

- Ejercicios Tema 3:

27.

a	b	c	d
3	3	2	2
0	2	1	1
0	0	0	0

\rightarrow pivote a, cogemos b, c, d
 \rightarrow pivote b, cogemos c, d



\Rightarrow Algoritmo de la suma:

$=$
 $+$
 $\Rightarrow p(k_4, x) + p(k_3, x);$

$\Rightarrow k(k-1)[(k-2)(k-3) + (k-2)];$

$(k^2 - k) \cdot ((k^2 - 3k - 2k + 6) + (k - 2)) \Rightarrow (k^2 - k) \cdot (k^2 - 4k + 4);$

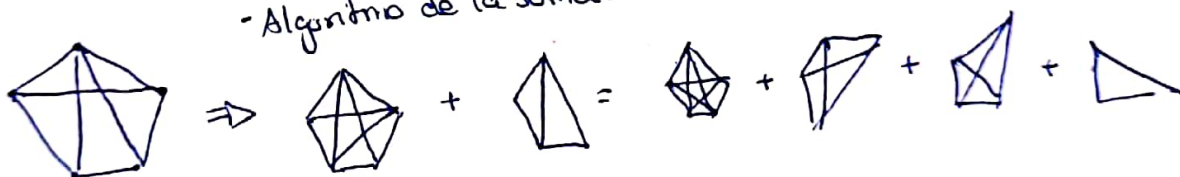
$P_G(x) \Rightarrow k^4 - 4k^3 + 4k - k^3 + 4k^2 - 4k;$

$\hookrightarrow P_G(x) \Rightarrow k^4 - 5k^3 + 4k^2; \quad \chi_G(x) = 3$

$\frac{6}{a} \cdot \frac{5}{b} \cdot \frac{4}{c} \cdot \frac{4}{d} \Rightarrow 6 \cdot 5 \cdot 4 \cdot 4 \Rightarrow 180 \text{ formas de pintar}$

- Algoritmo de la suma:

28.

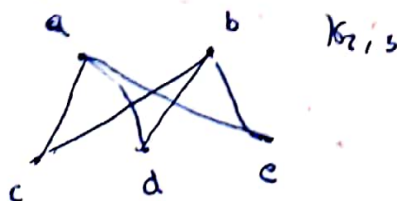


$\Rightarrow p(G, x) \Rightarrow p(k_5, x) + 2p(k_4, x) + p_2(k_3, x) = x^5 + 2x^4 + x^2;$

$\chi_{G(x)} \Rightarrow 3;$

$\frac{6}{a} \cdot \frac{5}{b} \cdot \frac{4}{c} \cdot \frac{4}{d} \cdot \frac{4}{e} \Rightarrow 6 \cdot 5 \cdot 4 \cdot 4 \cdot 4 \Rightarrow 1440 \text{ formas de pintar un grafo.}$

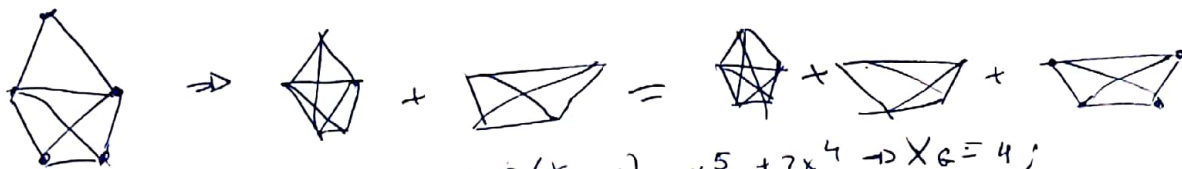
29.



$p(G, x) = k \cdot x^n + \dots + g x^2;$
 $\chi_G = 2;$

$\frac{6}{a} \cdot \frac{6}{b} \cdot \frac{5}{c} \cdot \frac{5}{d} \cdot \frac{5}{e} \Rightarrow 6^2 \cdot 5^3 \Rightarrow 4500 \text{ formas distintas de colorear.}$

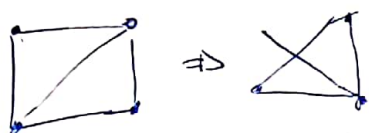
30.



