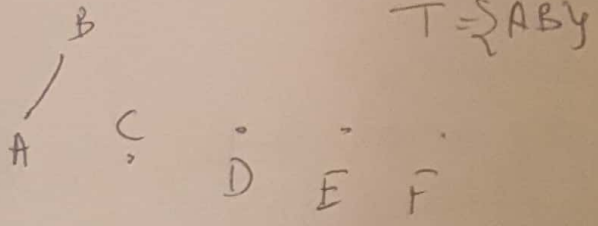
Lab 11B

1) step 1 : initialisation

sorted edges : {
AB, CD, AE, BD, EF,
AF, DF, BC, AD}

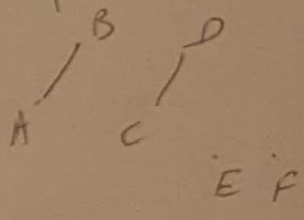
T = { }

step 2 C(A) ≠ C(B)



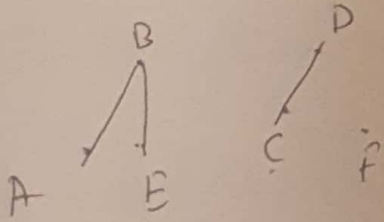
T = {AB}

step 3 : C(C) ≠ C(D)



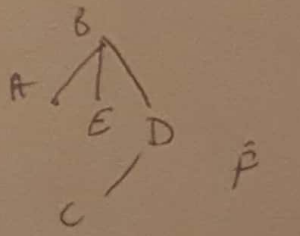
T = {AB, CD}

step 4 C(A) ≠ C(E)



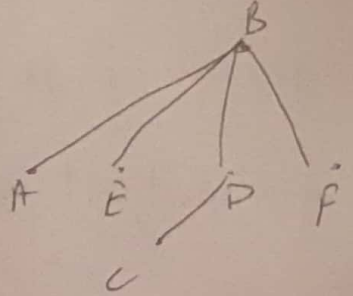
T = {AB, CD, AE}

step 5 C(B) ≠ C(D)



T = {AB, CD, AE, BD}

step 6 : C(E) ≠ C(F)

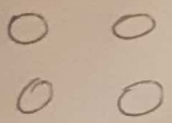


T = {AB, CD, AE, BD, EF}

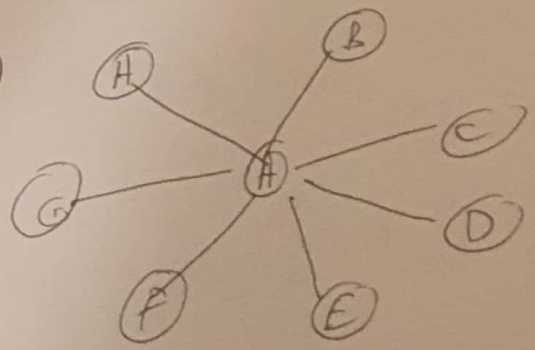
2) suppose $G = (V, E)$ is undirected (unweighted simple graph. A subset U of V is called a base for G in every edge for G has atleast one endpoint in U

A) given $G = (V, E)$ is it true that V itself is a base for G?

yes, by definition of E, every e in E has an endpoint in V.

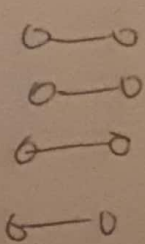
B) 

yes any graph with one or more vertices and no edge is an example.

C) 

if $U = \{A\}$ and every edge has one endpoint in U

D) give an example of graph G having n vertices with the property that every base graph G has size. atleast n.



if n of the given edges are in U than each node have one endpoint in the graph.

e) divise an algorithm to solve smallest Base decision problem

p ← obtain set of all subsets of V.

CurrentMin ← |V|

Current ← V

for u in p do

for e in E do

a ← left endpoint of e

b ← right endpoint of e

if a in u or b in u then

CurrentMin ← |u|

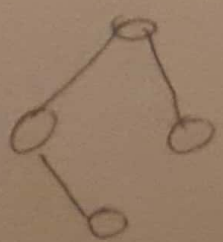
CurrentBase ← u.

return U

then running time is $O(m2^n)$

3) suppose G = (V, E) is an undirected graph ~~that~~ unweighted simple graph A spanning cycle for G is a simple cycle in G that contains every vertex of G

A)



B) ~~The spanning cycle decision problem is~~

a graph G itself a simple cycle if G is connected and every vertex in G has degree 2.

algorithm checkforSpanning (G(V,E)|

input : edges and vertices of G

output : true if spanning and false otherwise

take all edges of it build adcacy Matrix

1 → if edge exists

0 → if does not exist

while (there are unvisited edges) {

check if there is connection from root to the first node

check graph is connected

check if each vertex = deg(v) = 2 }