

The Open University of Sri Lanka
B.Sc/B.Ed Degree Programme
Applied Mathematics – Level 05
ADU5308 – Graph Theory
CAT 2 – Home Assignment 2 - 2021/2022



DURATION: ONE HOUR

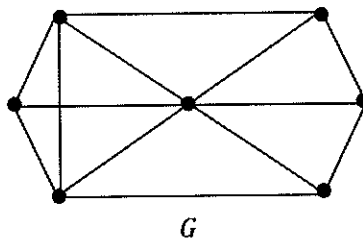
Submission deadline: on or before 29.01.2023 at 11.45 a.m.

ANSWER ALL QUESTIONS.

1.

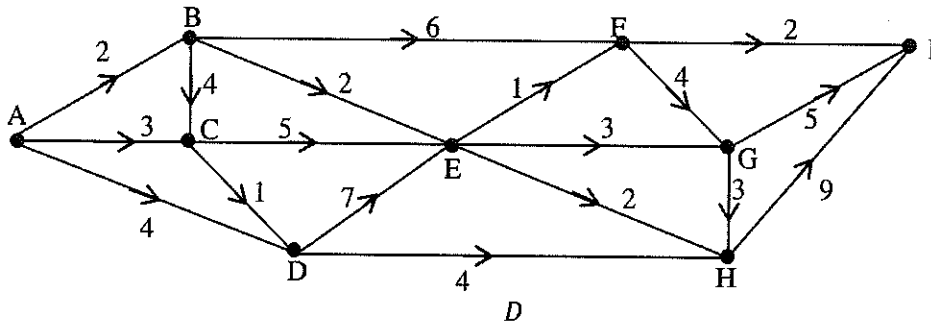
- a) Determine whether the complete bipartite graph $K_{3,4}$ planar. Justify your answer.
- b)
 - i. Draw the dual of the planar representation of $K_{2,3}$.
 - ii. Is $K_{2,3}$ self- dual? Justify your answer.

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



Verify the *Four-color Theorem* for the graph G .

3. Let D be a digraph which represents a construction of a complete shopping complex. Where A represents the beginning of the construction and I represents the completion of the construction.



- Using the critical path, find the minimum time that required to build the shopping complex completely.
- Is the digraph D is strongly connected? Justify your answer.
