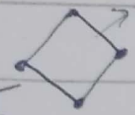
Graphs

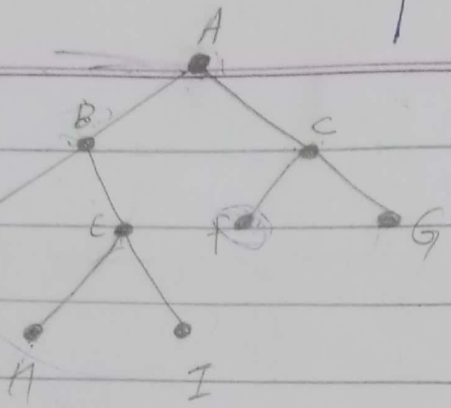
Vertices/node

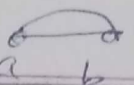
edges

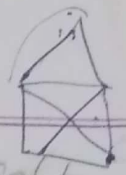


Trees

21-06-2022







Height of B = 2

Depth :- (Root Node)

depth of 'h' is = 3

A = Root

B = Parent of DE

DE = Siblings

D & E = Children of B.

Level : l_0 =

l_1 = B, C

l_2 = D, E

l_3 = H, I

Introduction to trees.

Tree is a special graph

No loop and no circuit

→ undirected graph

→ connected

→ Without circuit

Rooted Tree :-

A tree can have a Sub-tree.

Height :- of tree or node.

Height from lowest to highest

Binary :-

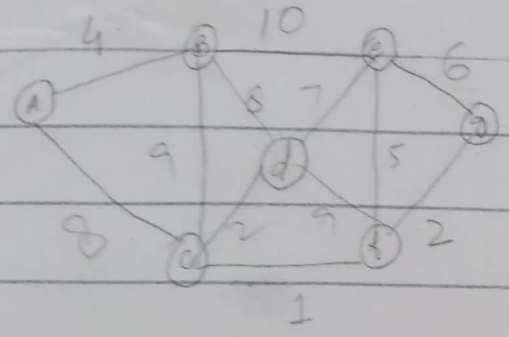
having almost two children.

Tertiary :-

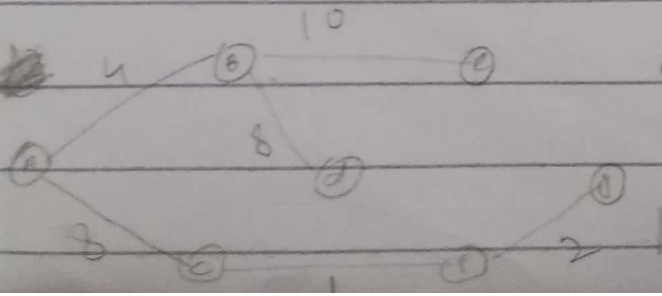
having almost three children

No of nodes :-

Spanning Tree



A spanning tree of a graph is a sub-graph that contains every vertex and the subgraph is a tree.



W(T) = 33

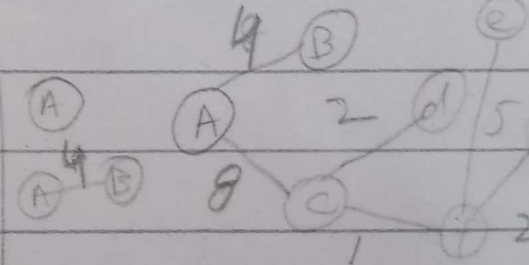
→ Minimum Spanning tree will minimum length.

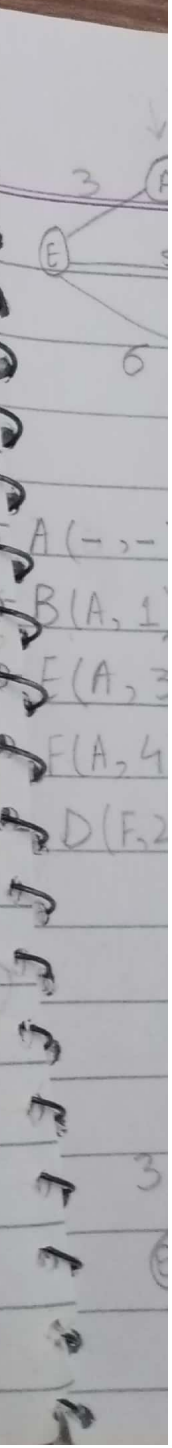
A spanning tree of a graph is a tree that contain every vertex.

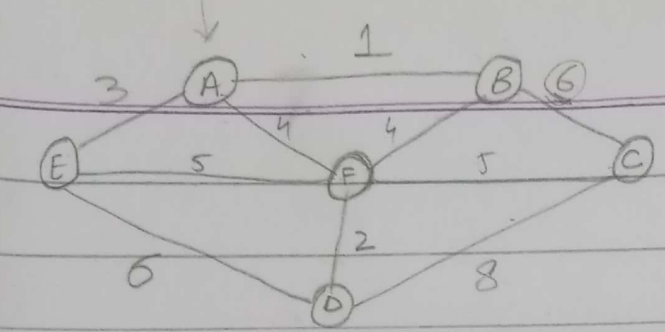
→ Algorithm to find (MST)

vertex in tree	Remaining	Illustration
A(−,−)	B(A,4), C(A,8)	
B(A,4)	C(A,8), E(B,10), D(B,8)	
C(A,8)	D(C,2), E(B,10), F(C,1).	
F(C,1)	D(C,2), E(F,5), G(F,2)	
D(C,2)	E(F,5), G(F,2)	
G(F,2)	E(F,5)	
E(F,5)	//	

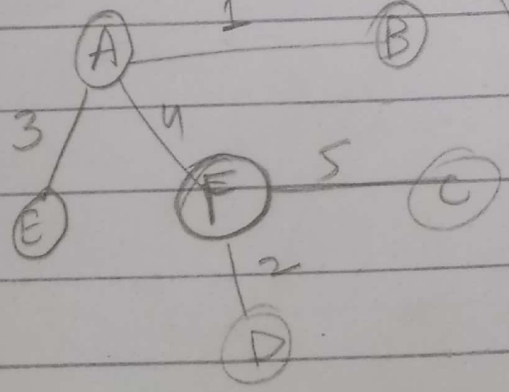
W(T) = 22







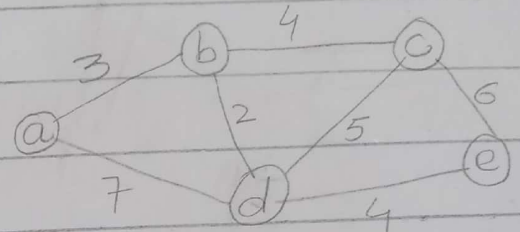
A(-,-)	E(A,3), F(A,4), B(A,1)
B(A,1)	F(A,4), C(B,6), E(A,3)
E(A,3)	D(E,6), F(A,4), C(B,6)
F(A,4)	D(F,2), C(F,5)
D(F,2)	



W(T) = 15

Single source shortest path problem.

Dijkstra



a(-,0)	b(a,3), d(a,7), c(a,∞), e(a,∞)
b(a,3)	c(b,7), d(b,5), e(b,∞)
d(b,5)	c(b,7), e(d,9)
c(b,7)	e(d,9)
e(d,9)	—

Complexity of Algorithm

Big O

Beta

Meta