

**COMM 225: POM**

**TOPIC 2: PROJECT MANAGEMENT – QUESTIONS (To be solved in Class)**

**Q1 (Ref: Q. 17-7, p716 of textbook):** Three recent university graduates have formed a partnership and have opened an advertising firm. Their first project consists of activities listed in the following table.

- (a) Draw the precedence network.
- (b) What is the probability that the project can be completed in 24 days or less? In 21 days or less?
- (c) Suppose that now is the end of the seventh day and that activities a & b have been completed while activity d is 50 percent completed. Three-point estimates for the remaining duration of activity d are now 5, 6, and 7 days. Activities c and h are ready to begin. Determine the probability of finishing the project by the end of (a) day 24 and (b) day 21.

<b>Duration in Days</b>				
<b>Activity</b>	<b>Precedes</b>	<b>Optimistic</b>	<b>Most Likely</b>	<b>Pessimistic</b>
a	c	5	6	7
b	h	8	8	11
c	e	6	8	11
d	f	9	12	15
e	End	5	6	9
f	g	5	6	7
g	End	2	3	7
h	i	4	4	5
i	End	5	7	8

**Q2 (Ref: Q. 17-13, p717):** The project manager of the construction of a domed stadium had hoped to be able to complete the construction prior to the start of the next season. After activity duration estimates, it now appears that a certain amount of crashing will be needed to ensure project completion before the season opener. Given the following information, determine the minimum-cost crashing schedule that will shave five weeks off the project length.

			<b>Crashing Costs</b>	
<b>Activity</b>	<b>Precedes</b>	<b>Normal Duration (weeks)</b>	<b>First Week</b>	<b>Second Week</b>
A	B	12	\$15,000	\$20,000
B	K	14	10,000	10,000
C	D, E, F	10	5,000	5,000
D	G	17	20,000	21,000
E	H	18	16,000	18,000
F	I	12	12,000	15,000
G	M	15	24,000	24,000
H	N, P	8	—	—
I	J	7	30,000	—
J	P	12	25,000	25,000
K	End	9	10,000	10,000
M	End	3	—	—
N	End	11	40,000	—
P	End	8	20,000	20,000

**Q3(Ref: Q. 17-18, p719 of textbook):** Consider the construction of a research building for Eli Lilly & Co., a pharmaceutical company, a few years ago. This 550,000 ft<sup>2</sup>. 4-story (in 3 wings), \$135 million building was planned to be completed in five years. It required special ventilation for 162 labs, purified water, and special drainage. Consider the following list of major activities/work packages (as seen by Eli Lilly), their expected duration, and their relationship to other activities/work packages for the Eli Lilly building.

Activity	Duration (in months)	Immediate Predecessor
A. project approval	3	—
B. decide general requirements	6	A
C. choose A/E firm	2	A
D. preliminary design	3	B, C
E. choose project management firm	2	B
F. decide detailed requirements	6	D, E
G. finalize design	6	F
H. schedule, budget, manual	4	F
I. start bid packages	2	G, H
J. excavate, foundation, steel structure	10	I
K. put up enclosures	7	J
L. HVAC, fire protection, plumbing	6	J
M. Electrical	5	J
N. Interior finishes	12	K, L, M
O. close out project	2	N

- Draw the precedence network.
- Determine the ES, EF, LF, and LS times.
- What is the project duration?
- What are the critical activities?