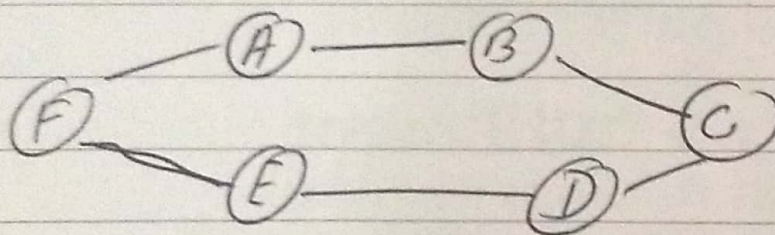


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Assignment 2

12.5

1a) An example of a graph in which every node is pivotal for at least one pair of nodes.



Node A is pivotal of node B and node F

Node B is pivotal of node A and node C

Node C is pivotal of node D and node B

Node D is pivotal of node C and node E

Node E is pivotal of node D and node F

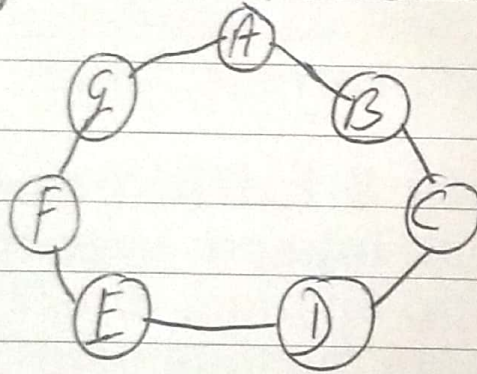
Node F is pivotal of node E and node A

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Assignment 2

2.5

16) In the graph every node is pivotal for atleast two pairs of nodes



A is pivotal for pair B and G & pair C and F
B is pivotal for pair C and A & pair D and G
C is pivotal for pair B and D & pair A and E
D is pivotal for pair C and E & pair B and F
E is pivotal for pair D and F & pair C and G
F is pivotal for pair E and G & pair D and A
G is pivotal for pair A and F & pair B and E

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GRAPHIC SOLUTIONS

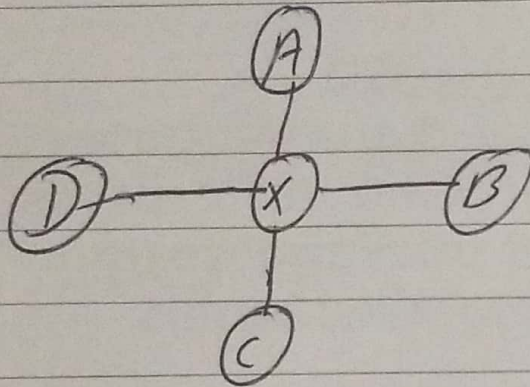
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Assignment 2

12.5

1 c)



Here every pair is pivotal pair for X

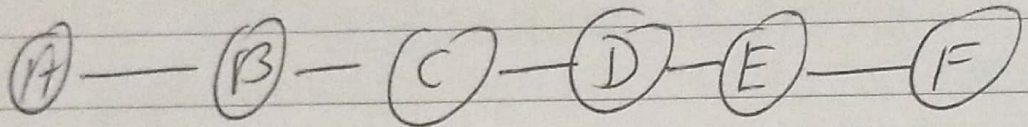
X is pivotal for (A) & (B)
X is pivotal for (A) & (C)
X is pivotal for (A) & (D)
X is pivotal for (B) & (C)
X is pivotal for (B) & (D)
X is pivotal for (C) & (D)

ACTA

125

2

a)



B, C, D and E are gatekeepers.

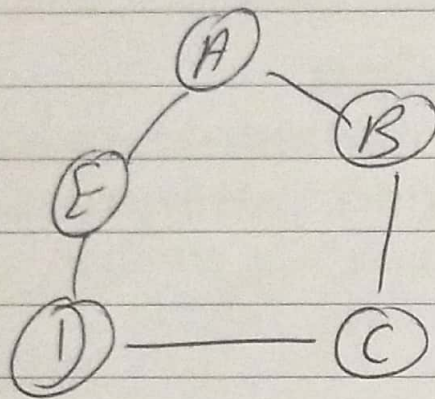
A and F are connected to B.

