Your Name:_____Your Entry Number: _____.
Your group/sub-group number: :_____Your lab TA name:_____.

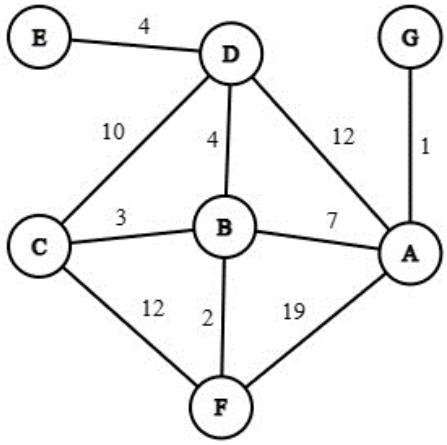
COL106, Quiz 5

Q1. (a) Let s(k) be the number of nodes in a binomail tree of order k, and let r(k) be the rank, i.e., the number of children of root in a binomial tree of order k. Write down the formula for s(k) and r(k).

(b) Draw a heap-ordered binomial tree of order 4. Label the nodes with numbers from 1 to s(k) such that the heap order is preserved.

Q2. Consider the following undirected graph.

We want to run Prim's algorithm beginning with vertex G to determine the minimum spanning tree (MST) for this graph. Update the entries in the following table to indicate running of the Prim's MST alogrithm. Add new entries in the table as the algorithm progresses. The initial values for the lables are given to you below in the table. For every step, list the vertices and edges as they are added to the current tree along with the cost of the current tree.



Vertices in the set U	Egdes in the current tree	Cost of the current tree	(Vertex(v), Label (D(v)) in the heap
{G}	{}	0	(A, 1) (B, ∞), (C, ∞), (D, ∞), (E, ∞), (F, ∞)