

Unit 6 - Week 4

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Lecture 7 Part 1 - Maximum Matching in Bipartite Graph

Lecture 7 Part 2 - Maximum Matching in Bipartite Graph

Lecture 8 Part 1 - Hall's Theorem and Konig's Theorem

Lecture 8 Part 2 - Hall's Theorem and Konig's Theorem

Lecture 9 Part 1 - Independent Set and Edge Cover

Lecture 9 Part 2 - Independent Set and Edge Cover

Week 4 Lecture materials

Quiz : Week 4 Practice Assignment

Quiz : Assignment 4

Week 4 Feedback : Graph Theory

Assignment 4 solutions

Week 5

Week 6

Week 7

Week 8

Download Videos

Assignment 4

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

Due on 2020-02-26, 23:59 IST.

1) Let $G = (V, E)$ be a bipartite graph. Then the size of maximum matching in G is at least

1 point

- $\frac{|V(G)|}{2}$
- $\Delta(G) + 1$
- $\frac{|E(G)|}{\Delta(G)}$

No, the answer is incorrect. Score: 0

Accepted Answers: $\frac{|E(G)|}{\Delta(G)}$

2) Let T be a tree with n nodes and k be the size of maximum independent set in T . Then the size of maximum matching in T is

1 point

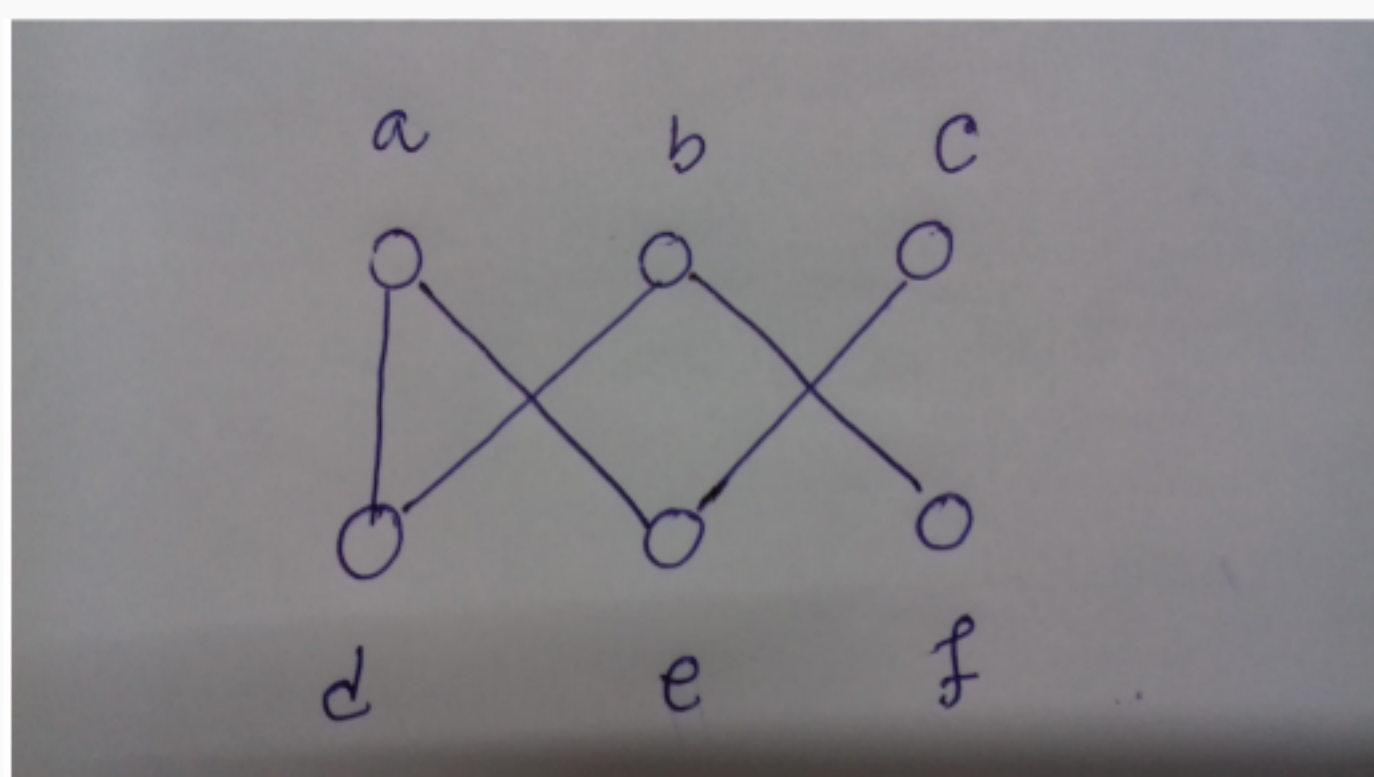
- $n - 1 - k$
- k
- $n - k$
- $k - 1$

No, the answer is incorrect. Score: 0

Accepted Answers: $n - k$

3) Consider the bipartite graph shown below.

1 point



Suppose the current matching $M = \{(c, e), (a, d)\}$. Does there exist an augmenting path with respect to M ?

- Yes
- No

No, the answer is incorrect. Score: 0

Accepted Answers: Yes

4) Consider the graph shown in Problem 3. What is the size of maximum matching in G

1 point

- 2
- 3

No, the answer is incorrect. Score: 0

Accepted Answers: 3

5) Consider the graph shown in Problem 3. What is the size of maximal matching in G containing (b, d) .

1 point

- 2
- 3

No, the answer is incorrect. Score: 0

Accepted Answers: 2

6) Let $m(G)$ denote the size of maximum matching in graph G . Then every maximal matching in graph G has at least

1 point

- $m(G) - 1$ edges
- $m(G) - 2$ edges
- $\frac{m(G)}{2}$ edges

No, the answer is incorrect. Score: 0

Accepted Answers: $\frac{m(G)}{2}$ edges

7) Let G be a graph with n nodes. The size of maximum independent set in G is always greater than equal to

1 point

- $\frac{n}{1 + \Delta(G)}$
- $\frac{n}{\Delta(G)}$
- $\frac{n}{\Delta(G) - 1}$
- $\Delta(G) + 1$

No, the answer is incorrect. Score: 0

Accepted Answers: $\frac{n}{1 + \Delta(G)}$

8) Let G be a bipartite graph without isolated vertices. Then the size of minimum edge cover in G is equal to

1 point

- the size of minimum vertex cover in G
- the size of maximum matching in G
- the size of maximum independent set in G

No, the answer is incorrect. Score: 0

Accepted Answers: the size of maximum independent set in G