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|-----|--|---|----|-----|
| 9. | Select the best sorting method out of the following - insertion sort, quick sort and merge sort with proper justification. | 2 | K3 | CO5 |
| 10. | Which hashing technique is best and illustrate with an example. | 2 | K2 | CO5 |

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	i. Write the algorithm to perform insertion on a doubly linked list.	7	K2	CO1
	ii. Write the algorithm to perform deletion on a doubly linked list.	6		
	(OR)			
b)	Develop an algorithm to add two polynomials using linked list.	13	K3	CO1
12. a)	i. Describe the process of postfix expression evaluation with an example.	7	K2	CO2
	ii. Describe the process of conversion from infix expression to postfix expression using stack.	6		
	(OR)			
b)	Analyze and write an algorithm to implement queue functions using arrays.	13	K4	CO2
13. a)	Construct the binary search tree using following elements: 35,15,40,7,10,100,28,82,53,25,3. Show diagrammatically each step of construction of BST.	13	K3	CO3
	(OR)			
b)	i. Index the following keys using B - Tree Indexing: 35,12,14,9,15,45,32,95,40,5	7	K3	CO3
	ii. Write the method to find the element 45 using the B - Tree.	6		
14. a)	Consider five cities: a. New Delhi, b. Mumbai, c. Chennai, d. Bangalore, e. Kolkata and a list of flights that connect these cities as shown in the following table. Use the given information to construct a graph.	13	K5	CO4

Flight No	Origin	Destination
101	2	3
102	3	2
103	5	3
104	3	4
105	2	5
106	5	2
107	5	1
108	1	4
109	5	4
110	4	5

(OR)

- b) Illustrate Depth-First Search and Breadth-First Search traversal of a graph with suitable examples. 13 K2 CO4
15. a) Describe the following search algorithms to search the number 88 from the following array: 77, 33, 44, 11, 88, 22, 66, 55 K2 CO5
- i. Linear Search 7
- ii. Binary Search 6

(OR)

- b) Describe the open addressing and chaining methods of collision resolution techniques in hashing. 13 K2 CO5

PART – C

(1 x 15 = 15Marks)

- | Q.No. | Questions | Marks | KL | CO |
|--------|--|-------|----|-----|
| 16. a) | Develop an algorithm to sort a set of 'N' numbers using quick sort. Demonstrate quick sort for the following data:88,11,22,44,66,99,32,67,54,10 and evaluate the worst case, average case and best case time complexities. | 15 | K5 | CO5 |

(OR)

- b) Apply Dijkstra's algorithm to compute the shortest path. Validate the algorithm with suitable example. 15 K3 CO4