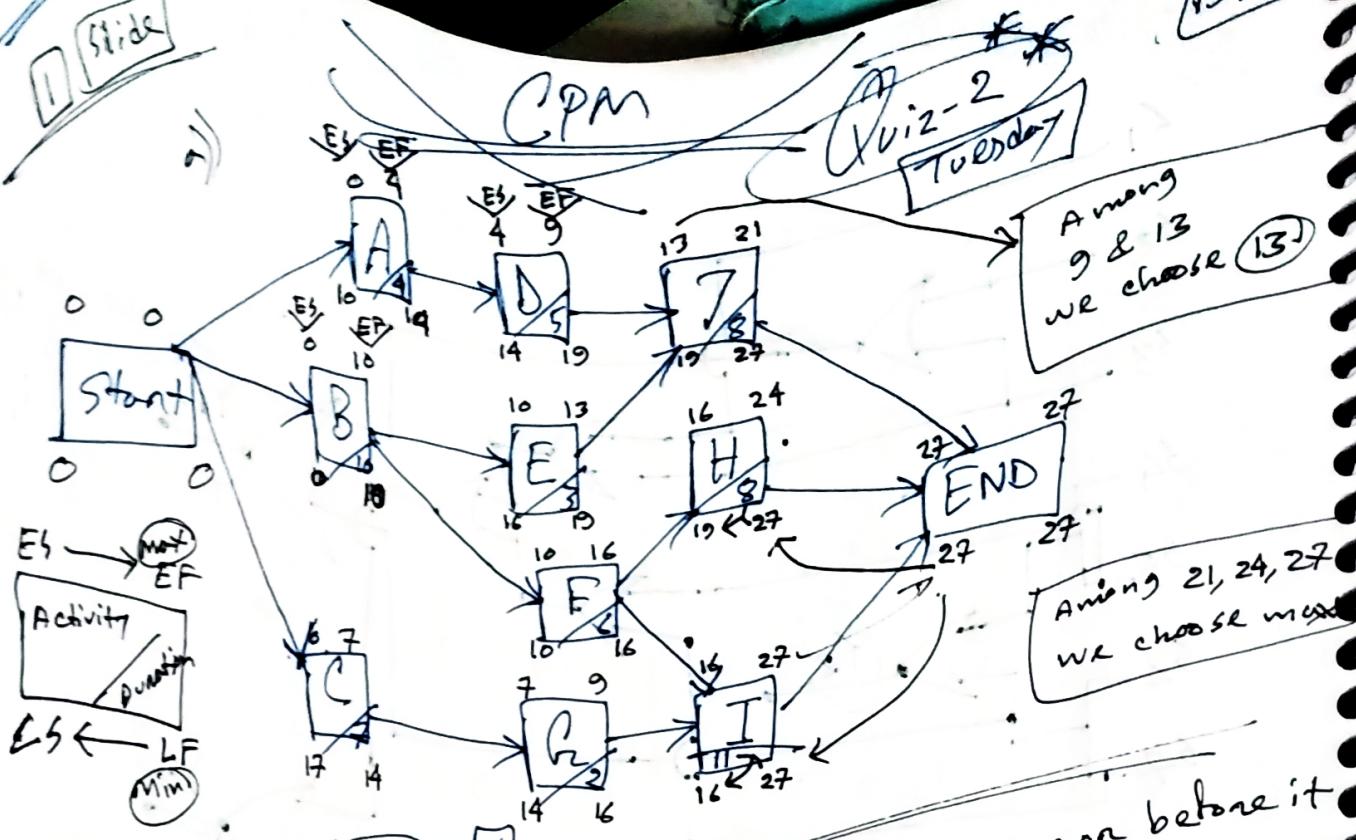


EM

slide

CPM

15.3.20



2011

四

$$A - D - 7 = 17 \quad \text{ii}$$

$$B - E + T = 21 \quad "$$

$$B - F - H = 24$$

$$\cancel{X} \quad | \quad B - F - I = 27 \quad \cancel{X} \cancel{X} \quad 14$$

$$C - h - I = 20^{\circ}$$

C))  $1000$  for 1 day delay  
 $(1000 \times 2)$  for 21 day on 3.

C))  $1000$  for 1 day delay  
 $(1000 \times 2)$  for 21 day on 3.

