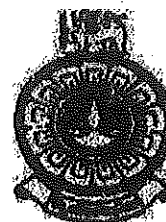The Open University of Sri Lanka

B.Sc/B.Ed Degree Programme

Applied Mathematics – Level 05

ADU5308 – Graph Theory

CAT I – Open Book Test - 2021/2022

DURATION: ONE HOUR
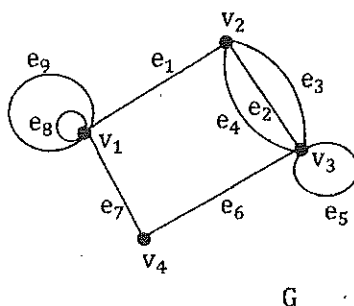
Date: 07.01.2023   **Time: 4.00p.m. – 5.00p.m.**

ANSWER **ALL** QUESTIONS.
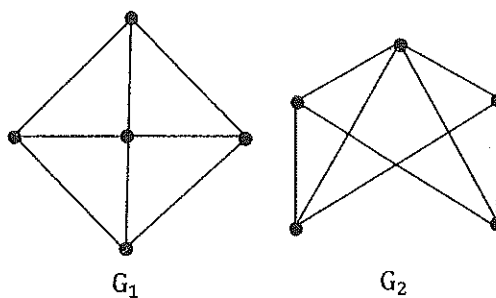
1.

     a) Write down the *adjacency list, incidence matrix* and *adjacency matrix* corresponding to the following graph G.
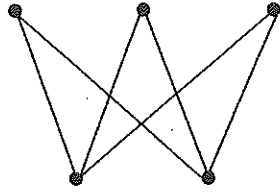

G

     b) Determine whether the following pairs of graphs are isomorphic. Justify your answer.
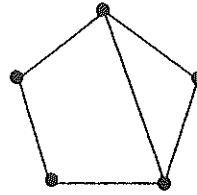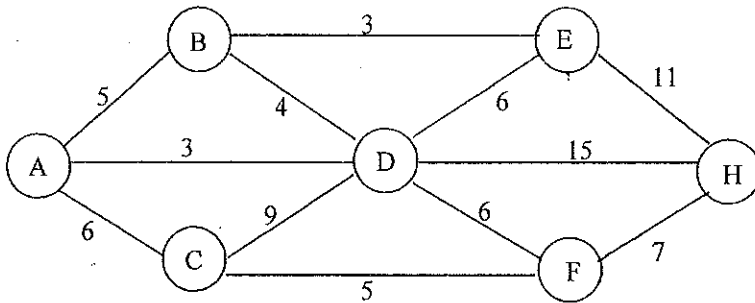
        i.

G_1 G_2

ii.

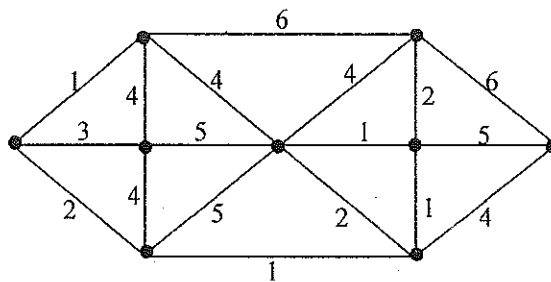G_3 G_4

2.

a) Use the *Dijikstra's algorithm* to find the shortest path from A to H for the following graph G.

G

b) Use an alternating method to verify your result that you obtained in part (a).

c) Use *Kruskal's Greedy algorithm* to find the minimum weighted spanning tree of the following graph G.

G