* minimum spanning Tree:- (MST)

Spanning Tree: spanning tree T of connected undirected graph Gr is a tree composed of all the vertices & some of edges of Gr such that there is no cycle formed.

1) Kruskal algo: $O[E \cdot \log V]$

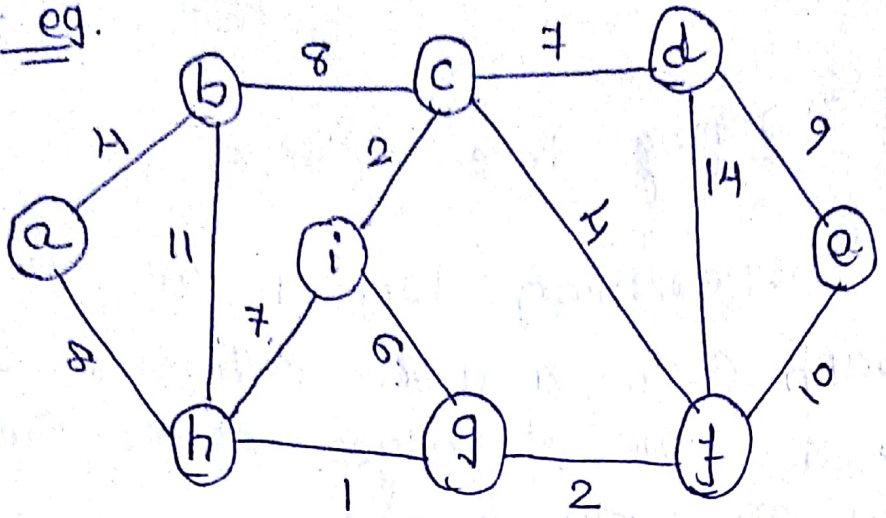
MST-Kruskal (Gr, w)

1. $A \leftarrow \phi$
2. for each vertex $v \in V[Gr]$
3. do make-set (v)
4. Sort the edges of E into increasing order by weight w
5. For each edge $(u,v) \in E$ taken
6. do if (findset (u) $\neq$ findset (v))
7. then $\{A \leftarrow A \cup \{(u,v)\}$
8. union (u,v) $\}$
9. return A.

* diff^ne bet^n

Prim's algo.	Kruskal. algo.
→ it is for obtaining MST by selecting the adjacent vertices of already selected vertices.	→ This algo. is for obtaining MST but it is not necessary to choose adjacent vertices of already selected vertices.

For eg.



$E = \{ (h,g)^1, (g,f)^2, (i,c)^2, (c,f)^4, (a,b)^4, (i,g)^6, (c,d)^7, (h,i)^7, (b,c)^8, (a,h)^8, (d,e)^9, (f,e)^{10}, (b,h)^{11}, (f,d)^{14} \}$

now,

$V = \{a\}\{b\}\{c\}\{d\}\{e\}\{f\}\{g\}\{h\}\{i\}$

$= \{a\}\{b\}\{c\}\{d\}\{e\}\{f\}\{g,h\}\{i\}$ $\longrightarrow (h,g)^1$

$= \{a\}\{b\}\{c\}\{d\}\{e\}\{g,h,f\}\{i\}$ $\rightarrow (g,f)^2$

$= \{a\}\{b\}\{i,c\}\{d\}\{e\}\{g,h,f\}$ $\rightarrow (i,c)^2$

$= \{a\}\{b\}\{d\}\{e\}\{i,c,g,h,f\}$ $\rightarrow (c,f)^4$

$= \{a,b\}\{d\}\{e\}\{i,c,g,h,f\}$ $\rightarrow (a,b)^4$

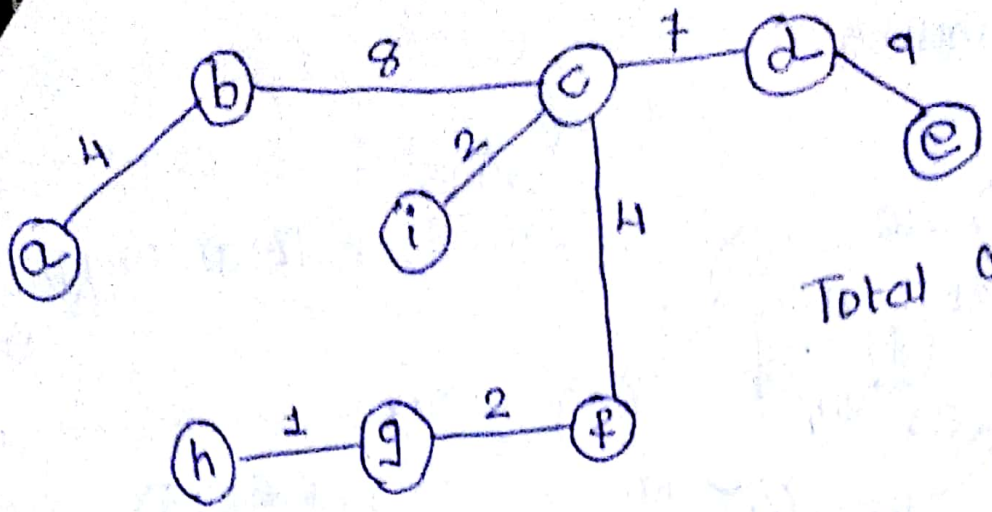
$= \{a,b\}\{e\}\{i,c,g,h,f,d\}$ $\rightarrow (c,d)^7$

