Assignment 7

The due date for submitting this assignment has passed.

Due on 2021-03-10, 23:59 IST.

As per our records you have not submitted this assignment.

1) Suppose, we have two graphs G and G' such that the largest eigen value of G is a while the largest eigen value of the Zig-zag product of G and G' is c. What can we say about the upper-bound on the largest eigen value of G'? ***1 point***

- $-1 + (1 + a - c)^{1/2}$
- $-1 - (1 + a - c)^{1/2}$
- $-1 + (1 - a + c)^{1/2}$
- $-1 - (1 - a + c)^{1/2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$-1 + (1 - a + c)^{1/2}$

2) If A is an n*n matrix with nonnegative entries and all row sums equal to r. Then which of the following statements is true? ***1 point***

- the largest eigen value can be at most r
- the largest eigen value can be at least r
- the second largest eigen value can be at least r
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
the largest eigen value can be at most r

3) Here are two statements about product of graphs. ***1 point***

A1: Tensor product reduces the degree
A2: Replacement product reduces the degree
A3: Matrix product preserves the spectral gap.

Then which of the following options is true?

- A1 and A2 are correct while A3 is wrong
- A1 and A3 are correct while A2 is wrong
- A2 and A3 are wrong while A1 is correct
- A1 and A3 are wrong while A2 is correct.

No, the answer is incorrect.
Score: 0

Accepted Answers:
A1 and A3 are wrong while A2 is correct.

4) Here are two statements ***1 point***

A1: Zig-zag product of two stochastic matrices must be stochastic.
A2: Tensor product of two stochastic matrices must be stochastic.

- A1 is false while A2 is true
- Both A1 and A2 are true
- Both A1 and A2 are false
- A1 is true while A2 is false

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both A1 and A2 are true