Assignment Three

Name:	
Student Number:	

Direction:

Please answer all the questions below and hand in your answers before the due day. All work, must be handed in **on time**.

Due day:

June. 14, 2021

Questions:

1. Consider two teams, A and B , playing a series of games until one of the teams wins n games. Assume that the probability of A winning a game is the same for each game and equal to p, and the probability of A losing a game is $q = 1 - p$ (Hence, there are no ties.) Let $P(i, j)$ be the probability of A winning the series if A needs i more games to win the series and B needs j more games to win the series.

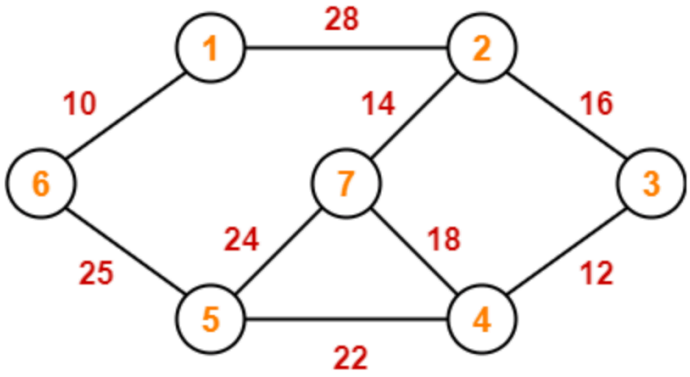
   a. Set up a recurrence relation for $P(i, j)$ that can be used by a dynamic programming algorithm.

   b. Find the probability of team A winning a seven-game series if the probability of it winning a game is 0.4.

   c. Write pseudocode of the dynamic programming algorithm for solving this problem and determine its time and space efficiencies.

2. Construct the minimum spanning tree (MST) for the given graph and calculate the cost of MST.

   a. Using Prim's Algorithm



   b. Using Kruskal's algorithm