$= \{a,b,i,c,g,h,f,d\}\{e\}$ $\rightarrow (b,c)^8$

$= \{a,b,c,d,e,f,g,h,i\}$ $\rightarrow (d,e)^9$

Total = **37.**

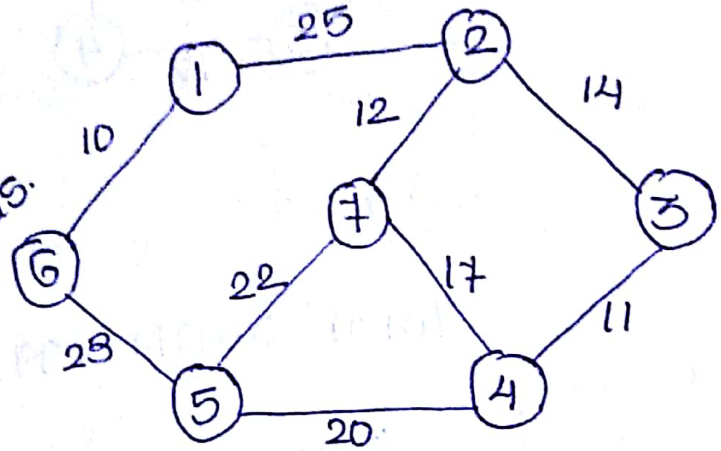
MST



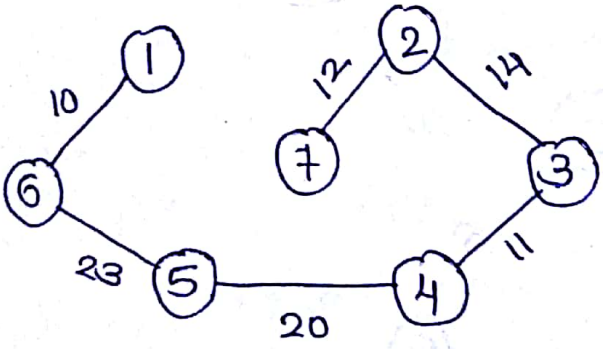
Total weight = 37.

eg.

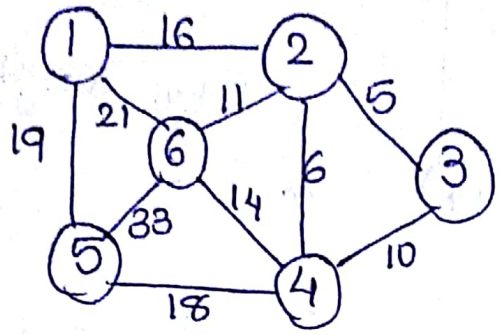
Q done by students.



Ans: MST = Total weight = 90.

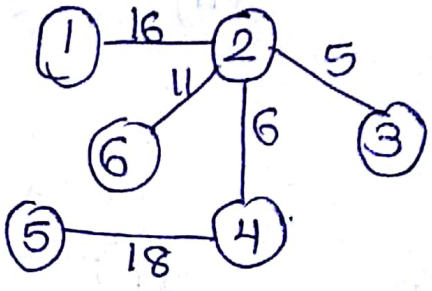


e.g (GTU, June-11, 4-marks)

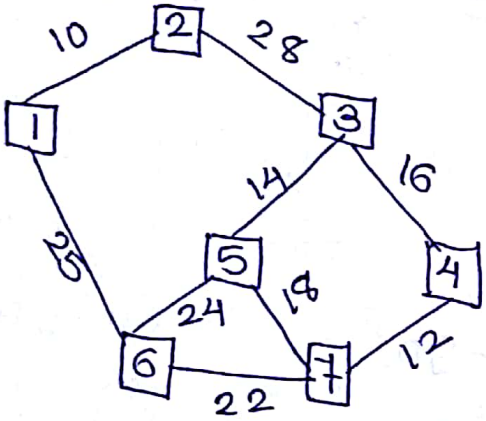


Ans:

Total weight = 56.

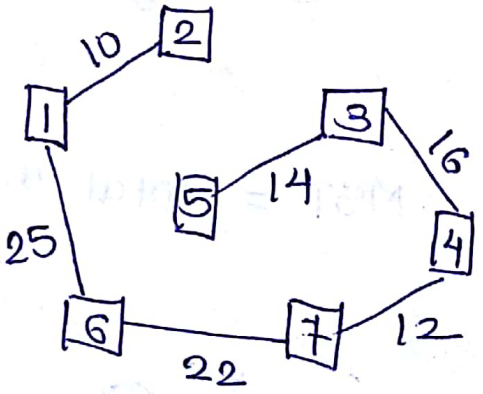


eg. (GTU, Dec-11, 3-marks)

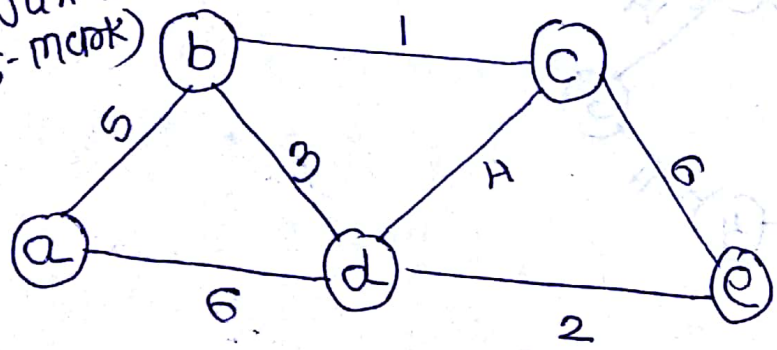


Ans:

Total weight = 99.



eg. (GTU, Jun-11, 8-mark)



Ans:

Total cost = 11.