C))  $1000$  for 1 day delay  
 $(1000 \times 2)$  for 21 day on 3.

$$\text{start} \downarrow$$

~~weak~~  $ST = e^{\frac{1}{2}}$

Activity	Description	Weeks
A	10	4
B	0	"
C	7	"
D	10	"
E	6	"
F	0	"
G	7	"
H	3	1

I → O work

→ 6 "

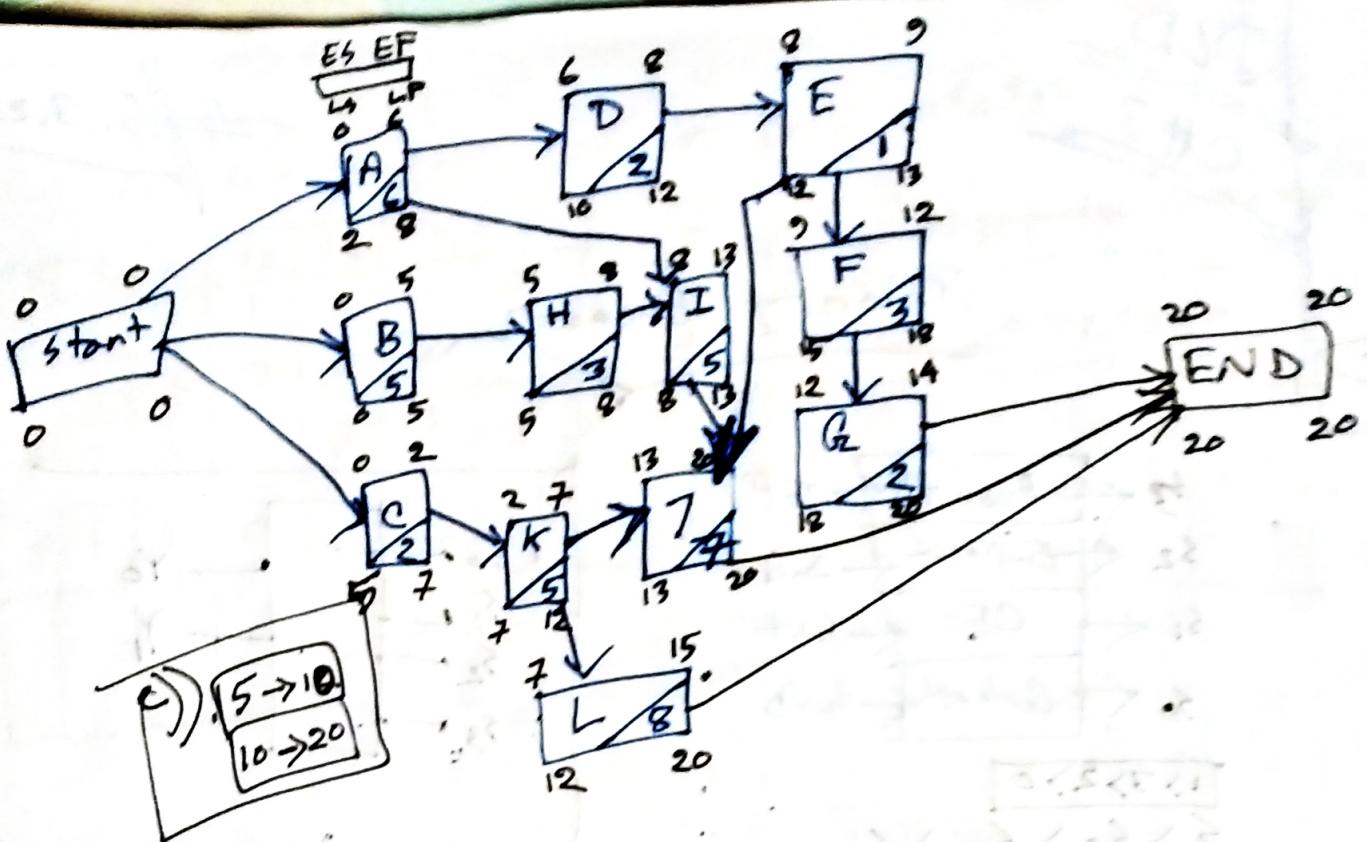
B, F, I

END

T = 27-7

$$= \boxed{0}$$

$$3T = 27 - 22$$



Paths:

$$A-D-E \Rightarrow 9$$

$$A-D-E-F-G_2 \Rightarrow 14$$

$$A-I-J \Rightarrow 19$$

$$B-H-I-J \Rightarrow 20$$

critical path >>

$$ES = EF = LS = LF$$

slack time: (LF-EF)

- |                     |
|---------------------|
| $A \rightarrow 2$   |
| $B \rightarrow 0$   |
| $C \rightarrow 5$   |
| $D \rightarrow 4$   |
| $E \rightarrow 4$   |
| $F \rightarrow 6$   |
| $G_2 \rightarrow 6$ |
| $H \rightarrow 0$   |
| $I \rightarrow 0$   |
| $J \rightarrow 0$   |
| $K \rightarrow 5$   |
| $L \rightarrow 5$   |

