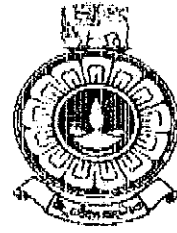


The Open University of Sri Lanka
 B.Sc/ B.Ed Degree Programme
 Applied Mathematics – Level 05
 ADU5308 – Graph Theory
 CAT 2 – No Book Test - 2024/2025



DURATION: ONE HOUR

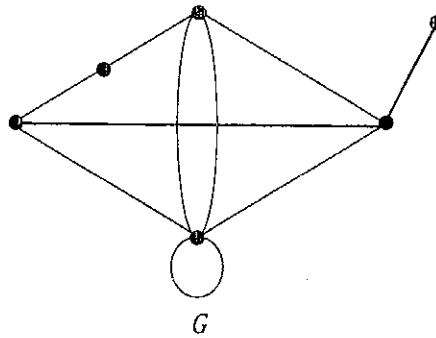
Date: 20.03.2025

Time: 4.00 p.m. – 5.00 p.m.

ANSWER ALL QUESTIONS.

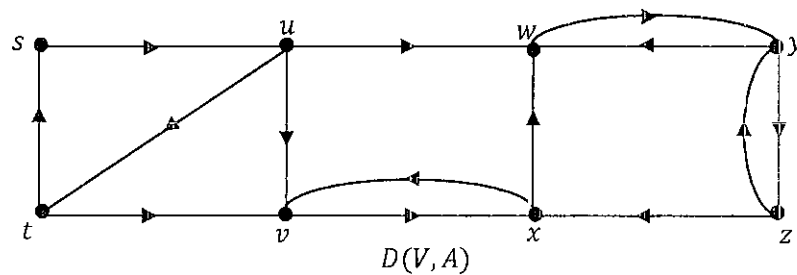
1.

a) Draw the dual of the planar representation of the following graph G .



[20 marks]

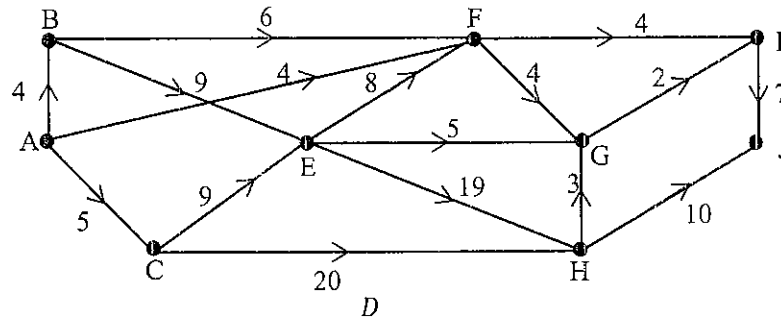
b) Consider the following digraph $D(V, A)$.



- Find $d(s, a)$ for all $a \in V$
- Find $d(a, z)$ for all $a \in V$.
- Determine whether the following graph is strongly connected or not.

[20 marks]

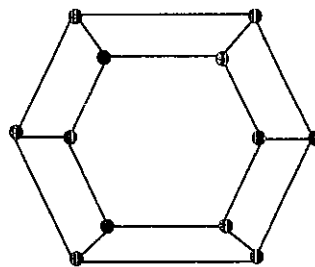
2. Let D be a digraph which represents a construction of a complete shopping complex, where A and J respectively represent the beginning and the completion of the construction.



Using the *critical path problem* technique, find the minimum time required to build the shopping complex completely.

[30 marks]

3. Find the *Chromatic Number* and the *Chromatic Index* for the given graph G .



G

Using map coloring determines whether the given graph G is *Eulerian* or not.

[30 marks]