So to ~~travel~~ gatekeepers are needed
f

So from one node to another B to D, C is traversed and similarly other gatekeepers

Any line graph with 5 or more than 5 nodes would have more than half of all nodes as gatekeeper nodes.

12.5
2 (6)



Here A, B, C, D, E all nodes are local gatekeepers but not gatekeeper.

So nodes B and E are next to A but there is available path that can be used. It is not required to use an A.

Similarly there are neighbouring nodes that are local gatekeeper but not gatekeeper.

So cyclic graphs with 4 or more than 4 nodes have all nodes all local gatekeeper but not a single node is gatekeeper.

Chapter 3

3.7

1) Triadic closure is said to be considered between A, B and C if there is a strong bond between ~~AB~~ A, B and A, C there is a strong or weak bond between B and C.

This triadic closure usually ~~not~~ part of very complex networks it is too extreme.

Also amongst the social networks strong triadic closure occurs.

2) It can be assumed B and C is a weak bond because if it were strong bond it would violate Strong Triadic ~~Close~~ Closure Property.

If E-C edge did not exist then node B would have strong bond with E and C same with node C and F-B edge.

[3.7] 3) Band A nodes here satisfies a strong triadic closure property. Both nodes has strong ties to two other nodes
(B to A & C) edges (A to B & D) edges
Here B and A satisfies the strong triadic closure property.

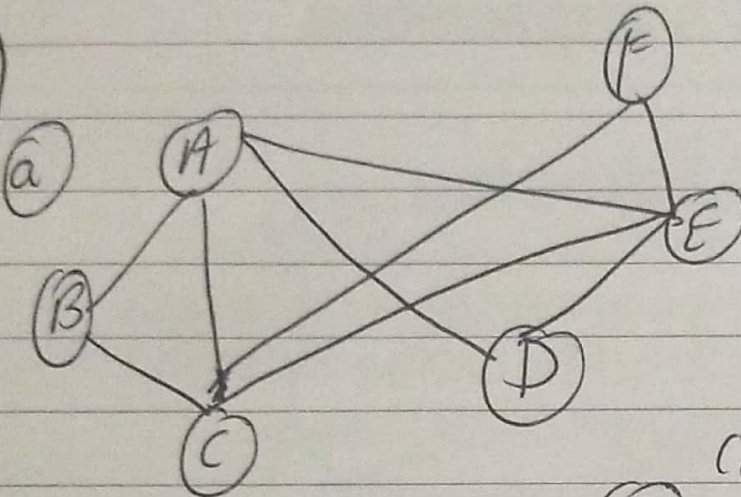
5) Nodes that satisfy strong triadic closure property is A & B

A has strong ties to B and C, and there is an edge between B and C. So, A satisfies the strong triadic closure property

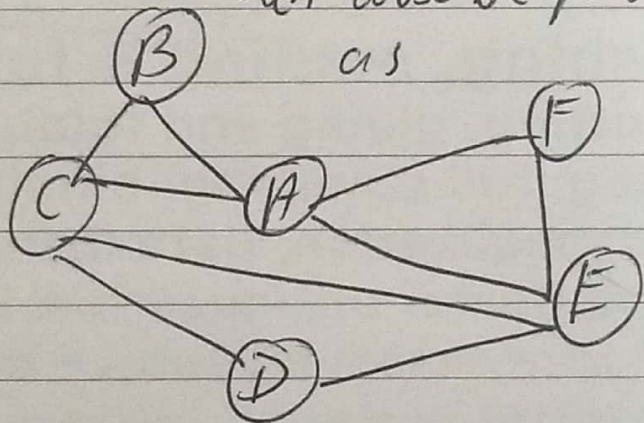
B has strong ties to A and C and there is ~~an~~ an edge between A and C. So, B satisfies triadic property.

C does not ~~even they~~ it has strong ties to B and E but there is no edge between B and E. So, C doesn't satisfy.

