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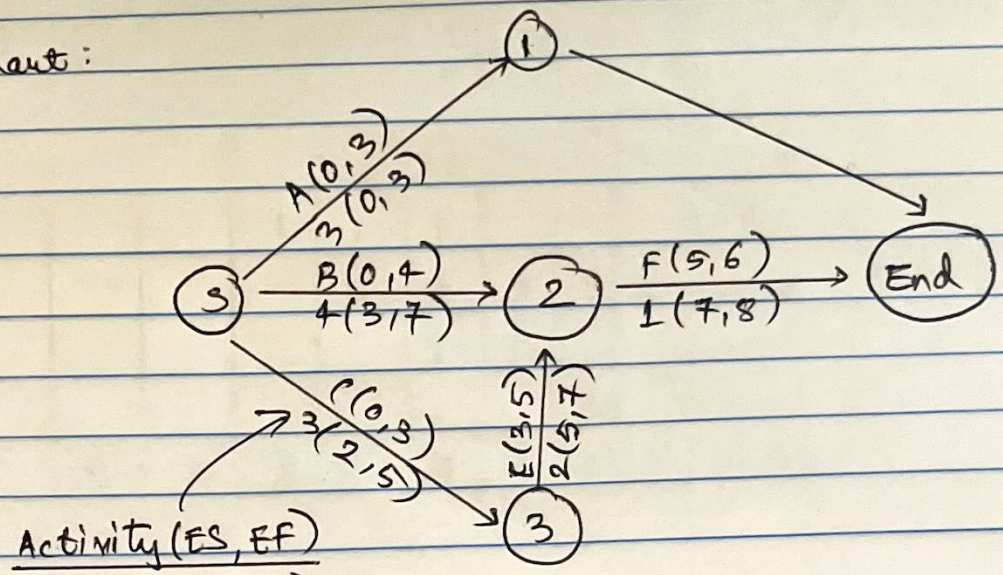
Assignment 7

Problem 7.2

a) PERT Chart:



Activity	start Node	End Node	Activity Time	staff Required	Slack Time
A	S	1	3	2	0
B	S	2	4	4	3
C	S	3	3	1	2
D	1	End	5	3	0
E	3	2	2	1	2
F	2	End	1	3	2

Slack = LS - ES

Activity Slack = 0

b) Forward Pass:

Week / Activity	1	2	3	4	5	6	7	8	Staff Required:
A	2	2	2						→ 2
B	4	4	4	4					→ 4
C	1	1	1						→ 1
D				3	3	3	3	3	→ 8
E				1	1				→ 0
F						3			→ 1
Total	7	7	7	8	4	6	3	3	→ 0 = 45

A = 8 - 3 = 5

c) Backward Pass:

Week / Activity	1	2	3	4	5	6	7	8	Staff Required:
A	2	2	2						→ 2
B				4	4	4	4		→ 4
C			1	1	1				→ 1
D				3	3	3	3	3	→ 2 → 9
E					1	1			→ 0
F							3		→ 0
Total	2	2	3	7	7	7	7	6	= 41

Δ = 7 − 2 = 5

d) If we move activity E in forward pass to a time period later, i.e, currently E is starting at 3, if E starts at 4, we can further reduce a staff, as 4 staff from B will be free, from which, 3 can be used for F and 1 can be used for E.

∴ The total staff required in this case would become 7.

⇒ staffing profile ⟶ 7 staff required.

Problem 7.4

a) BAC = cost per mile × total miles
= 30,000 × 20
= $600,000

Total time = 8 weeks
Cost per week = $\frac{600,000}{8}$ = $75,000

b) PV/BCWS = $75,000 @ 2 = $150,000

c) EV/BCWP = $30,000 @ 4 = $120,000

d) AC/ACWP = $100,000

e) CV = BCWP − ACWP
= $120,000 − $100,000
= $20,000 (+ve) → (company is under budget and project is under budget)

f) SV = BCWP − BCWS
= $120,000 − $150,000
= −$30,000 (−ve) → Project & company are behind schedule.

g) CVI = $\frac{BCWP}{ACWP}$ = $\frac{\$120,000}{\$100,000}$ = 1.2 > 1 → Earnings are more than amount spent.

h) $SVI = \frac{BCWP}{BCWS} = \frac{\$120,000}{\$150,000} = 0.8 < 1$

↓ Less work completed than planned.

i) $EAC = AC + (BAC - EV)$

$= \$580,000$

$ETC = BAC - EV$

$= \$430,000$

$VAC = BAC - EAC$

$= \$20,000 \longrightarrow +ve \longrightarrow$ Budget under run (company under budget)