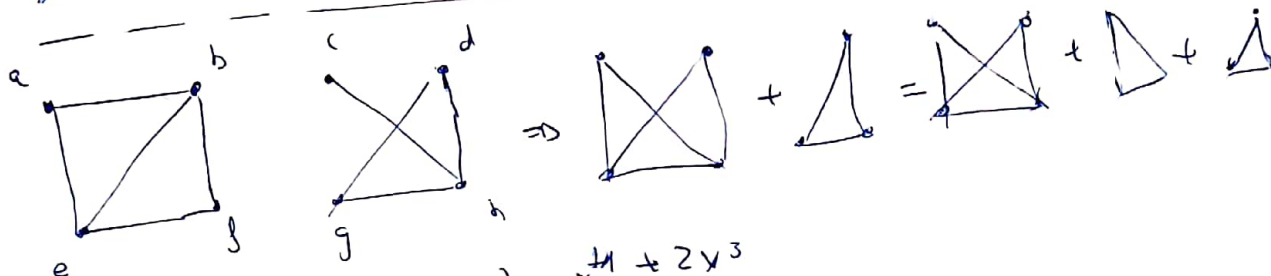
$$\Rightarrow P(G, x) = P(K_5, x) + 2P(K_4, x) = x^5 + 2x^4 \Rightarrow \chi_G = 4;$$

$$\frac{4}{a} \frac{3}{b} \frac{3}{c} \frac{2}{d} \frac{1}{e} \Rightarrow 4 \cdot 3^2 \cdot 2 \Rightarrow \left. \begin{array}{l} 72 \text{ formas distintas de colorear} \\ \text{el grafo} \end{array} \right\}$$

31.



* Algoritmo de la suma:

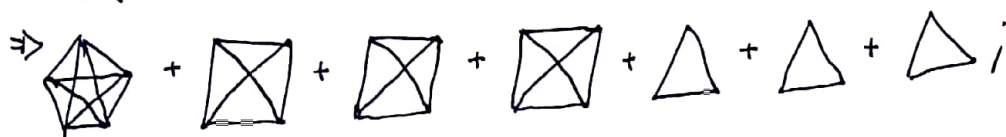
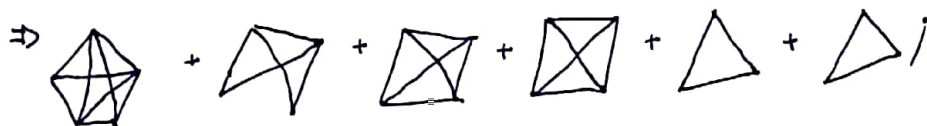
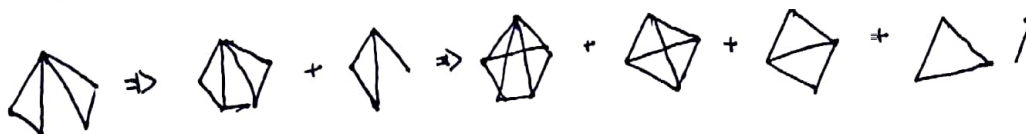


$$\Rightarrow P(K_4, x) + 2P(K_3, x) = x^4 + 2x^3$$

$$\Rightarrow P(G, x) = 2x^4 + 3x^3 \Rightarrow \boxed{\chi_G = 3}$$

$$\left. \begin{array}{l} \frac{4}{a} \frac{4}{b} \frac{4}{c} \frac{2}{d} = 5 \cdot 4^2 \cdot 2 = 160 \\ \frac{5}{c} \frac{3}{d} \frac{3}{g} \frac{4}{h} = 5 \cdot 3^2 \cdot 4 = 180 \end{array} \right\} \begin{array}{l} 28800 \text{ formas de} \\ \text{colorear} \end{array}$$

32.



$$P_G(x) = P(K_5, x) + 4P(K_4, x) + 3P(K_3, x);$$

$$P_G \Rightarrow x^5 - 6x^4 + 14x^3 - 15x^2 + 6x; \quad \chi_G = 3$$

$$P_G(5) = 780;$$

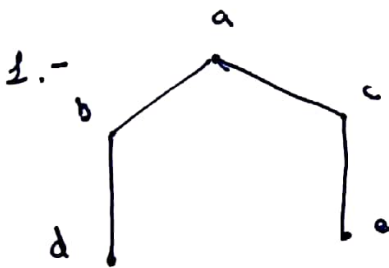
33. Si tenemos un supuesto árbol G , entonces es conexo, luego dados dos vértices cualesquiera hay un camino simple entre ambos vértices, si hubiera más de uno, entonces el grafo contendría un ciclo, y esto no es posible, pues G es un árbol.

