R17

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M. Tech I Semester Examinations, October/November - 2020
ADVANCED ALGORITHMS
**(Computer Science)**

Time: 2 hours   **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
- - -

1.   Solve x(n) = x(n -1) + 5 for n > 1, x(1) = 0 using Recurrence method and master theorem method.   [15]

2.a) Solve the following recurrence relation by using substitution method
      $T(n) = 7T\left(\frac{n}{2}\right) + 18n^2$ and n is a power of 2.

  b) Explain the role of algorithms in computing.   [8+7]

3.   Suppose the following list of numbers is inserted in order into an empty binary search tree: 45, 32, 90, 34, 68, 72, 15, 24, 30, 66, 11, 50, 10
      a) Construct the binary search tree.
      b) Find the in-order, pre-order and post-order traversal of BST created.   [7+8]

4.   Insert the following list of elements into the hash table by using quadratic probing (size of hash table 10)
              5, 26, 55, 10, 14, 86, 72   [15]

5.   Using Dynamic programming explain how longest common subsequence is performed in dynamic programming technique.   [15]

6.   Explain how optimal solutions are obtained using greedy methods with an example.
                                                                       [15]

7.   Find the minimum spanning tree for the following graph using prim's and Krushkal's algorithm.   [15]
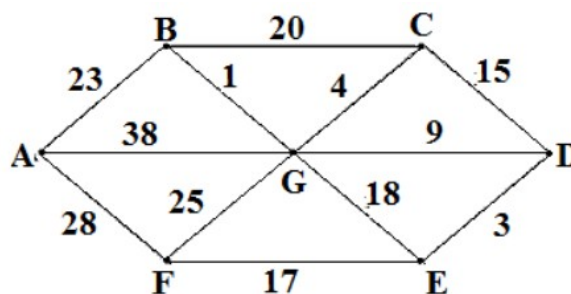
8.   Write an approximation algorithm to solve Sum of Subset problem.   [15]

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