Asansol Engineering College

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1) The table below gives the schedule of welding activities in an assembly shop:

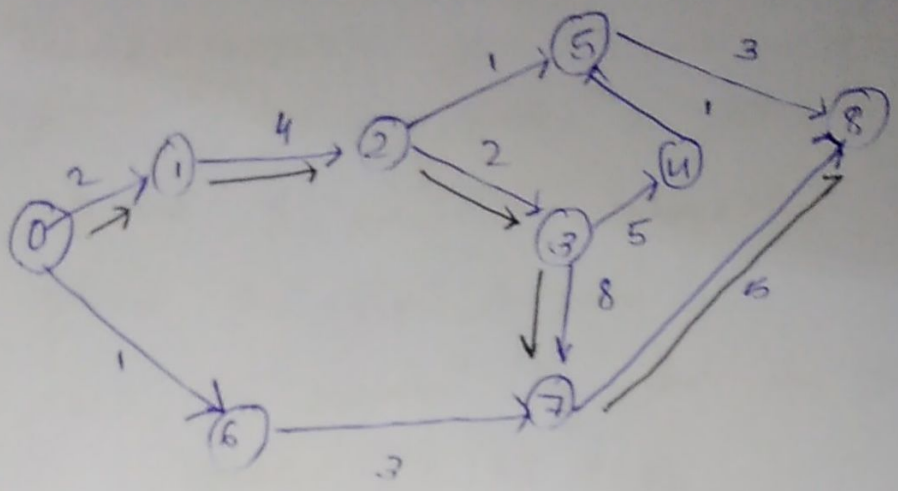
a) Draw the project network

b) Determine the slack times for each activity and mark the critical path

c) Compute total project duration

Activity	Duration	EST	EFT	LST	LFT	Slow
0 - 1	2	0	2	0	2	0
0 - 2	4	2	6	2	6	0
2 - 3	2	6	8	6	8	0
3 - 4	5	8	13	12	17	4
2 - 5	1	6	7	17	18	11
5 - 4	1	13	14	17	18	4
0 - 6	1	0	1	12	13	12
3 - 7	8	8	16	8	16	0
6 - 7	3	1	4	13	16	12
5 - 8	3	14	17	18	21	4
7 - 8	5	16	21	16	21	0

a)



b) Critical path

$0 \rightarrow 1 \rightarrow 2 \rightarrow 3 \rightarrow 7 \rightarrow 8$

c) Total duration :-

$2 + 4 + 2 + 8 + 5 = 21$ days.

2) An R & D project has a list of tasks to be performed whose time estimates are given in the table as follows

a) Draw the project network

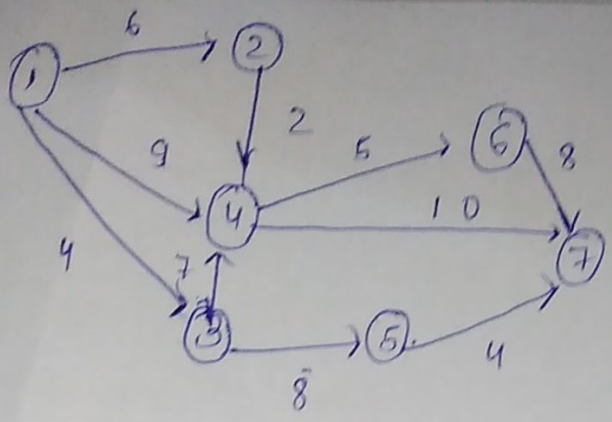
b) find the critical path

c) Find the probability that the project is completed in 19 days

d) Find the probability of completing it in 24 days

e) If the probability of completion of project is 84% find the scheduled time of project

Activity	To	Tm	Tp	Te	St	Vt	EFT	EST	LST	LFT	Flow
1-2	4	6	8	6	0.6	0.36	6	0	3	9	3
1-3	2	3	10	4	1.3	1.6	4	0	0	4	0
1-4	6	8	16	9	1.6	2.5	9	0	2	11	2
2-4	1	2	3	2	0.3	0.09	8	6	9	11	3
3-4	6	7	8	7	0.3	1.09	11	4	4	11	0
3-5	6	7	14	8	1.3	0.6	12	4	12	20	8
4-6	3	5	7	5	0.6	1.36	16	11	11	16	0
4-7	4	11	12	10	1.3	1.36	21	11	14	24	3
5-7	2	4	6	4	0.6	0.36	16	12	20	24	8
6-7	2	9	10	8	1.3	1.6	24	16	16	24	0



b) Critical path

$1 \rightarrow 3 \rightarrow 4 \rightarrow 6 \rightarrow 7$

$T_6 = 4 + 7 + 5 + 8 = 24$

$\sigma t = \sqrt{1.3 + 0.3 + 0.6 + 1.3}$

$= \sqrt{3.5} = 1.9$

c) $D = 19$

$T_6 = 24$

$Z = \frac{19 - 24}{1.9} = -2.6 \approx 0.005\%$

d) $D = 24$

$T_6 = 24$

$Z = \frac{24 - 24}{1.9} = 0 \approx 0.500\%$

e) $Z = 84.1\% \approx 0.841$

$0.841 = \frac{D - 24}{1.9} \Rightarrow D = 25.59$

≈ 26 days.