34. $33 \cdot 1 + 25 \cdot 2 + 15 \cdot 3 = 328 + 4 \cdot 1 \Rightarrow \frac{132}{2} = 66$;

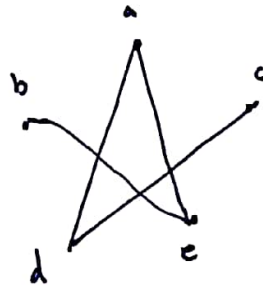
66 n° par

Solución $\Rightarrow 33 + 25 + 15 + 1 \Rightarrow \boxed{74 \text{ n}^\circ \text{ Vertices}}$

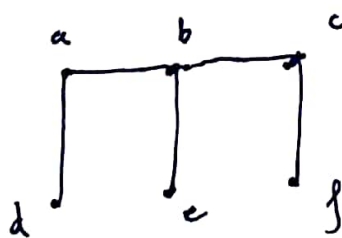
35.



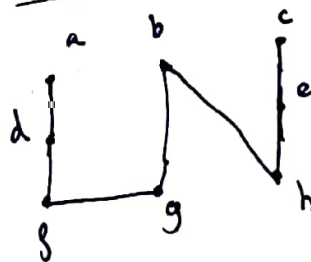
2.-

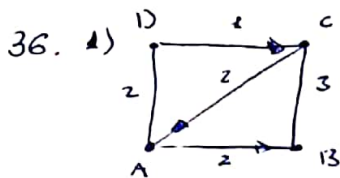


3.



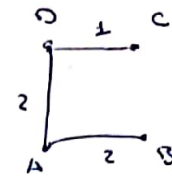
4.-





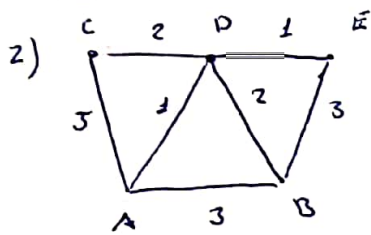
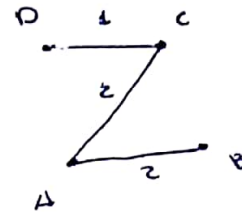
Kruskal:

DC	DA	CA	CB	AB
1	2	2	3	2
Si	Si	No	No	Si



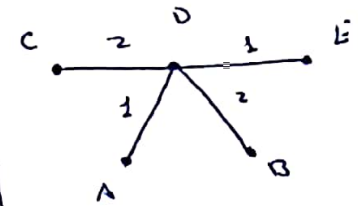
Prim:

1. $\{D\} \rightarrow \{ \}$
2. $\{D, C\} \rightarrow \{DC\}$
3. $\{C, A\} \rightarrow \{CA\}$
4. $\{A, B\} \rightarrow \{AB\}$



Kruskal:

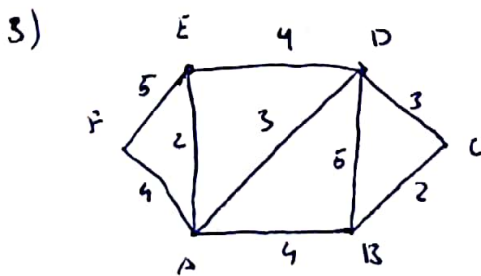
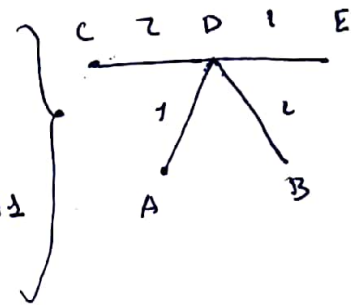
DC	DA	DB	DE	CA	AB	BE
2	1	2	1	3	3	3
Si	Si	Si	Si	No	No	No



Peso: 6

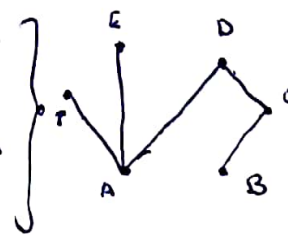
Prim:

1. $\{D\} \rightarrow \{ \} \rightarrow 0$
2. $\{D, E\} \rightarrow \{DE\} \rightarrow 1$
3. $\{D, B\} \rightarrow \{DB\} \rightarrow 2$
4. $\{D, A\} \rightarrow \{DA\} \rightarrow 1$
5. $\{DC\} \rightarrow 2$



