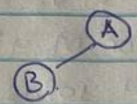
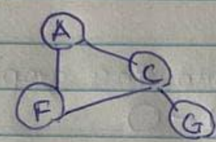
Lab-8

problem 1:

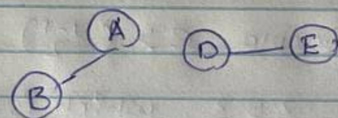
A- let $U = \{A, B\}$. Draw $G[U]$



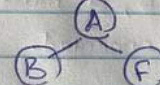
B- let $W = \{A, C, G, F\}$ Draw $G[W]$



C- let $Y = \{A, B, D, E\}$ Draw $G[Y]$



D- consider the following subgraph H of G.



Is there a subset x of the vertex set V so that $H = G[x]$? explain.

NO, because let say $x = \langle A, B, F \rangle \subset V$

$G[x] = (\langle A, B, F \rangle, \langle (A,B)\ (B,F),\ (A,F) \rangle)$

while $H = (\langle A, B, F \rangle, \langle (A,B),\ (A,F) \rangle)$

Hence $G[x] \neq H$, there no subset x of v so that $H = E[x]$.

E- find away to partition the vertex set V into 2 subsets V_1 V_2 so that each of the induced graphs $G[V_1]$ and $G[V_2]$ is connected and $G = G[V_1] \cup G[V_2]$.

$V_1 = \langle D, E, I \rangle$ $\quad V_2 = \langle B, A, C, F, G, H \rangle$

we have two induced & connected graphs $G[V_1]$, $G[V_2]$.

problem 3

A- Let u be in V_1 and let y be in V_2. Let p be a path in G from u to y. let y be the first vertex in p that is not in V_1; y must belong to V_j for some $j \neq 1$. let x be the immediate predecessor of y in p; note x belongs to V_1. The edge in p that joins x and y is the desired edge.

B- consider the following graph

$n = 4$

$$\frac{(4-1)(4-2)}{2} = 3$$

our formula $E > \binom{V-1}{2}$

$3 > 3$ which is not correct.

C- If G has n vertices, G must have atleast n-1 edges in order to be connected.

problem 4: