

TUTORIAL 4

Question 1

Find the minimal spanning trees using Prim's Algorithm.

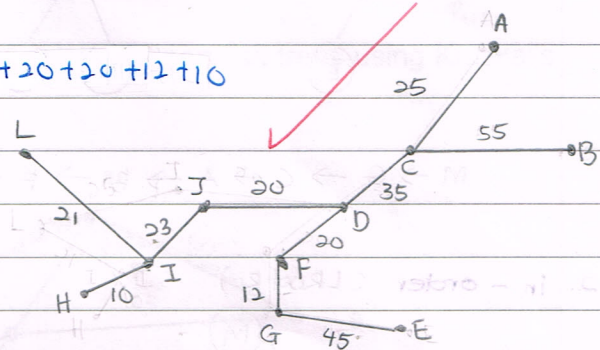
11 edges

$$n-1 = 11-1$$

 $= 10$ edges remain

Edges	AL	DE	AB	BC	EG	CJ	CD	GH	JL	FI	AC	IJ	IL	DF	DJ	FG	HI
Weight	80	70	60	55	45	40	35	30	25	25	25	23	21	20	20	12	10
Delete	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	No	No	No				

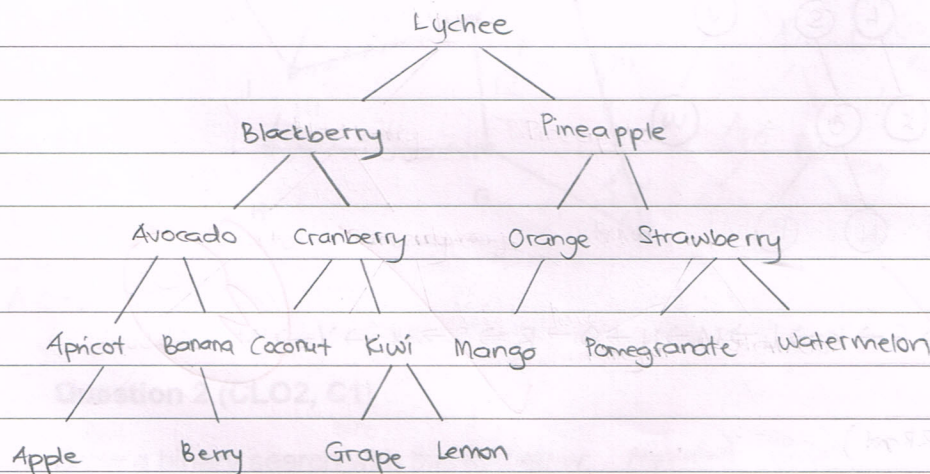
$$\text{Total weight} : 55 + 45 + 35 + 25 + 23 + 21 + 20 + 20 + 12 + 10$$
$$= 266$$



Question 2.

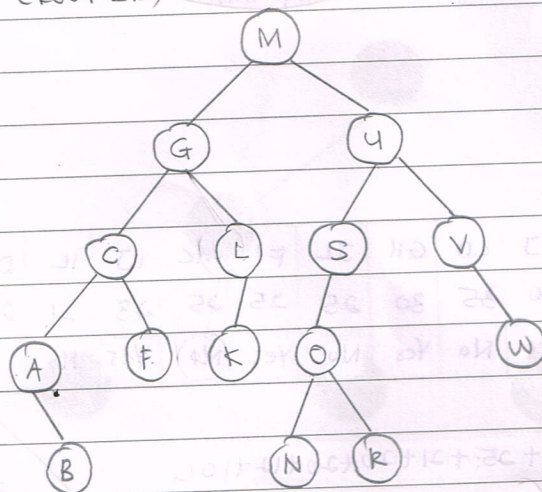
Binary search tree. (Alphabet order)

Apple, Apricot, Avocado, Banana, Berry, Blackberry, Coconut, Cranberry, Grapefruit, Kiwi, Lemon, Lychee, Mango, Orange, Pineapples, Pomegranate, Strawberry, Watermelon.



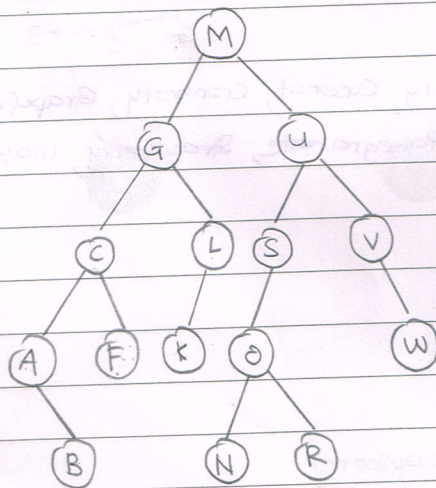
Question 3.

1. Pre-order (Root LR)



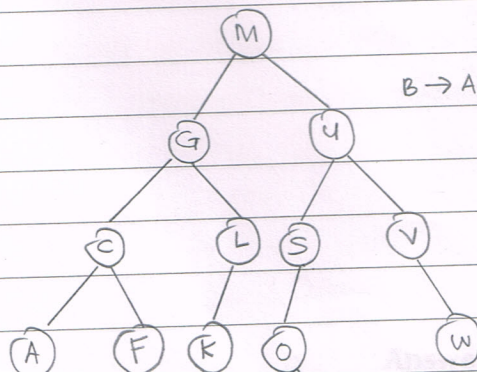
M → G → C → A → B → F → K → L → U → S → O → N → R → V → W

2. In-order (LRootR)



A → B → C → F → G → K → L → M → N → O → R → S → U → V → W

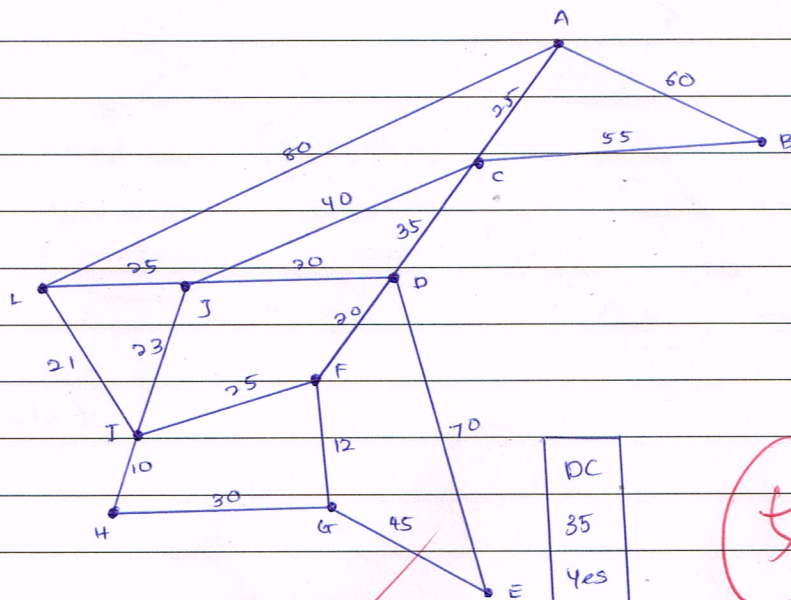
3) Post-order (LRRoot)



B → A → F → C → K → L → G → N → R → O → S → W → V → U → M

Question 1

[Minimal spanning trees using Kruskal's algorithm]



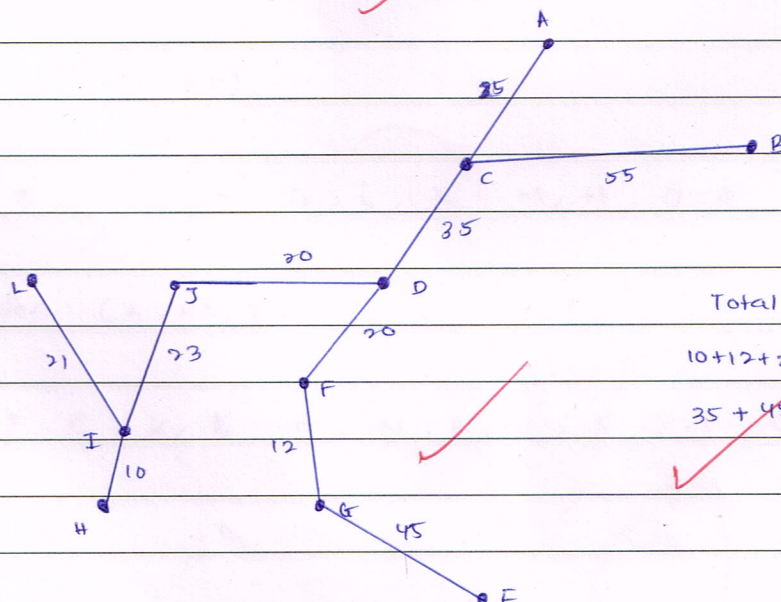
DC
35
Yes

↓ 8

(ascending order)

Edges	HI	FG	DF	JD	LI	JL	CA	LJ	IF	HG	JC	GE	CB	AB	DE	LA	
Weight	10	12	20	20	21	23	25	25	25	30	40	45	55	60	70	80	
Add	yes	yes	yes	yes	yes	yes	yes	NO	NO	NO	NO	yes	yes	NO	NO	NO	

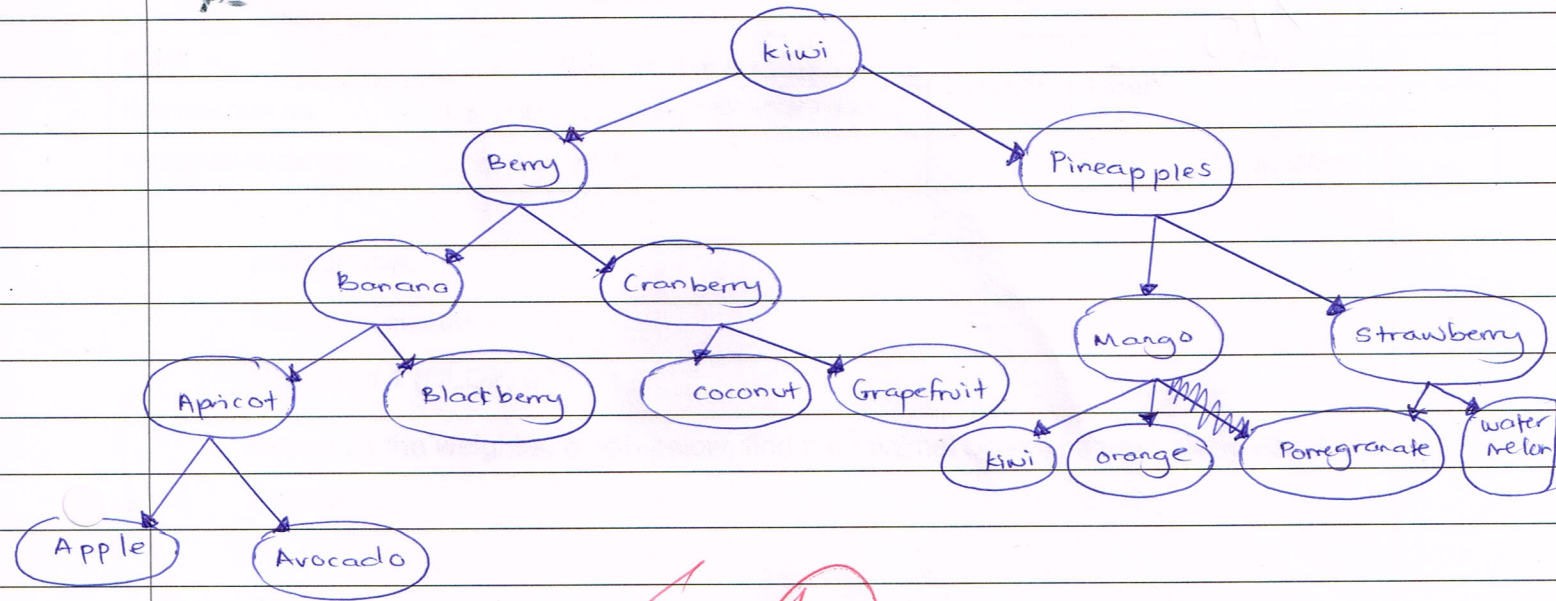
(11 - 1) = 10 left.



Total:

$$10 + 12 + 20 + 20 + 21 + 23 + 25 + 35 + 45 + 55 = 266 \#$$

Question 2.



Question 3

① Pre-order : (R, L, Rt)

~~kiwi~~ M, G, C, A, B, F, L, K, U, S, O, N, R, V, W.