Kruskal:

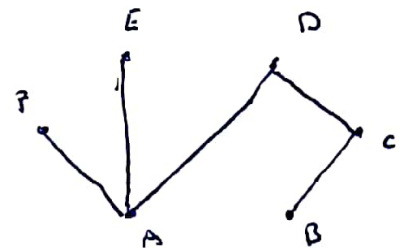
AB	AD	AE	AF	BC	BD	DC	DE	EF
4	3	2	4	2	5	3	4	5
No	Si	Si	Si	Si	No	Si	No	No



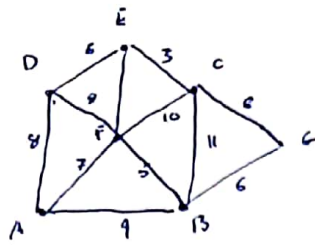
Peso 14:

Prim:

1. $\{F, A\} \rightarrow \{FA\}$
2. $\{A, E\} \rightarrow \{AE\}$
3. $\{A, D\} \rightarrow \{AD\}$
4. $\{D, C\} \rightarrow \{DC\}$
5. $\{C, B\} \rightarrow \{CB\}$

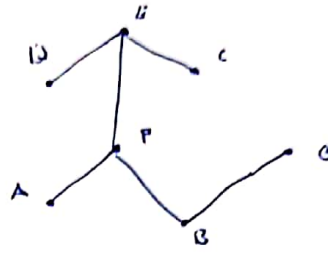


4.



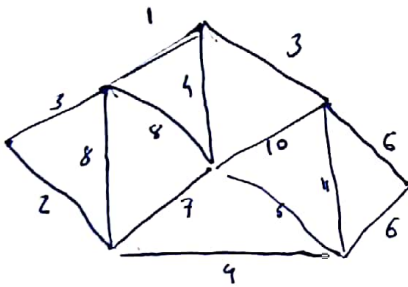
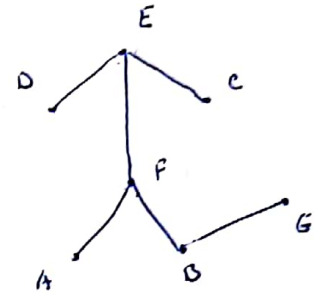
Kruskal:

ED	EC	EF	DA	DF	FA	FB	FC	CB	CG	GB
Si	Si	Si	No	No	Si	Si	No	No	No	Si



Prim:

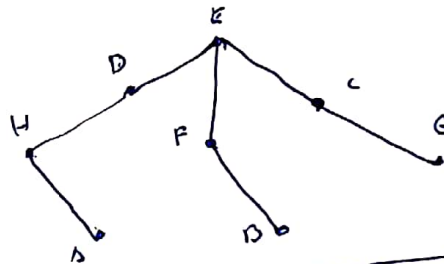
1. $\{E, C\} \rightarrow \{EC\}$
2. $\{D, E\} \rightarrow \{DE\}$
3. $\{E, F\} \rightarrow \{EF\}$
4. $\{F, A\} \rightarrow \{FA\}$
5. $\{F, B\} \rightarrow \{FB\}$
6. $\{B, G\} \rightarrow \{BG\}$



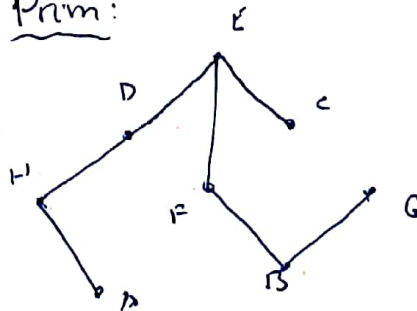
Peso 24:

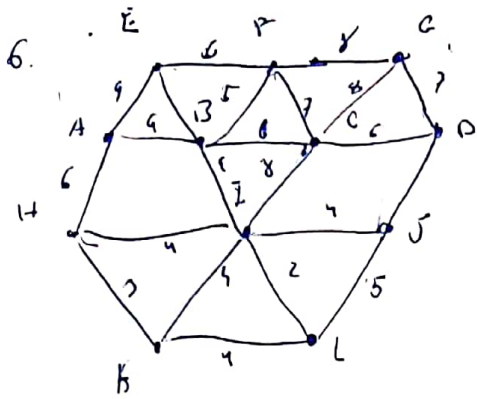
Kruskal:

