**Lab Assignment 11**

**(Week 7 – Lab A / Lab B)**

**Q1.** In Figure 1, you have been given a weighted graph. It is desired to find out the minimum cost required to traverse from Node A to Node P. Write a program to perform the desired task. Also discuss the list of data structures used to perform the desired task.



**Q2.** Find out the Minimum Spanning Tree of the weighted graph given in Fig. 1 using Kruskal’s algorithm and Prim’s algorithm. Write a program to perform the desired task. Also discuss the list of data structures used to perform the desired task. Evaluate the performances of both approaches (Prim’s and Kruskal’s) in finding the MST.

**Q3.** Besides Minimum Spanning Tree (MST), it is also desired to find out the second MST (i.e. the next best MST). Write a program to perform the desired task and obtain the second MST in the graph of Fig 1.

**Q4.** For a given weighted graph G = {V, E}, let us consider that we already computed the MST for G and represented as T. Now consider that an edge in the given Graph, G is **removed / deleted**. Call this graph as G’. Now, there can be two possibilities, either T is still the MST or T may not be the MST. It is now needed to identify the MST (either T or T’, where T’ is the new MST) without starting from the scratch. Write a program to perform the desired task and obtain the T / T’ in the graph of Fig 1 (where you delete edge HK after finding T).