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Question Paper Code : 10318

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2012.

Third Semester

Electrical and Electronics Engineering

EE 2204/131304/EE 36/10133 EE 306/080300003 — DATA STRUCTURES
AND ALGORITHMS

(Common to Electronics and Instrumentation Engineering and Instrumentation and
Control Engineering)

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are cursor based lists?
2. Give any two applications of stack.
3. Perform preorder, inorder and postorder traversal on the following tree structure.



4. Convert the expression $((a+b)+c*(d+e)+f)*(g+h)$ to a prefix expression.
5. What is the need for height balanced trees?
6. What is meant by collisions while hashing the data structures?
7. Define digraph.
8. How breadth first search and depth first search is implemented on a computer?
9. What are the drawbacks of greedy algorithms?
10. Which performance measures are used to analyse an algorithm?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the different types of linked lists and its implementation.

Or

(b) What are the different operations that can be performed in a queue? Explain in detail.

12. (a) Formulate 14 different all possible binary tree structures that can be constructed with just 4 nodes.

Or

(b) Formulate a binary search tree with the following data and sort the same using tree traversal technique 8, 15, 11, 22, 7, 18, 3, 14, 12, 1.

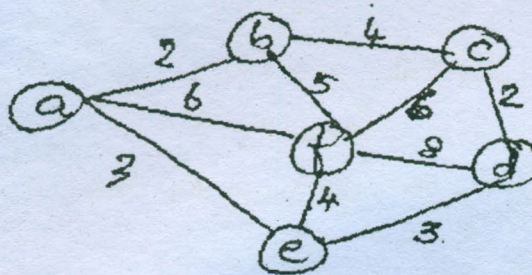
13. (a) Explain the different types of AVL rotations with an example.

Or

(b) What are the different methods to avoid collision while hashing?

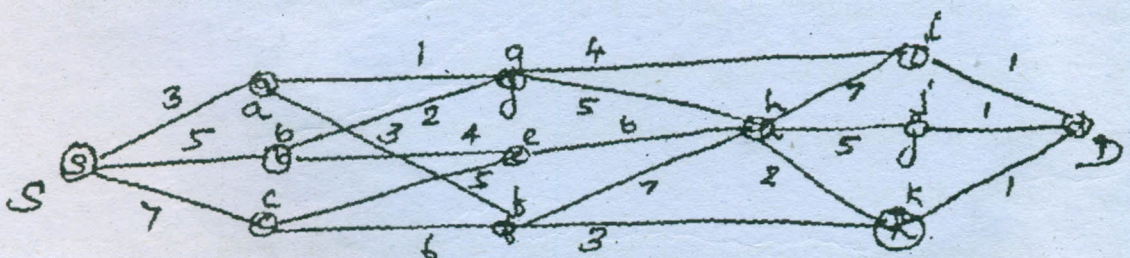
14. (a) (i) What is meant by minimum spanning tree?

(ii) Apply prim's algorithm to find the minimum spanning tree in the following graph. (2 + 14)



Or

(b) Explain Dijkstra's shortest path finding algorithm with the following graph to travel from S to D.



15. (a) (i) Explain backtracking algorithm with an example.
(ii) How the drawbacks of backtracking algorithm is overcome in branch and bound algorithm? (14 + 2)

Or

- (b) Write short notes on :
(i) NP complete problem
(ii) Asymptotic notations. (8 + 8)
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