

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.

B.Sc. END SEMESTER EXAMINATIONS NOVEMBER-2022

SEMESTER - III

20UCSCT3003 - Data Structures and Algorithms

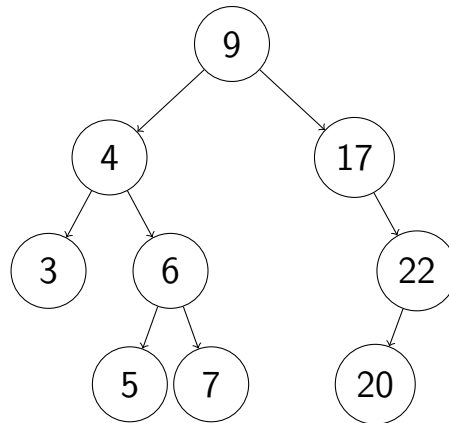
Total Duration : 2 Hrs 30 Mins.

Total Marks : 60

Section A

Answer any **SIX** questions ($6 \times 5 = 30$ Marks)

1. Define array. Explain the basic operations of an array with example.
2. Illustrate the process of a single and double linked list with a neat diagram.
3. Write down the steps to perform recursive tree traversal and find the same for the given binary tree.



4. Write and apply the selection sort algorithm for the given elements
14,33,27,10,35,19,42,44
5. Describe how the stack is different from queue.
6. What is a polynomial? Explain the linked list representation of a polynomial with example.
7. Define hashing. Describe mid-square hashing algorithm with an example.
8. Write the algorithm for binary search and determine the complexity.

Section B

Answer any **THREE** questions ($3 \times 10 = 30$ Marks)

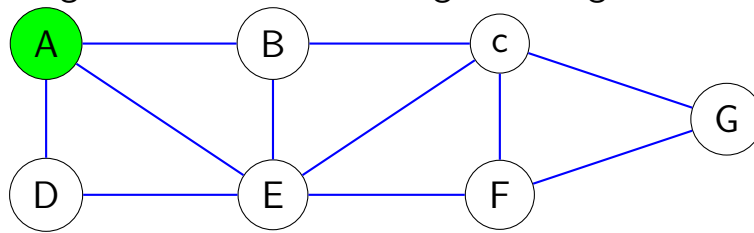
9. Explain the performance analysis of an algorithm with example.
10. (i) Convert the following expression from infix to postfix

$$(A+B)*C+(D-E)/F+G$$

- (ii) Write an algorithm to add an element in a circular queue.

Contd...

11. Differentiate the operation of adding an element at the end of a single and double linked list.
12. Write the algorithm to traverse the given using DFS and BFS (start – A)



13. Write and illustrate the merge sort algorithm with an example and find the complexity.