DE	HA	HDEC	EF	FB	CG	BG	AF	AD	DF	AB	FC	CB
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Prim:

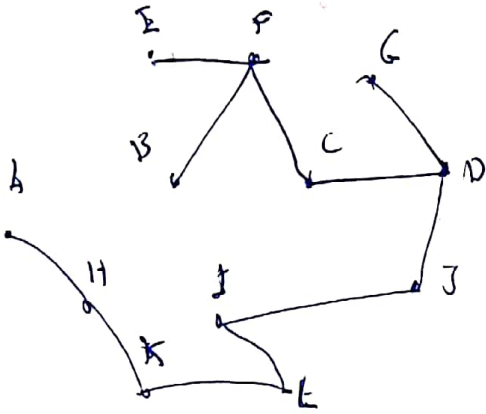
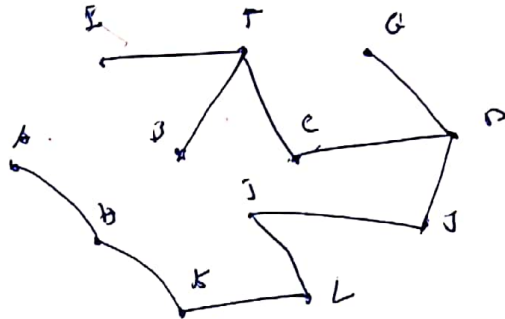




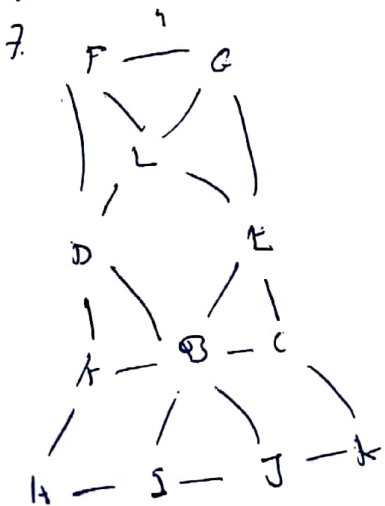
Kruskal:

JSrus/841:

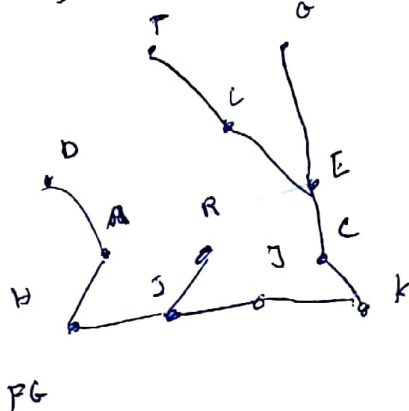
As	AB	BE	EP	E13	BC	BP	CB	CD	CI
Si	No	No	Si	No	No	Si	No	Si	No
H1	H1	KL	KL	IL	IL	IL	Si	Si	No
No	Si	Si	No	Si	Si	Si	No		



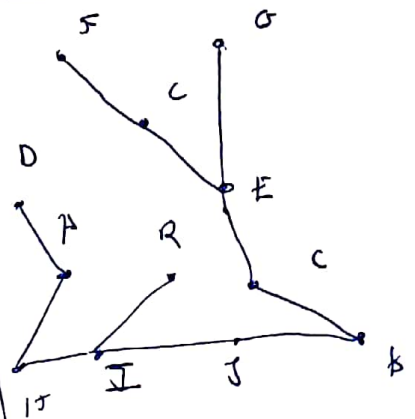
1. $\{E, F\} \rightarrow \{F, E\}$
2. $\{K, B\} \rightarrow \{B, K\}$
3. $\{F, C\} \rightarrow \{C, F\}$
4. $\{C, D\} \rightarrow \{D, C\}$
5. $\{D, G\} \rightarrow \{G, D\}$
6. $\{D, J\} \rightarrow \{J, D\}$
7. $\{J, I\} \rightarrow \{I, J\}$
8. $\{I, L\} \rightarrow \{L, I\}$
9. $\{K, L\} \rightarrow \{L, K\}$
10. $\{H, K\} \rightarrow \{K, H\}$
11. $\{A, B\} \rightarrow \{B, A\}$



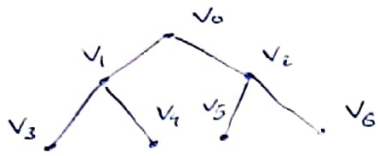
→ Kruskal:



