

Code: 15A05201

R15

B.Tech II Year I Semester (R15) Supplementary Examinations June 2017

DATA STRUCTURES

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What is the use of a header node?
 - (b) Why cursor implementation of linked list is used?
 - (c) What are the applications of queue?
 - (d) Write the algorithm for balancing symbols.
 - (e) What are the two methods of binary tree implementation?
 - (f) Explain briefly about prim's algorithm.
 - (g) What is radix sort?
 - (h) Define polyphase merge.
 - (i) Write the code for hash function.
 - (j) Write general method of divide and conquer.

PART - B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT - I

- 2 (a) Explain the operations and implementation of list ADT.
(b) Give a procedure to convert an infix expression $a+b*c+(d*e+f)*g$ to postfix notation.

OR

- 3 Explain briefly about various types of linked lists with suitable examples.

UNIT - II

- 4 (a) Compare the representation of stacks using linked list than arrays.
(b) List out the basic operations that can be performed on a stack.

OR

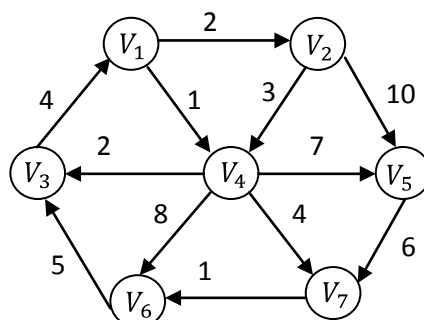
- 5 What is a queue? Write an algorithm to implement queue with an example.

UNIT - III

- 6 Explain heap structures. How are binary heaps implemented? Give its algorithm with example.

OR

- 7 Explain Dijkstra's algorithm using the following graph. Find the shortest path between V_1 to $V_2, V_3, V_4, V_5, V_6, V_7$.



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R15**UNIT - IV**

- 8 (a) Write a program to explain bubble sort. Which type of technique does it belong?
(b) What is the worst case and best case time complexity of bubble sort?

OR

- 9 (a) Demonstrate the selection sort results for each pass for the following initial array of elements. 21 6 3 57 13 9 14 18 2.
(b) Explain the algorithm for selection sort and give a suitable example.

UNIT - V

- 10 Write and explain linear search procedure or algorithm with a suitable example.

OR

- 11 Write a program that searches a value in a stored array using non recursive binary search.

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