② In-order : (L, R, Rt)

~~Berry~~ B, A, C, F, G, L, K, M, N, O, R, S, U, V, N.

③ Post-order : (L, Rt, R)

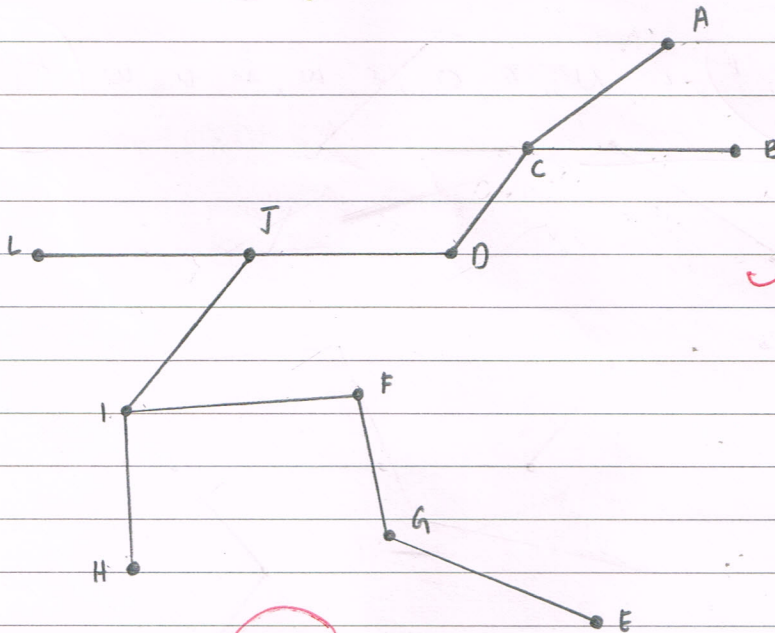
B, A, F, C, K, ^L G, N, R, O, S, V, W, U, M.

Find the minimal spanning trees using Kruskal's algorithm

Edges	IH	FG	JD	FD	LI	IJ	LJ	IF	CA	HG	DC	JE	GE	CB	AB	DE	LA
Weight	10	12	20	20	21	23	25	25	25	30	35	40	45	55	60	70	80
	X	/	/	X	X	/	/	/	/	X	/	X	/	/	X	X	X

$$17 - 1 = 16$$

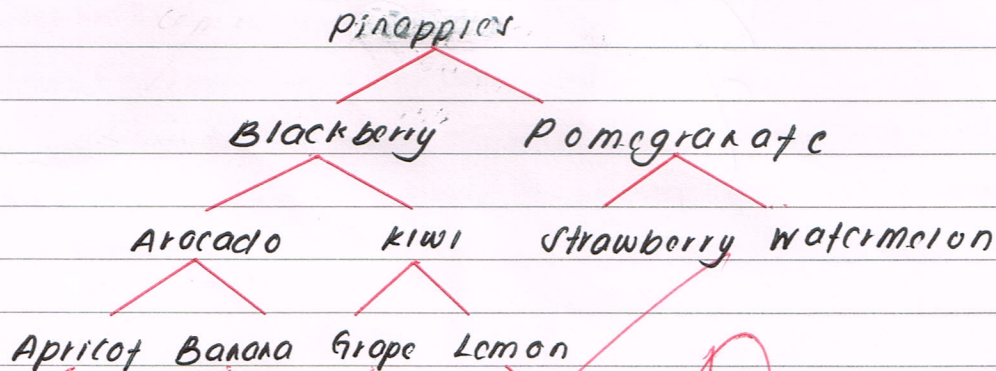
= 16 edges remain



Total weight : $10 + 12 + 20 + 21 + 23 + 25 + 25 + 25 + 35 + 40 + 45 + 55$
= 275

Question 2

Apple, Apricot, Avocado, Banana, Berry, Blackberry, Cocosnut, Strawberry, Grapefruit, Kiwi, Lemon, Lychee, Mango, Orange, Pineapples, Pomegranate, Strawberry, Watermelon



Question 3

1. Pre-order

= M, G, C, A, B, F, L, K, U, C, O, N, R, V, W

2. In-order

= A, B, C, F, G, K, L, M, N, O, R, S, U, V, W

3. Post-order

= B, A, F, C, G, K, L, N, R, O, S, W, U, V, W

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