

Date: 30.05.2021

### Activity 8 – Perth Cost estimation

#### Problem :

Apply for your project and do the following.

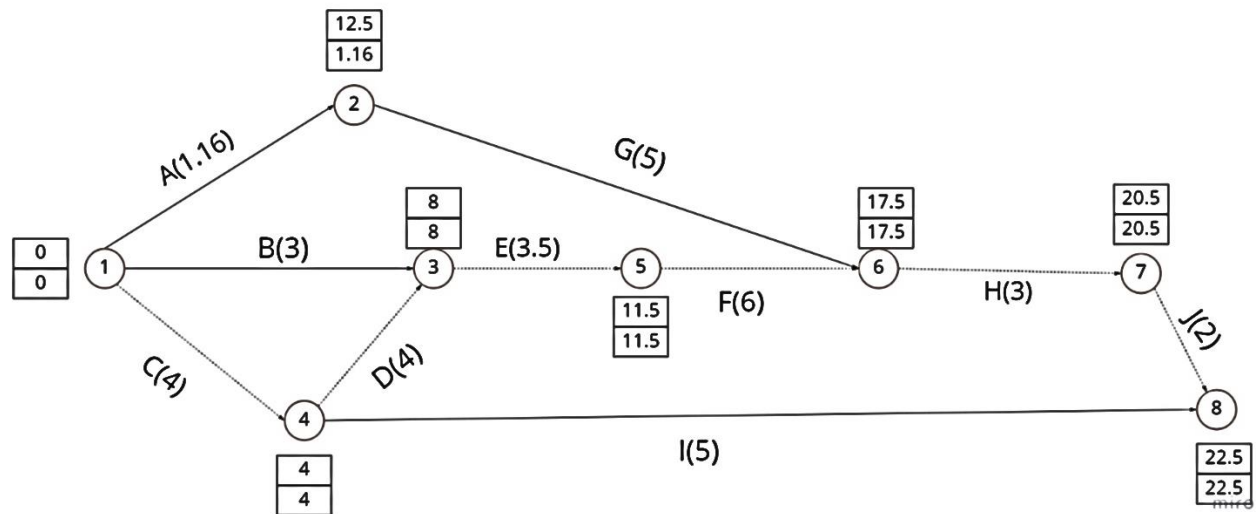
- List the activities
- Build the network
- Estimate the Mean time and variance
- Find the Early Start and Late Completion times as per the discussed rules
- Find the Critical path as per the conditions.

#### Solution:

Activities	Description of Activity	Preceeding	to	tm	tp	Mean	Variance
A	Initiation	-	1	1	2	1.16	0.0256
B	Fund raising	-	2	3	4	3	0.11
C	Problem identification and analysis	-	3	4	5	4	0.11
D	Project design identification	C	2	4	6	4	0.44
E	Manufacturing of project installing camera and sensors	B,D	3	3	6	3.5	0.25
F	Process and program designing	E	5	6	7	6	0.11
G	Collecting samples from soil , fertility ,pH and pests issues	A	1	3	5	5	0.44
H	System testing	F,G	2	3	4	3	0.11
I	Installation and Advertising	C	2	5	8	5	1
J	Final	H	2	2	2	2	0

$$\text{Mean} = (t_o + 4t_m + t_p) / 6$$

$$\text{Variance} = [(t_p - t_o)/6]^2$$



FORWARD PASS	BACKWARD PASS
For node 1 , $Es_1 = 0$	For node 8 , $Ls_8 = 22.5$
For node 2 $Es_2 = 0 + 1.16 = 1.16$	For node 7 , $Ls_7 = 22.5 - 2 = 20.5$
For node 3 , previous nodes : 1 , 4 $1 : \{ 0 + 3 = 3 \}$ $4 : \{ 4 + 4 = 8 \}$ $Es_3 = \max (3,8) = 8$	For node 6 , $Ls_6 = 20.5 - 3 = 17.5$
For node 4 $Es_4 = 0 + 4 = 4$	For node 5 , $Ls_5 = 17.5 - 6 = 11.5$
For node 5 , $Es_5 = 8 + 3.5 = 11.5$	For node 4 , previous nodes: 3 , 8 $8 : \{ 22.5 - 5 = 17.5 \}$ $3 : \{ 8 - 4 = 4 \}$ $Ls_4 = \min ( 17.5 , 4 ) = 4$
For node 6 , previous nodes : 2 , 5 $2 : \{ 1.16 + 5 = 6.16 \}$ $5 : \{ 11.5 + 6 = 17.5 \}$ $Es_6 = \max(6.16 , 17.5) = 17.5$	For node 3 , $Ls_3 = 11.5 - 3.5 = 8$
For node 7 , $Es_7 = 17.5 + 3 = 20.5$	For node 2 , $Ls_2 = 17.5 - 5 = 12.5$
For node 8 , previous nodes = 7 , 4 $4 : \{ 4 + 5 = 9 \}$ $7 : \{ 20.5 + 2 = 22.5 \}$ $Es_8 = \max(9 , 22.5) = 22.5$	For node 1 , previous nodes : 2 , 3 , 4 $2 : \{ 12.5 - 1.16 = 11.34 \}$ $3 : \{ 8 - 3 = 5 \}$ $4 : \{ 4 - 4 = 0 \}$ $Ls_1 = \min ( 11.34 , 5 , 0 ) = 0$

**Critical Path : 1 - 4 - 3 - 5 - 6 - 7 - 8**

$$= 4 + 4 + 3.5 + 6 + 3 + 2$$

$$= 22.5 \text{ weeks}$$

**Meeting recording link:**

**[https://drive.google.com/file/d/1dCq7poZ7J\\_f6UizkSGLHVpW4Y1tFC-M3/view?usp=sharing](https://drive.google.com/file/d/1dCq7poZ7J_f6UizkSGLHVpW4Y1tFC-M3/view?usp=sharing)**