

Unit 6 - Week 5: Graph Theory-II

Course outline

How to access the portal

Week 1: Mathematical Logic

Week 2: Mathematical Logic

Week 3: Mathematical Logic And Set Theory

Week 4: Graph Theory

Week 5: Graph Theory-II

Lec 1: Bipartite Graphs; Edge Coloring and Matching

Lec 2: Planar Graphs

Lec 3: Graph Searching; BFS and DFS

Lec 4: Network Flows

Lec 5: Counting Spanning Trees in Complete Graphs

Quiz : Assignment 5

Feedback form

Week 6: Set Theory & Number Theory

Week 7: Set Theory & Number Theory

Week 8: Combinatorics

Week 9: Combinatorics

Live Session-1

Week 10: Number Theory

Live Session-2

Week 11: Algebra

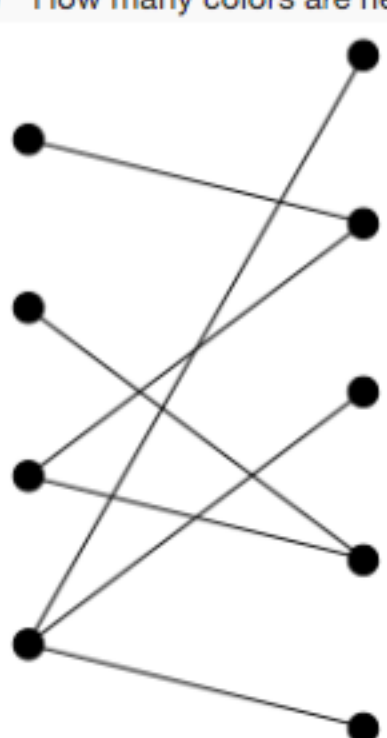
Week 12: Algebra-II

Assignment 5

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-09-04, 23:59 IST.

1) How many colors are needed to edge color the following graph? 4 points

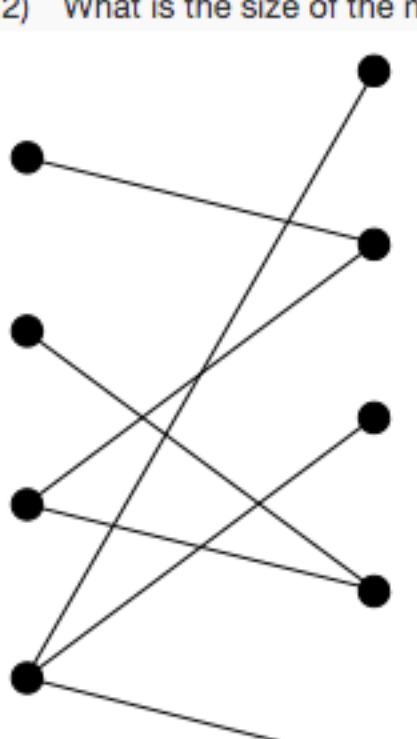


- 3
 2
 4
 5

No, the answer is incorrect. Score: 0

Accepted Answers: 3

2) What is the size of the maximum matching in the following graph? 4 points



- 4
 2
 3
 5

No, the answer is incorrect. Score: 0

Accepted Answers: 4

3) Which of the graphs given below are planar? 4 points

- K_4
 $K_{4,5}$
 $K_{3,4}$
 $K_{2,10}$

No, the answer is incorrect. Score: 0

Accepted Answers: K_4
 $K_{2,10}$

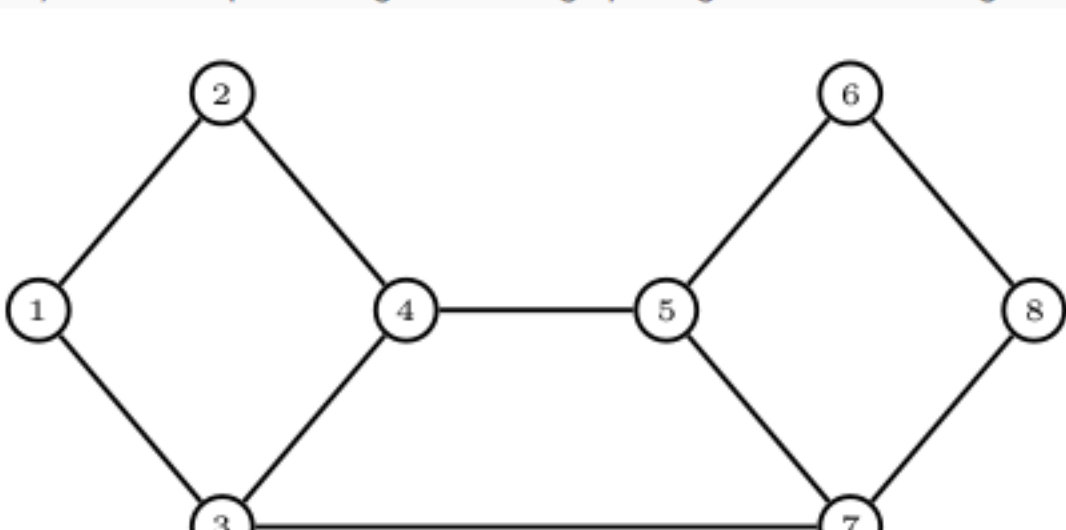
4) Let G be a planar graph in which every cycle contains at least 6 edges. If G has 10 vertices, what is the maximum number of edges that can be there in G ? 4 points

