Tutorial 3 A059

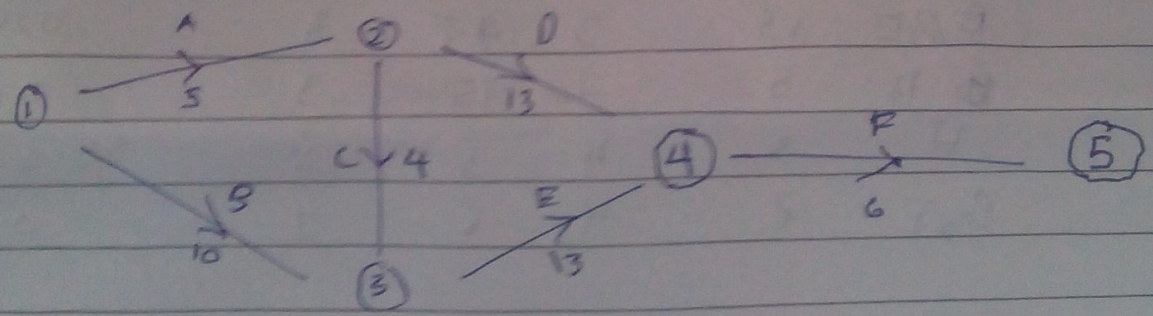
PERT

Expected Time : $\mu = \frac{a + 4m + b}{6}$; Variance : $\sigma^2 = \left(\frac{b-a}{6}\right)^2$

a: optimistic time, b: pessimistic time, m: most likely time.

Job	Predecessors	a	b	m	μ	σ
A	–	2	5	8	5	1
B	–	7	10	13	10	1
C	A	3	4	5	4	1/9
D	A	9	12	21	13	4
E	B, C	5	14	17	13	4
F	D, E	3	6	9	6	1

PERT CHART



Example

Since $E(T) = 29$ days and $\sigma = (6)^{1/2}$ days

Find the probability of

(1) Completing the project 3 days before.

(2) Completing the project 2 days after.

Soln

(i) $Prob(T \leq 26) = Prob\left(S \leq \frac{26-24}{\sqrt{6}}\right) = 0.11$

(ii) $Prob(T \leq 31) = Prob\left(S \leq \frac{31-24}{\sqrt{6}}\right) = 0.74$

Question

Activity	Predecessor	a	m	b	te	S
A	—	4	5	12	6	1.77
B	A	3	45	15	6	4
C	A	2	3	4	3	0.11
D	C	6	8	22	10	7.11
E	B	4	6	8	6	0.44
F	~~D,E~~ C	3	4	5	4	0.11
G	~~B~~ D,E	1.5	3	4.5	3	0.25
H	~~A~~ B	5	7	15	8	2.77
I	H	3	4	5	4	0.11
J	G, I	2	4	6	4	0.44