Assignment 6

The due date for submitting this assignment has passed.

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

As per our records you have not submitted this assignment.

1) Recall the definition of expander. A graph G (V,E) is called a (n,d,p)-edge expander if G is a n-vertex, d-regular graph such that for all subsets S of V with at most n/2 many vertices, and E(S,T) is at least pd|S| where T is the complement set of S in V and E(S,T) denotes the set of edges such that for (s,t) in E(S,T), s is in S and t is in T. If a is the second largest eigen value, then what is the relation between a and p? ***1 point***

- a is at most 2p
- 1- a is at most 2p
- p is at most 2(1-a)
- p is at most (1-a)/2

No, the answer is incorrect.
Score: 0

Accepted Answers:
1- a is at most 2p

2) Let G be a 3-regular graph with n vertices. Then, which of the following statements must be true. ***1 point***

- there exists a partition of V(G), as V and V' so that the number of edges in G with one endpoint in V and one endpoint in V' is at least n.
- there exists a partition of V(G), as V and V' so that the number of edges in G with one endpoint in V and one endpoint in V' is at most n.
- there exists a partition of V(G), as V and V' so that the number of edges in G with one endpoint in V and one endpoint in V' is at most n+1
- there exists a partition of V(G), as V and V' so that the number of edges in G with one endpoint in V and one endpoint in V' is at least n+1.

No, the answer is incorrect.
Score: 0

Accepted Answers:
there exists a partition of V(G), as V and V' so that the number of edges in G with one endpoint in V and one endpoint in V' is at least n.

3) Suppose A is an invertible square matrix. What can be said about the eigenvalues of A? ***1 point***

- Sum of the eigenvalues is zero
- Product of eigenvalues is non zero
- One of the eigenvalues is zero
- Sum of the eigenvalues is at least the dimension of A

No, the answer is incorrect.
Score: 0

Accepted Answers:
Product of eigenvalues is non zero

4) Recall the binary entropy function H(p)= - p log p - (1-p) log (1-p), for p in (0,1). For what value of p, does H(p) gets the minimum value? ***1 point***

- p=0
- p=1/2
- p=1
- both (1) and (3)

No, the answer is incorrect.
Score: 0

Accepted Answers:
both (1) and (3)