Duration: 3hrs   **[Max Marks:80]**

N.B. : **(1) Question No 1 is Compulsory.**
       (2) Attempt any three questions out of the remaining five.
       (3) All questions carry equal marks.
       (4) Assume suitable data, if required and state it clearly.

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1		Attempt any FOUR	**[20]**
	a	Differentiate between Linear and Non-Linear Data Structure.	
	b	Explain enqueue and dequeue operation in a linear queue.	
	c	Explain the representation of a linked list and its types.	
	d	Explain time complexity and space complexity.	
	e	Write an algorithm for bubble sort.	

2	a	Explain the implementation of a queue using arrays? How to handle overflow and underflow conditions in a queue implemented using arrays? Can a circular queue be implemented using arrays?	**[10]**
	b	Explain in detail circular and double ended queue	**[10]**

3	a	Write the algorithm to traverse a linked list, perform insertion at beginning and insertion before a node in a singly linked list.	**[10]**
	b	Demonstrate BFS with example.	**[10]**

4	a	Apply Huffman Coding on "ENGINEERING".	**[10]**
	b	Apply Prim's and Kruskal's Algorithm on the following graph:	**[10]**
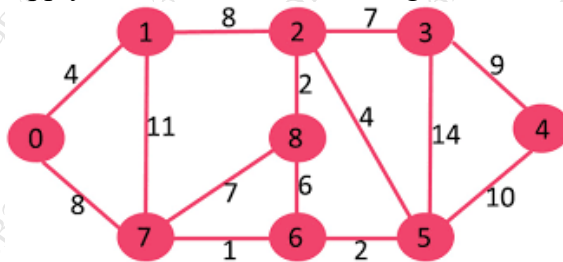
5	a	Demonstrate the algorithm for Binary Search with the following example. 63, 82, 94, 77, 53, 87, 23, 55, 10, 44 . key = 44	**[10]**
	b	Demonstrate the different tree traversal algorithms with the following example.	**[10]**
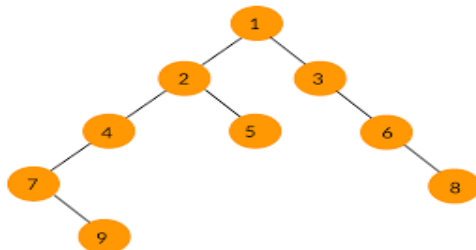
6	a	A Using linear probing insert the following values in a hash table of size 10. Show how many collisions occurred in each iteration. 28,55,71,67,11,10,90,44	**[10]**
	b	Explain quick sort with an example	**[10]**

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