→ Prim:



37. Un árbol binario con 7 vértices:



Inorden: $\{e, b, s, g, c, h, j, i, k, d, a\}$

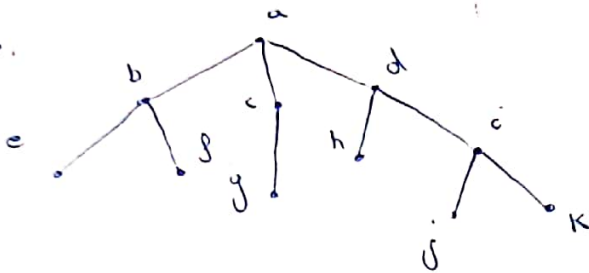
Topdown: $\{a, b, c, d, e, g, h, i, j, k\}$

Preorden: $\{a, b, e, g, c, h, j, i, k, d, a\}$

Postorden: $\{e, g, b, s, c, h, j, k, i, d, a\}$

Bottomup: $\{e, s, g, h, j, k, i, b, c, d, a\}$

38.



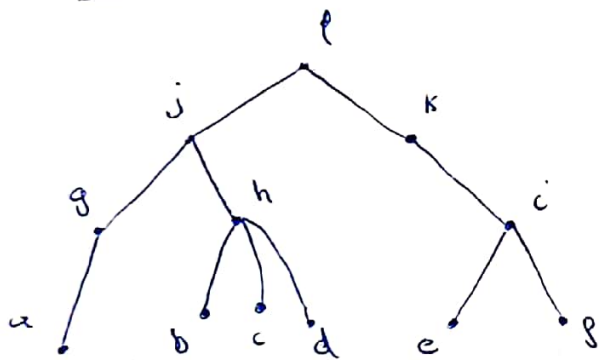
Preorden: $\{l, j, g, a, h, b, c, d, k, i, e, g\}$

Postorden: $\{a, g, b, c, d, h, j, e, g, i, k, l\}$

Inorden: $\{a, g, j, b, h, c, d, a, e, i, g, k, l\}$

Topdown: $\{l, j, k, g, h, i, a, b, c, d, e, g\}$

Bottomup: $\{a, b, c, d, e, g, h, i, j, k, l\}$



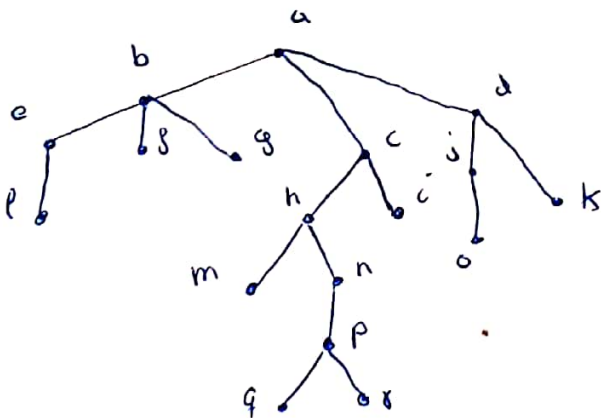
Preorden: $\{a, b, e, l, g, g, c, h, m, n, p, g, r, i, d, j, o, k\}$

Postorden: $\{l, e, g, g, b, g, r, p, m, n, h, i, c, o, j, k, d, a\}$

Inorden: $\{l, e, b, g, g, m, h, g, p, n, r, c, i, o, j, d, k\}$

Topdown: $\{a, b, d, e, g, g, b, i, j, k, l, m, n, k, p, g, r\}$

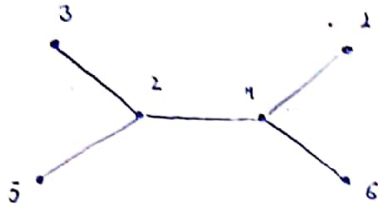
Bottomup: $\{g, r, p, m, n, l, o, e, g, g, h, i, j, k, b, c, d, a\}$



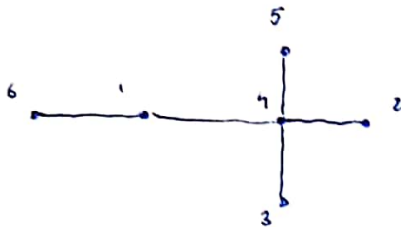
39. Existen 5 vértices, a los que se le pueden combinar entre ellos, habiendo una cantidad de los vértices en factorial más el número de vértices de sus combinaciones.

