODE:CS12234**

(PATTERN 2023)

Time: [1Hr. 30 Min] **[Max. Marks: 40]**

Instructions to candidates:

1) **Figures to the right indicate full marks.**
2) **Use of scientific calculator is allowed**
3) **Use suitable data wherever required**
4) **All questions are compulsory. Solve any one sub question from each Question 1 and 2 and any three sub questions each from Questions 3 and 4.**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) Write a Java code to represent given matrix in form of sparse matrix.	[5]	CO1	APPLY
	b) Given the numbers (10, 15, 20, 25, 30) identify the appropriate search algorithm that will be used to search 25 in given list of numbers. Determine the number of steps required to search 25, write the algorithm for searching and mention the time complexity of algorithm.	[5]	CO1	APPLY
Q2	a) Write a Java code to insert (at end), delete (from front), and display the nodes of Singly Link list (SLL). Write the time complexity of insertion at end and deletion from front of SLL	[5]	CO2	APPLY
	b) Compare SLL, DLL and CLL. Write Java code to insert node in CLL.	[5]	CO2	APPLY
Q.3	a) Write a java code for string reverse using STACK and justify use of stack for reversing the string	[5]	CO3	APPLY
	b) Write an algorithm to convert an infix string to postfix. Give an example for infix to postfix conversion.	[5]	CO3	APPLY
	c) Evaluate following postfix expression using stack. Show all Steps. Expression : 241-3*+	[5]	CO3	APPLY
	d) Show step by step conversion of infix expression to prefix expression. (A+B) * (C-D)	[5]	CO3	APPLY

Q.4	a) Apply Queue as an ADT for ticket reservation counter	[5]	CO4	APPLY

	b) Compare Linear Queue and Deque. The size of Deque is 5. Determine the output if following steps of action are done:
	deque.addRear(1);
	deque.addRear (2);
	deque.addFront(3);
	deque.addFront(4);
	Also determine the index of front and rear.
		[5]	CO4	APPLY

	c) Write a java code to implement insert and delete functions of circular queue using array.	[5]	CO4	APPLY
	d) Determine the sequence of objects in priority queue given, the value of object is the priority of object: (100, 10, 65, 50, 12, 8, 110, 25). Give 3 applications of priority queue.	[5]	CO4	APPLY