GT ASSIGNMENT 02

Bilal Ahmed Khan

25KO183 Sec. B

BUESTION OI

i) The blad clare of a free on n verlices 2n-2.

We prove that a free of n vertices. Par n-1 edges 1) For n21 the graph will have Dedge 2) For n2K, the graph vill have K-1 edges

3) For nº KH the cope will Bck, removing the vertex from the free will prove point or) Renoving any leaf grom the graph The vertices are nowk.

i). Since leaves only contribute 1 edge in loces, the total no. of edges is reduced to k-1 o "ii) Thus The total no. ob edges in a free of n vectices is n-1

From fandshaking Lemma: Total degree is twice the no. of edges.

Degre of free . 2 (No of edges)

Degree of abre = 2n-2

let or be a graph with n retrices, the K(G)=8(G) if S(G)>,n-2

We have to prove that the size of cut vertex set is equal to the minimum degree of the graph only when the minimum degree is aflest 2.

(Continu Grom rest page)

Suppose we have a goaph of on vertices where n >2, for every included graph of order 3 or more must be connected since if a & b are non adjacent, they are adjacent to every other vertex in the subgraph.

So doleting n-3 will be never.

Sufficient to disconnect the graph

Hence from a.

in let a be a graph with adjacent vertices n Eyy. Prove e(n) & cly) cliffer by at most

let max distance i.e. econtricts
of n brom all vertices be a and
eccentricity of y be b.
Since n and y are adjacent,
they are at a distance of
I from each other

Thurs, all distances Grown will be separated by a path of terythe of one from all distances from y. Hence proved that a 2 b±1

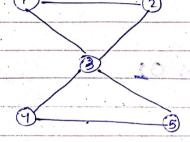
QUESTION 02

02(a)

Since all paths between graph components include the bridge, they will also include both of its endpoints. Therefore, by definition of the cut-vertex i.e. the vertex that inch ded in all paths, both end-points of the cut-vertices.

02:6)

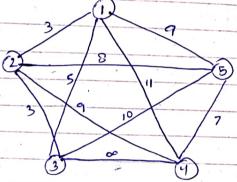
The coverse is not have, consider the Gollowing example



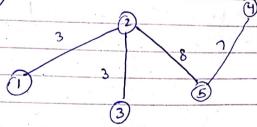
The graph has 5 verbies and 9
antivertex but lacks any bridge
because all edges are contained
in a cycle and boildges are
never included in any cycle or
cirwit.

QUESTION 03

To calculate the minimum spanning free we will use Kruskal algorithm.



The MST with the cost of 21 is given below



QUESTION 04

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QUESTZON 05

For calculating total no. of spanning trees we use the method from

geeks forgeeles, com/hotal-number-spanning-trees.

graph/

The matrix formed is.

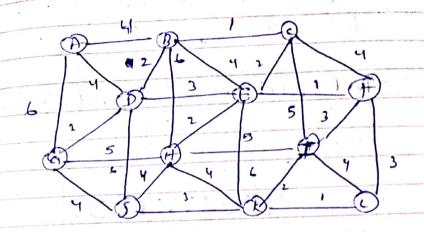
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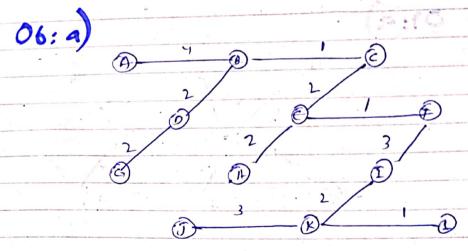
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Therefore the number of panning.

QUESTION OF





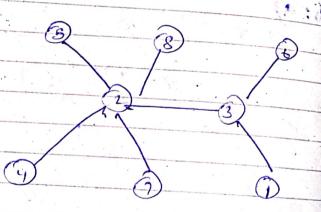
Order: Bc, ef Kl, bd, dg, ce, eh, Ki, Kj, fi, ab. 06:6)

MS7 will be some but order will be

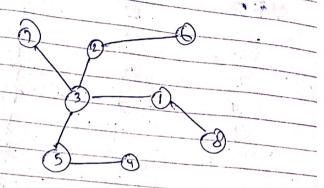
ab, bc, bd, ce, et, dg, el, fi, ik

due sizon or

01:9)

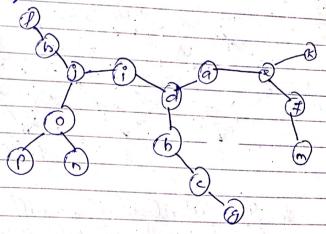


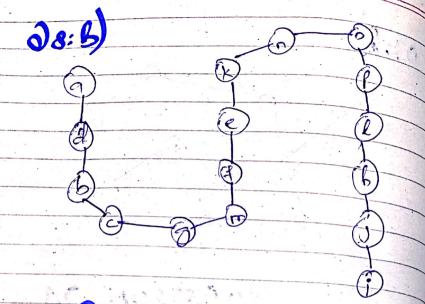
07:8)



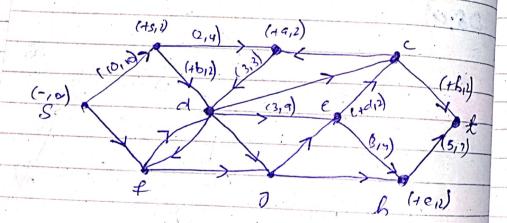
QUESTZON DO

08:4)





QUESTION 09



In the 2rd; teration we will be blocked at s. Hence only s will be labeled and a flow of 2 is pumper Total flow is 14 MIN-LUT METHOD:

Parfifson ane. P= §55 & P. ga, B, c, ole, fig. R, f3

Flow from P to P: 10+4=14.

x - x - 1 End of Assignment