JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
B.Tech- Semester V, Test 3 (Dec. 2017)

Course Code: 10B11CI411   **Max. Marks: 35**
Course Name: Fundamentals of Algorithm
**Course Credit: 4**   **Max. Time: 2:00 Hrs**

Attempt all questions. Carrying of mobile phones will be treated as the case of unfair means. **Each Question carries 7 marks.**

1. Define NP-class of problem. Explain, weather, P ∊ NP? Define NP-Complete problems.

2. A contiguous subsequence of a list S is a subsequence made up of consecutive elements of S. For instance, if S is 5, 15, -30, 10,-5, 40, 10, then 15, -30, 10 is a contiguous subsequence but 5, 15, 40 is not. Compute the contiguous subsequence of maximum sum using dynamic programming.

3. Find the minimum no of operations required for the chain matrix multiplication of AxBxCxD using dynamic programming.
   A: 30x40, B: 40x5, C: 5x15, D: 15x6

4. Extract MST from the following graph using Kruskal's algorithm (using disjoint set data structure).
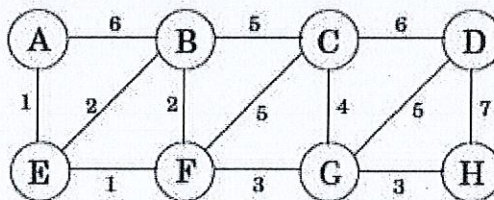
5. A subsequence is palindromic if it is the same whether read left to right or right to left. For instance, the sequence {A, C, G, T, G, T, C, A, A, A, A, T, C, G} has many palindromic subsequences, including A, C, G, C, A and A, A, A, A (on the other hand, the subsequence A, C, T is not palindromic). Devise an algorithm that takes the above sequence and returns the longest palindromic subsequence. Its running time should be O(n2).