(B) EM

(C)

(D)

(E) A

(F) C

Online  
class

# 22.3.20

## Project cost & Estimation

### Resources:

- ① Manpower  $\rightarrow$  labor, workers, employees.
- ② Materials  $\rightarrow$
- ③ Equipment  $\rightarrow$

$$(8 \times 5000) + (8 \times 500 \times 2) + (8 \times 30 \times 500)$$

5000 =

$$+ (8 \times 500 \times 2) + (800 \times 2 \times 0.5) + (0.5 \times 0.25) + (8 \times 500 \times 1)$$

5000 = 5000 =

$$+ (8 \times 500 \times 2) + (8 \times 500 \times 2) + (800 \times 0.5 \times 0.5) + (8 \times 500 \times 1)$$
$$+ (8 \times 500 \times 2) + (8 \times 500 \times 2)$$

$$(0.5 \times 0.25) + (8 \times 500 \times 1)$$

~~(2) P.C & E35~~

$$A = \frac{50000}{25} \times 4 \times 6 + 1500 \times 2 \times 6$$

$$= 66000$$

$$B = \frac{60000}{25} \times 2 \times 4 + 100000 + 1500 \times 1 \times 4 + 500 \times 1 \times 4$$

$$= 127200$$

$$C = (400 \times 5 \times 6) + (8000 \times 6)$$

$$= 60000$$

$$D = (8000 \times 20 \times 8) + (5 \times 400 \times 8) + \left( \frac{50000}{25} \times 8 \right)$$

$$= 192000$$

$$E = (13000 \times 6) + (360 \times 500) + (100 \times 55000) + (15 \times 400 \times 6) + \left( \frac{20000}{25} \times 6 \right) + \left( \frac{50000}{25} \times 6 \right)$$

$$= 58,32400$$

$$F = (8000 \times 6) + (240 \times 500) + (55000 \times 25) + (8 \times 400 \times 6) + \left( \frac{60000}{25} \times 6 \right) + \left( \frac{50000}{25} \times 6 \right)$$

$$= 15,98,600$$

$$G = \left( \frac{1000}{25} \times 2 \times 8 \right) + (1500 \times 20)$$
~~- 20640~~

$$= 46000$$

$$H = (6 \times (3 \times 1000)) + (2500 \times 25)$$

$$= 80500$$

$$I = (60 \times 500) + (\frac{6}{5} \times 400 \times 8) +$$

$$= 65,200$$

$$J = 11,200$$

$$K = 70,800$$

Total P. cost  
# 81,39,900

$$\text{Total project cost} = A + B + C + D + E + F + G + H + I + J + K$$

$$= 8139900$$

## Transportation model

- ① North-west corner method

② Least cost method.

---

① Balanced

② imbalanced

(2) ~~Supply~~ factory ~~Demand~~ warehouse

	Capacity				
	200	300	100	100	Assume cost
F1	200	300	100	100	\$16
F2	100	100	100	100	\$15
F3	100	100	100	100	\$14
	500				
	w1	w2	w3	w4	cap
	250	250	300	200	

~~New connection~~

	w1	w2	w3	w4	
F1	\$6	\$8	\$10	\$8	200 0
F2	\$6	\$5	\$10	\$12	300 290 0
F3	\$4	\$10	\$12	\$10	500 290 0
	250	250	300	200	1000 1000
Demand (w)	250	250	0	0	

Min cost >>  $(200 \times \$6) + (50 \times \$6) + (250 \times \$5) + (50 \times \$6) + (250 \times \$5) + (300 \times \$12) + (310 \times 200) = 8650$

	$w_1$	$w_2$	$w_3$	$w_4$	$w_5$	<del>SUPPLY</del>			
$F_1$	12	13	15	9	13	15	10	12	40 28 30
$F_2$		11	10	7	12	3	12	9	10 30
$F_3$		12	9	11	12	12	8	9	20 80
$F_4$		13	12	13	12	10		10	10 0
Demand $\rightarrow$	12 0	15 0	20 40	15 40	18 80				Total Supply 80 80 Total Demand Balanced

\* If Demand of  $w_1$  is zero, proceed to  $w_2$  for supply]

$$\text{Min. cost} \Rightarrow [(12 \times 13) + (15 \times 9) + (13 \times 15) + (7 \times 12) + (3 \times 12) + (12 \times 12) + (8 \times 9) + (10 \times 10)] \Rightarrow 922$$