

Department of Civil Engineering, IIT Delhi
CEL769 PROJECT PLANNING AND CONTROL

H Slot
22-11-08

Major

I Semester 2008-09
03:30PM – 05:30PM

Max Mark: 60
Venue: VI LT2

- 1) State the need for inventory planning (three)? (3)
- 2) What is resource leveling? Enumerate the assumptions made for leveling the resources. Mention also the expected limitations. (5)
- 3) Describe the possible patterns of drawing a network diagram along with a simple example. (4)
- 4) Brief the assumptions related to the time/cost trade-off model development (4)
- 5) Show all the duration values on a continuous probability distribution curve (5)
- 6) Compare the following pointing out the salient features among them
 - (a) Cyclical ordering system and fixed order system (three) (3)
 - (b) Working stock and safety stock (two) (2)
 - (c) Make, Buy and Lease (four) (6)
- 7) Cost and schedule data for a small project are given below. Assume an indirect cost of Rs. 200/day, develop the least-cost curve for the project (10)

Activity	IPA	Crash Cost (Rs.)	Normal Cost (Rs.)	Crash Duration (days)	Normal Duration (days)
A	-	3900	3600	6	7
B	A	6500	5500	3	5
C	B	7200	6350	7	9
D	B	4900	4700	18	19
E	B	2200	2050	9	10
F	C	1700	1200	6	8
G	F	7200	7200	5	5
H	E	10000	9450	10	11
I	D,G,H	4700	4500	6	7

- 8) Here, you are given two critical paths in two separate tables

Critical Activity	to	tm	tp
A	6	6	6
D	3	4	5
G	5	5	8
J	5	7	9
M	5	8	8

Critical Activity	to	tm	tp
B	1	5	6
C	2	6	10
E	1	8	9
F	1	4	7
H	5	7	12

- (a) Find the mean and standard deviation (for both the paths)
- (b) Find the probability that the project will finish

- i. By the end of day 30
- ii. Before the start of day 32
- iii. After the end of day 31
- iv. Find the date of completion with atleast 93% confidence (10)

- 9) Assume that a large earth-moving project will be undertaken to clean up several hazardous waste sites. The current schedule and resource assignments are shown in the table below. Adjust the activities and schedule to obtain the desired allocation. (8)

Site	IPA	Duration (weeks)	Current planned number	Desired allocation
A	-	12	6	4
B	A	20	6	5
C	-	15	6	4
D	C, F	24	6	8
E	-	12	6	9
F	E	18	5	4
G	F	10	5	7

- 10) You are monitoring the performance of the following 3 activities in a 5 month project. The total effort required to perform Activity A, B and C is 3000 man hours each. The plan for the first month of the project is given below

Months/Activity	A	B	C
1	1000	750	500

You have been monitoring the project for this month. The cumulative percentage of work completed is:

Months/Activity	A	B	C
1	25%	25%	25%

The contractor has submitted the following data regarding the amount of man hours her crew has spent on the job

Months/Activity	A	B	C
1	1000	750	1000

How has the contractor's performance been over this month? If the rate of progress remains the same, what is the forecast completion date of the task? Explain by showing all your calculations. Suitable data as and when necessary can be assumed. (10)