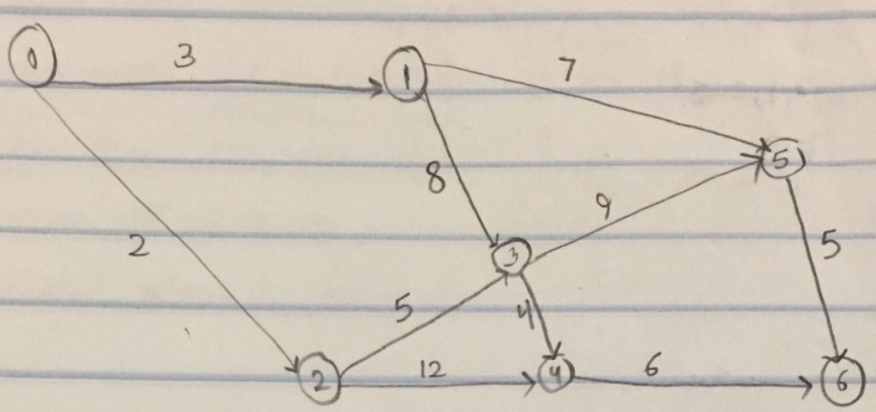
Q3)



node 0

Home tree = {0}

$d(0) = 0$

Guest nodes = {1, 2, 3, 4, 5, 6} $d(\cdot) = \infty$

Distance: 0-1 = 0+3 = 3

Distance: 0-2 = 0+2 = 2

$d(1) = 3$ $d(2) = 2$

node 1

Home tree = {0, 1} $d(1) = 3$ $d(2) = 2$ $d(0) = 0$

Guest nodes = {2, 3, 4, 5, 6} $d(\cdot) = \infty$

Distance 1-3 = 3+8 = 11 1-5 = 3+7 = 10

$d(3) = 11$ $d(5) = 10$

node 2

Home tree = {0, 1, 2} $d(0) = 0$ $d(1) = 3$ $d(2) = 2$ $d(3) = 11$ $d(5) = 10$

Guest nodes = {3, 4, 5, 6} $d(\cdot) = \infty$

Distance: 2-3 = 2+5 = 7

Distance: 2-4 = 2+12 = 14

$d(3) = 7$

$d(4) = 14$

node3 Home tree = {0, 1, 2, 3} d(0)=0 d(1)=3 d(2)=2 d(3)=7

Guest nodes = {4, 5, 6} d(.) = ∞

Distance : 3-4 = 7 + 4 = 11

Distance : 3-5 = 7+9 = 16

d(4) = 11 d(5) = 10

node (4) Home tree = {0, 1, 2, 3} d(0)=0 d(1)=3 d(2)=2 d(3)=7 d(4)=11 d(5)=16

Guest nodes = {6}

Distance : 4-6 = 11 + 6 = 17

d(6) = 17

node (5) Home tree = {0, 1, 2, 3, 4, 5}, d(0)=0 d(1)=3 d(2)=2 d(3)=7 d(4)=11 d(5)=16

Guest nodes = {6}

Distanace : 5-6 = 10 + 5 = 15

d(6) = 15

Home tree = {0, 1, 2, 3, 4, 5, 6}

Guest nodes = { }

- The shortest path:

0 - 1 - 5 - 6