IDS420

Project Management

Widgetco is about to introduce a new product (Product Z). One unit of Product Z is produced by assembling 1 unit of Product X and 1 unit of Product Y. Before, production begins on either Product X or Product Y, raw materials must be purchased and workers must be trained. Furthermore, before products X and Y can be assembled into Product Z, the finished Product Y must be inspected. Table below gives the list of the predecessors and the duration of each activity.

Activity	Predecessors
A= train workers	-
B= purchase raw materials	-
C= produce Product X	A,B
D= produce Product Y	A,B
E= test Product Y	D
F= Produce Product Z by assembling Products X&Y	C,E

The time required to complete each activity is uncertain (which implies that the length of time needed to complete the project is uncertain). Show that activities B, D, E & F are critical.

Assume that activities A-F follow independent Normal distributions with the following parameters given.

Activity	Mean	Standard Deviation
A	6	2
B	9	1
C	8	2
D	7	2
E	10	3
F	12	3

- Draw a pictorial (i.e. network) representation of the project
- Find the variance of each activity
- Find the variance of the project
- Find the project expected time to complete the project
- Estimate the probability that the project will take less than 40 days
- Estimate the probability that the project will take more than 45 days
- Use simulation to show that B, D, E & F are on the critical path.