- 12
 13
 11
 14

No, the answer is incorrect. Score: 0

Accepted Answers: 12

5) Consider performing a BFS the graph G given below starting at vertex 1. Which of the following sequences could be a BFS order? 4 points

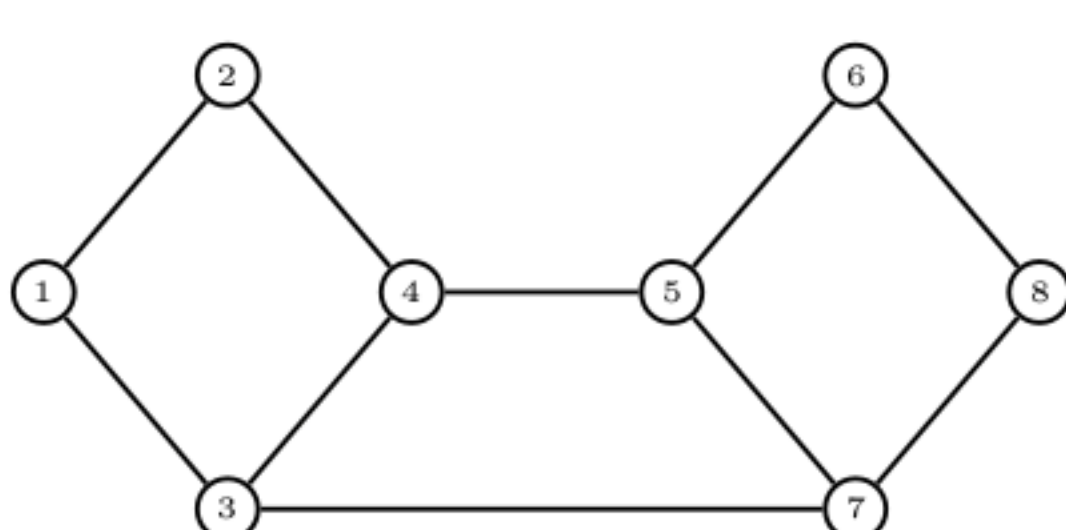


- {1,3,2,4,7,5,8,6}
 {1,2,3,4,5,6,7,8}
 {1,2,4,5,6,8,7,3}
 {1,2,3,4,7,8,5,6}

No, the answer is incorrect. Score: 0

Accepted Answers: {1,3,2,4,7,5,8,6}
{1,2,3,4,7,8,5,6}

6) Consider performing a DFS the graph G given below starting at vertex 1. Which of the following sequences could be a DFS order? 4 points

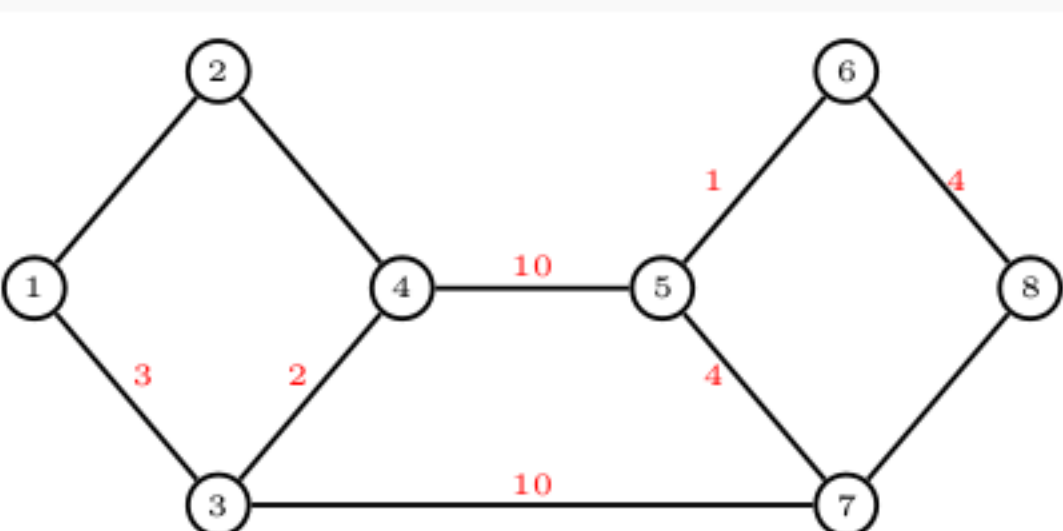


- {1,3,2,4,7,5,8,6}
 {1,2,3,4,5,6,7,8}
 {1,2,4,5,6,8,7,3}
 {1,3,7,8,6,5,4,2}

No, the answer is incorrect. Score: 0

Accepted Answers: {1,2,4,5,6,8,7,3}
{1,3,7,8,6,5,4,2}

7) Consider the capacitated graph G given below. Note that the capacities of certain edges have been left out. The values indicated in red color are the capacities of the corresponding edges. Assume that the missing capacities are non negative (could be zero as well). Which of the following statements are true? 4 points



- The max flow from 1 to 8 is at most 15.
 The max flow from 1 to 8 could be 20.
 The max flow from 1 to 8 is at least 1.
 The max flow from 1 to 8 is at least 2.

