

**B.Tech. SEM -IV Electronics / E & TC) 2014 Course (CBCS) :  
SUMMER - 2019**

**SUBJECT: DATA STRUCTURE AND FILES**

Day: Saturday  
Date: 01/06/2019

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

**S-2019-2616**

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**N.B:**

- 1) All questions are **COMPULSORY**.
  - 2) Figures to the right indicate **FULL** marks.
  - 3) Draw neat diagrams **WHEREVER** necessary.
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**Q.1** What are the different parameter passing techniques in 'C' functions. (10)  
Explain each of them suitable example.

**OR**

- Q.1** a) What is pointer and how it is initialized. (05)
- b) What are structures? Explain its use. Define structure having name, age and salary. (05)

**Q.2** Sort the following parameter using quick sort. (10)  
55, 25, 68, -25, -22, 34, 54, 28, 27, 1.

**OR**

**Q.2** What are different searching techniques? Compare them in the context of time complexity and describe any one in detail with example. (10)

**Q.3** What is singly linked list? What are advantages of singly linked list? (10)  
Compare singly linked list and Doubly linked list.

**OR**

**Q.3** Write a C function to insert a node in singly linked list at start and end. (10)

**Q.4** Convert the following postfix expression into prefix (10)

- i)  $AB + C * DE - FG + \$$  ( $\$ = \text{exponent}$ )
- ii)  $ABCDE \$ / -$  ( $\$ = \text{exponent}$ )

**OR**

**Q.4** Compare stack and queue. Write a necessary C function to implement stack using array. (10)

**P.T.O.**

- Q.5** Create a tree of the following: **(10)**  
i) Kumar, Rakesh, Amit, Sachin, Virat, kunal, alok, Ajeeth, Rahul  
ii) 25, 48, 56, 78, 79, 12, 52, 64, 56, 45.

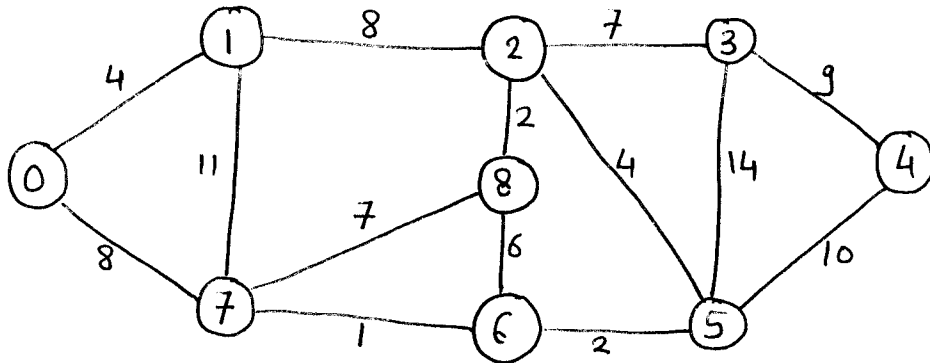
**OR**

- Q.5** What is binary search tree? Explain application of BST. **(10)**

- Q.6** What is Depth first Search? What are the advantages and disadvantages of DFS? Also define Graph. **(10)**

**OR**

- Q.6** Explain Dijkstra's algorithm and find the shortest path between 0 and 4 of the given figure: **(10)**



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