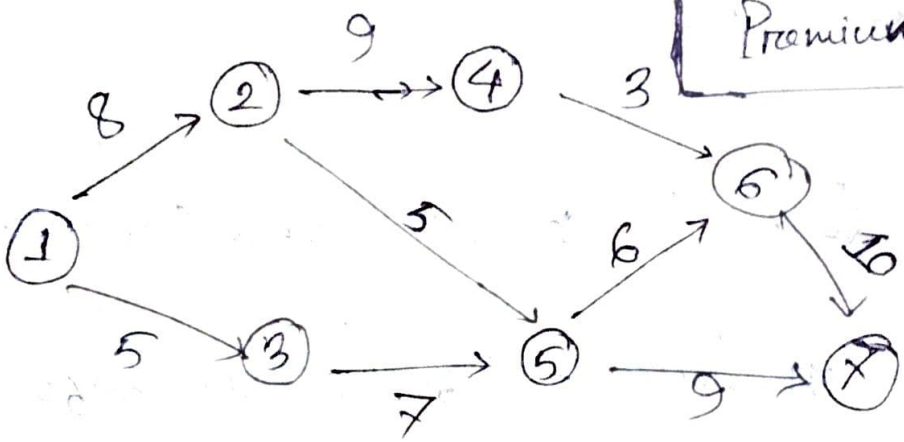
Activity	Time Days Normal	Crash	Direct Cost NC	CC.	Cost Slope $\frac{CC-NC}{NT-CT}$
~~1-2~~	~~8 7 5~~ 4	4	3000	6000	750
1-3	~~5~~ 4	3	4000	8000	2000
~~2-4~~	~~9 8~~ 6	6	4000	5500	500
~~3-5~~	~~7~~ 5	5	2000	3200	600
2-5	5	1	8000	12000	1000
~~4-6~~	~~3~~ $2\frac{1}{2}$	$2\frac{1}{2}$	10,000	11200	2400
5-6	~~6~~ 4	2	4000	6800	700
~~6-7~~	~~10~~ 7	7	6000	8700	900
5-7	9	5	4200	9000	1200
			45,200	70,400	

Indirect Cost 2000/day
Premium Value = 50,000/day



Paths:

1 - 2 - 4 - 6 - 7 = ~~30 days~~ ~~29~~ ~~28~~ ~~25~~ ~~23~~ ~~21~~ 20 $19\frac{1}{2}$

1 - 2 - 5 - 6 - 7 = ~~29~~ ~~28~~ ~~25~~ ~~23~~ ~~21~~ 20 $19\frac{1}{2}$

1 - 2 - 5 - 7 = ~~22~~ ~~21~~ ~~19~~ 18

1 - 3 - 5 - 6 - 7 = ~~28~~ ~~25~~ ~~23~~ ~~21~~ ~~20~~ $19\frac{1}{2}$

1 - 3 - 5 - 7 = ~~21~~ ~~19~~ 18

Step (i) Crash (2-4) by 1 day

Crash cost = 500

Project Duration = 29 days

Step (ii) (1-2) (6-7) (2-4, 2-5) (2-4, 5-6) (4-6, 2-5) (4-6, 5-6)

750 (Minimum) 900 1500 1200 3400 3100

∴ Crash (1-2) by 1 day, cost = 750

Total Crash Cost = 500 + 750 = 1250

Duration = 28 days

Step (iii) Crash (6-7) by 3 days, Crash cost = 3×900

Crash Cost total = 1250 + 2700 = 3950

Duration = 25 days

Step (iv) (1-2, 1-3) (1-2, 3-5) (5-6, 2-4) (5-6, 4-6)

2750 1350 1200 3100

(Minimum)

Crash (5-6, 2-4) by 2 days, CC = 2×1200 = 2400

Total CC = 3950 + 2400 = 6350, Duration = 23 days

Step (v) Crash (1-2, 3-5) by 2 days

CC = 2×1350 = 2700

CC Total = 6350 + 2700 = 9050

Duration = 21 days

Step (vi) (1-2, 1-3) by 1 day

CC = 750 + 2000 = 2750

CC Total = 9050 + 2750 = 11,800

Duration = 20 days

Step (vii) (4-6, 2-5, 1-3) (4-6, 5-6)

5400 3300

Crash (4-6, 5-6) by $\frac{1}{2}$ day, CC = 1550

CC Total = 11800 + 1550 = 13350

After 23th day,

Total cost = Normal cost + Crash cost + Indirect cost

= 45200 + 6350 + 46000

= 97550

At 22th day,

Total cost = 45200 + 7700 + 44000

= 96900 ↓

At 21th day,

Total cost = 45200 + 9050 + 42000

= 96250 ↓ (optimal cost)

At 20th day,

Total cost = 45200 + 11800 + 40,000

= 97000 ↑

At $19\frac{1}{2}$th day

Total cost = 45200 + 13350 + 39000

= 97550 ↑

So, we have made the project duration $19\frac{1}{2}$ days

by reducing $(30 - 19\frac{1}{2}) = 10\frac{1}{2}$ days

Our rival company will launch their product at 1st Febru

Our launching date was 7th February (6 days later than rival company)

∴ If we finish our project by $19\frac{1}{2}$ days,

we will be able to launch our product =

$(10\frac{1}{2} - 6) = 4\frac{1}{2}$ days ago than rival company.

∴ Premium profit will be $= (4\frac{1}{2} \times 50000)$

$= 225000/-$

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