

Course outline

How does an NPTEL online course work?

Week 0

Week 1

Week 2

Week 3

Week 4

Week 5

- Lecture 9: Undirected Graph Connectivity in randomized logspace.

- Lecture 10: Graph Expansion Properties.

- Lecture 11: Expanders

- Quiz : Assignment 5**

- Assignment 5 Solution

- Feedback for Week 5

Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

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Assignment 5

The due date for submitting this assignment has passed.

Due on 2021-02-24, 23:59 IST.

As per our records you have not submitted this assignment.

- 1) Let S and T be symmetric stochastic matrices of graph G and G' . Further let $\lambda(\cdot)$ be the second-largest eigenvalue function. Then which of the following options are true?

1 point

- $\lambda(S^\ell) = \lambda(S)^\ell$
- $\lambda(S + T) \leq \lambda(S) + \lambda(T)$
- $\lambda(S + T) \geq \lambda(S) + \lambda(T)$
- Both option (a) and (b) are true.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both option (a) and (b) are true.

- 2) Let G be a graph with two distinct eigen values. Then which of the following option will certainly hold true?

1 point

- G is a complete graph.
- G is not complete but has a clique.
- G is a bipartite graph.
- Given information is not enough to make any meaningful deduction.

No, the answer is incorrect.
Score: 0

Accepted Answers:
 G is a complete graph.

- 3) For a non-negative random variable X , and $a > 0$. What is the probability of $X \geq a$?

1 point

- 0
- $O(1/a)$
- $O(1 - 1/a)$
- 1

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $O(1/a)$

- 4) Let $\lambda(\cdot)$ be the second-largest eigenvalue function. Which of the following options define the Spectral Gap of graph G ?

1 point

- $\lambda(G)$
- $1 - \lambda(G)$
- $1/\lambda(G)$
- $\sqrt{\lambda(G)}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $1 - \lambda(G)$

- 5) Let $f(x)$ be any nonzero polynomial in $Z_5[x]$. If $f(2)=0$ then which of the following MUST be true?

1 point

- $f(6) = 0$
- $f(9) = 0$
- $f(8) = 0$
- $f(7) = 0$

No, the answer is incorrect.
Score: 0

Accepted Answers:
 $f(7) = 0$