

18EE35014

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Q1

(A)

As the most of the nodes are present in a single connected component, and in A,

for component size $\geq 1c+0s$, no. of components should be \leq very low and that is 1 in A.

Also, in other options, for size greater than $1c+0s$, there are multiple components which shouldn't be so as there is only one component with $\approx 99.9\%$ nodes.

Q2

(C)

Since the network exhibits low reciprocity among users, we cannot comment about degree of separation, as. for ex- for Youtube, reciprocity is low, but degree of separation is high. but for Twitter, degree of sep. is high.

Q3. for C,

$$\text{Number of neighbour pairs} = 4_{C_2} = 6$$

$$\text{Number of connected pairs} = 2$$

(C-D, D-H)

$$\text{So, clustering coeff of C} = \frac{2}{6} = \frac{1}{3}$$

for D,

$$\text{No. of neighbour pairs} = 4_{C_2} = 6$$

$$\text{No. of connected pairs} = 3$$

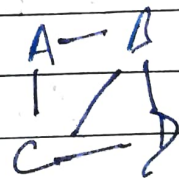
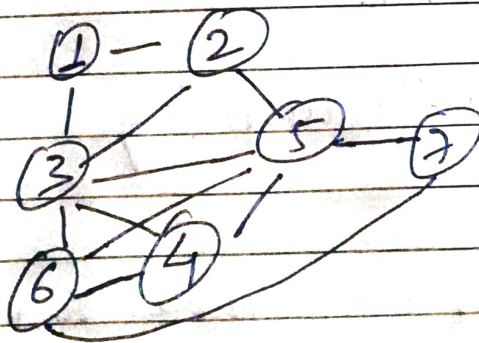
(B-E, B-C, C-H)

$$\text{So, clustering coeff of D} = \frac{3}{6} = \frac{1}{2}$$

Q4.

U

V



Unweighted projection network.

Q5. (1) \rightarrow (a), (b)

(2) \rightarrow (1), (9).

Q 6.

I will pick node (7) as it has maximum degree. ~~So, it is~~

It is connected with almost every nodes & remaining nodes are connected to its neighbours. Almost in 2 steps, the message can reach every node.

Q7,

The degree of every node in a complete graph is $(n-1)$.

Also, from the ~~leftmost~~ ~~extreme~~ formula, we can see that.

And from the definition of assortativity, & high degree of nodes, assortativity degree = 1.