No, the answer is incorrect. Score: 0

Accepted Answers: The max flow from 1 to 8 is at most 15.
The max flow from 1 to 8 is at least 1.

8) Consider the sequence $S = 1, 2, 1, 2, 4, 4$. Let S be the Prufer code corresponding to some tree T . What is the degree of the vertex 2 in T ? 4 points

- 3
 2
 4
 1

No, the answer is incorrect. Score: 0

Accepted Answers: 3

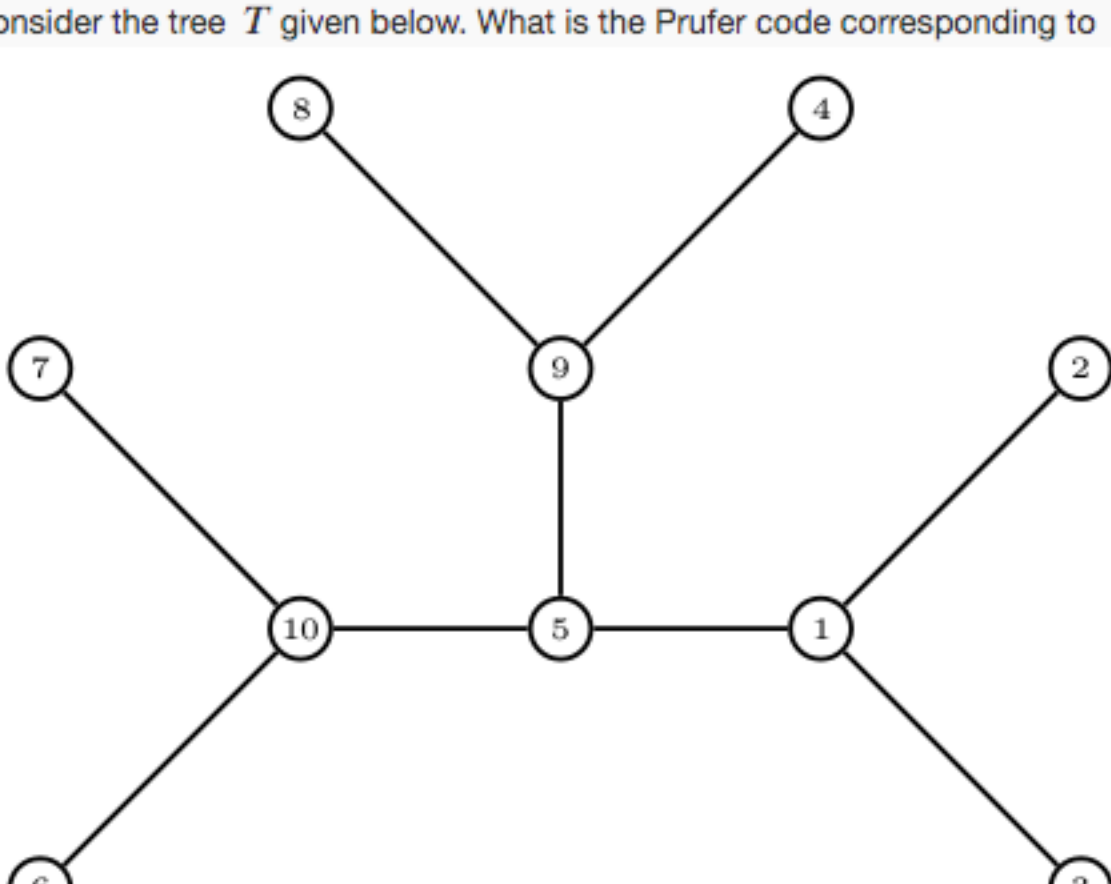
9) How many spanning trees does K_6 have? 4 points

- 1296
 216
 7776
 40966

No, the answer is incorrect. Score: 0

Accepted Answers: 1296

10) Consider the tree T given below. What is the Prufer code corresponding to T ? 4 points



- {1,1,5,9,10,9,5}
 {2,3,1,4,6,7,8,9}
 {9,8,7,6,4,1,3,2}
 {5,9,10,10,9,5,1,1}

No, the answer is incorrect. Score: 0

Accepted Answers: {1,1,5,9,10,9,5}