4.6
3)



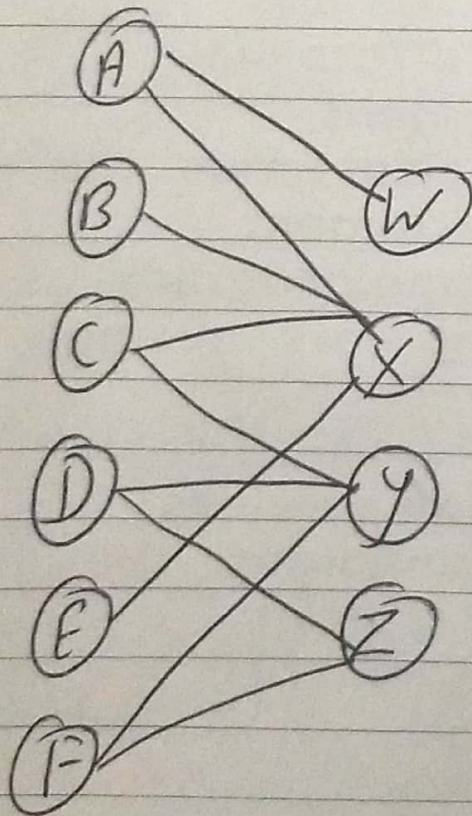
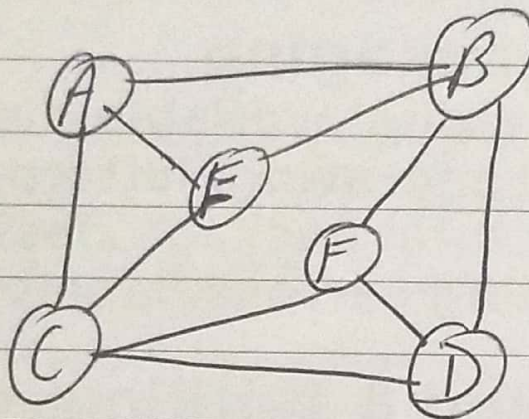
can also be presented
as



- (b) The nodes A, C, E ~~are having~~ have three relations and if the triangle IJK is formed in a projected graph it may not necessarily share same focus in corresponding affiliated network.

4.6

4) (a)



4.6

4

⑥ There are 4 triangles like ABE , AEC , CFD , BFD and here every single triangle share one focus.

Now there is no edge that joins the pair AF & AD and EF & FD so triangle consisting F and D does not share same focus and there are at least 2 foci.

Now there is no edge joining pair BC , triangle ABE cannot share same ~~two~~ focus with triangle AEC so there are at least 3 foci.

Also, there is no edge joining pair BC , triangle CFD cannot share the same focus with triangle BFD . There are at least four foci.

5.6

1) The network on 90 people is unbalanced since these villages does not satisfy condition either all nodes are friends, or else the nodes can be divided into 2 groups, X and Y such that every pair of nodes in X like each other, every nodes in Y like each other and every one in X is the enemy of everyone in Y .

This is a weakly balanced networks as its nodes can be divided into groups in such a way that every 2 nodes that belong in the same group are friends and every 2 nodes belonging to different groups are enemies.

5.6

2) This can be concluded from the image.

For positive edges

AB participates with ABD, ABE, ABC Δ s.

AC participates with ABC, ACD, ACE Δ s.

for CE ACE, BCE, DCE

DE BDE, ADE, CDE

BD ABD, CBD, EBD

For -ve edges

AD - BAD, CAD, EAD

AE DAE, BAE, CAE

BE ABE, CBE, DBE

BC ABC, DBC, EBC

CD ACD, BCD, ECD

Triangle is balance and has 1 or 3 positive edges else unbalanced.

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GRAPHIC SOLUTIONS

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Blanced

AB - ABE

AC - ACD

CE - BCE

DE - ADE

BD - CBD

AD - EAD, CAD

AE - BAE, DAE

BE - ABE, CBE

BC - DBC, EBC

CD - ACD, BCD

Unbalanced

ABD, ABC

ACB, ACE

ACE, DCE

BAD, CAD

ABD, EBD

ABD

CAE

DBE

ABC

ECD

Blanced ABE, ACD, BCE, ADE, CBD

Unbalanced: ABD, ABC, ACE, DCE, DBE, ACD