$$5! + 5 \Rightarrow (5 \cdot 4 \cdot 3 \cdot 2 \cdot 1) + 5 \Rightarrow 120 + 5 \Rightarrow \underline{125}$$

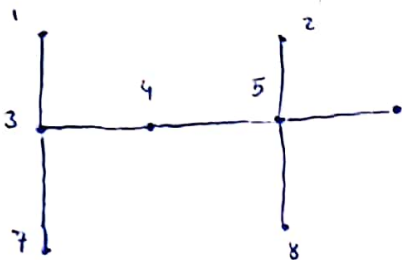
40.



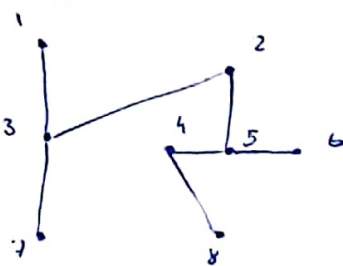
$$\Rightarrow (4, 2, 2, 4)/$$



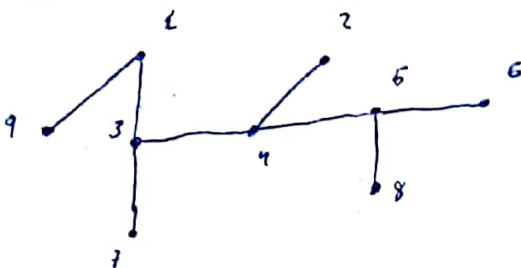
$$\Rightarrow (4, 4, 4, 1)/$$



$$\Rightarrow (3, 5, 5, 5, 4, 5)/$$

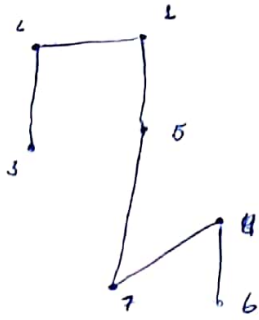


$$\Rightarrow (3, 5, 3, 2, 5, 4)/$$

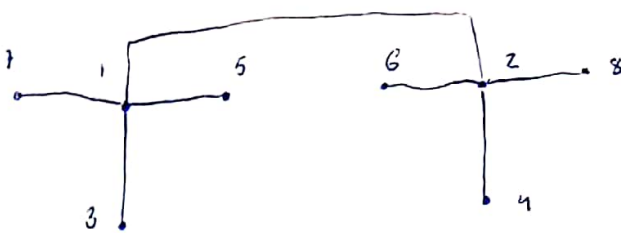


$$\Rightarrow (4, 5, 3, 5, 4, 3, 1)$$

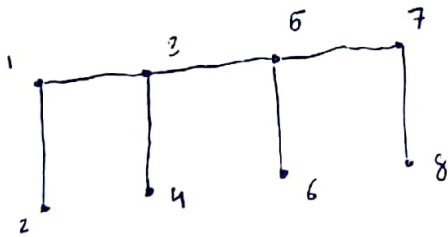
$$43. (2, 1, 3, 4, 4) \Rightarrow (2, 2, 2, 4, 5, 6, 7)$$



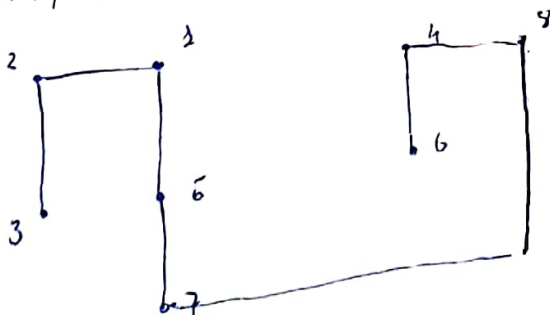
$$(1, 2, 3, 4, 5, 6, 7) \Rightarrow (1, 2, 3, 4, 5, 6, 7, 8)$$



$$(1, 2, 3, 4, 5, 6, 7) \Rightarrow (1, 2, 3, 4, 5, 6, 7, 8)$$



$$(2, 3, 4, 5, 6, 7, 8) \Rightarrow (1, 2, 3, 4, 5, 6, 7, 8)$$



$$(1, 2, 3, 4, 5, 6, 7, 8) \Rightarrow (1, 2, 3, 4, 5, 6, 7, 8)$$

