INSE 6230: Assignment 1 - Winter 2018

(0% of final grade)

1. The table below provides information about a short IT project.
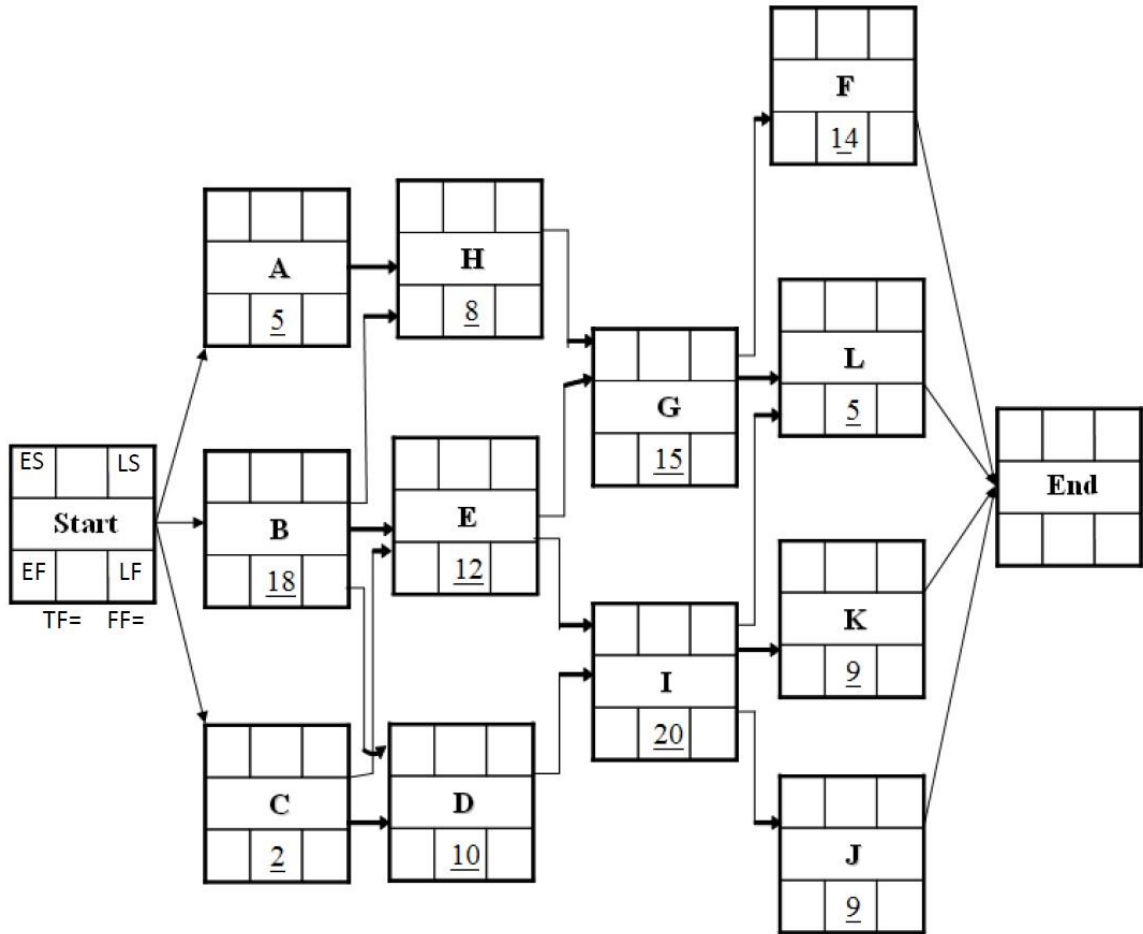
Activity	Predecessors	Duration (Months)
A	-	2
B	-	3
C	A	4
D	A, B	2
E	D	2
F	B, C, E	3

A. Draw an AOA network diagram for this project.
B. Find the critical path(s) in the network.
C. Draw Gantt Chart for this project
D. Consider the following situations:
   a. Activity A takes one day longer than planned.
   b. Activity B takes one day longer than planned.
   c. Activity C takes one day longer than planned.

For each of the cases above, determine what happens:
- with the completion time of the project
- with the next (following) activity

2. Fill the AON network below based on the Start node pattern, *i.e.* calculate ES, LS, EF, LF, TF and FF. Indicate the critical path of the network. What is the project completion time?

3. Draw an AOA and AON networks for the project with the following activities.

Activity	Predecessors	Min	Most Likely	Max
A	-	5	5	6
B	-	6	7	8
C	A, B	3	3	5
D	C	4	5	6
E	C	5	8	8
F	D	8	13	14
G	D, E	3	6	7

A. Use PERT method to calculate the mean and standard deviation of the project completion time.

B. Calculate the critical path with and without considering the 3-point estimation.

4. Consider a project that requires an initial investment of $50,000 in year 0. It has a duration of 7 years. For year 1 to year 7, the labor cost and materials cost are each year are as follows: $10,000 per year and $5,000 per year, respectively. The annual benefit is $30,000 from year 1 to year 7. The company uses a discount rate of 10%.

A. Calculate NPV for this project. Based on the NPV criterion, would you recommend investing in this project?

B. If the company's required maximum payback period is 2 years, should this project be accepted?

C. Calculate ROI for this project.

5. The tasks of a project and the related data is given below. It is required to complete the project in 56 days at minimum possible cost.

Activity	Predecessors	Duration	Maximum number of days to crash	Cost of crash per day
A	-	20	10	5
B	-	33	4	7
C	-	18	8	5
D	A	27	3	7
E	A	16	4	8
F	C	25	3	4
G	C	27	5	8
H	E, B, F	10	3	3
I	E, B, F	21	4	7
J	H, D	19	3	6

A. Draw the network for this project (AON or AOA)

B. What is the critical path(s) and the project duration at this point?

C. Determine the critical path(s), the project duration and the additional project cost after each crashing step, and show the details about the activities you have crashed. Please, create a summary table of your crashing steps similar to the one below.

Step	Activity(-ies) to be crashed	By how many days?	For what additional cost?	Project duration after this step	Total additional project cost	Critical path(s) after this step
1						
2						
…						

D. What is the final critical path(s), the project duration and the final additional project cost after the crashing?