Ministry of high education
High Institute for Eng. and Tech.
in New Damietta

Mid Term Exam November 2017
ENG 402 Project Management
Time allowed 90 minute

Answer the following problems

Question 1: (8 marks)

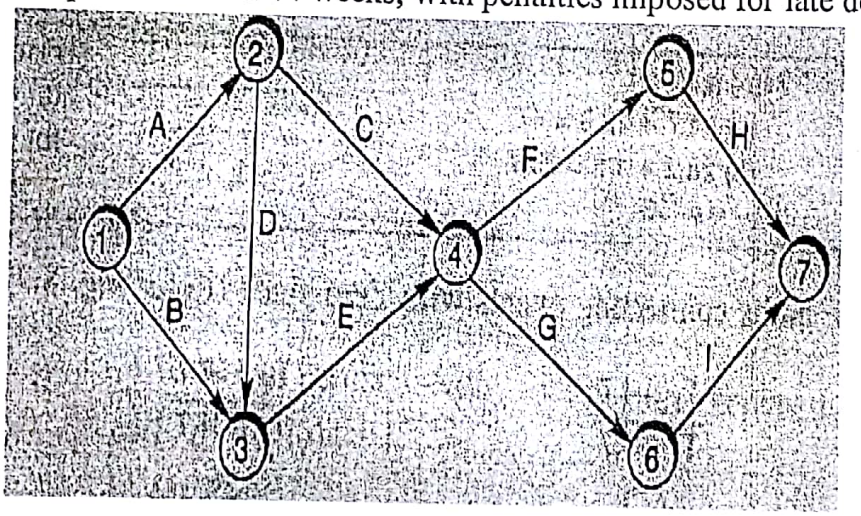
A project has 11 activities (A, B, C,…., K). The time required for each of the eleven activities and the precedence relationships between the activities are as under:

Activity	A	B	C	D	E	F	G	H	I	J	K
Preceding Activity	-	-	A, B	A	C	A, B	A,B,C,F	B,F,G	C,D,F	I,H	C
Time days	40	20	15	25	15	25	10	15	10	15	10

A. Draw a bar chart, find out the project completion time and show the critical path
B. Draw the network

Question 2: (12 marks)

For the network shown and the information given below, the contract calls for project completion within 44 weeks, with penalties imposed for late delivery, find:



Activity	te week
A	5
B	8
C	2
D	3
E	8
F	16
G	9
H	12
I	2

a) T_E, T_L and slack time for each event
b) The critical path or paths, the non-critical paths and the time of each path.
c) the project expected completion time
d) Is there any penalty for the company?
e) Which activities can be delayed beyond the data of the T_E without delaying the project completion time? And by how many weeks
f) What will happen if the expected time of activity C increases by 10 weeks
g) What will happen if the expected time of activity G increases by 10 weeks
h) If the expected time of activity F increases by 5 weeks, by how many weeks Activity H must be decreased to prevent paying penalty

Best wishes,
Prof. Dr. Mohamed Saad El Kady

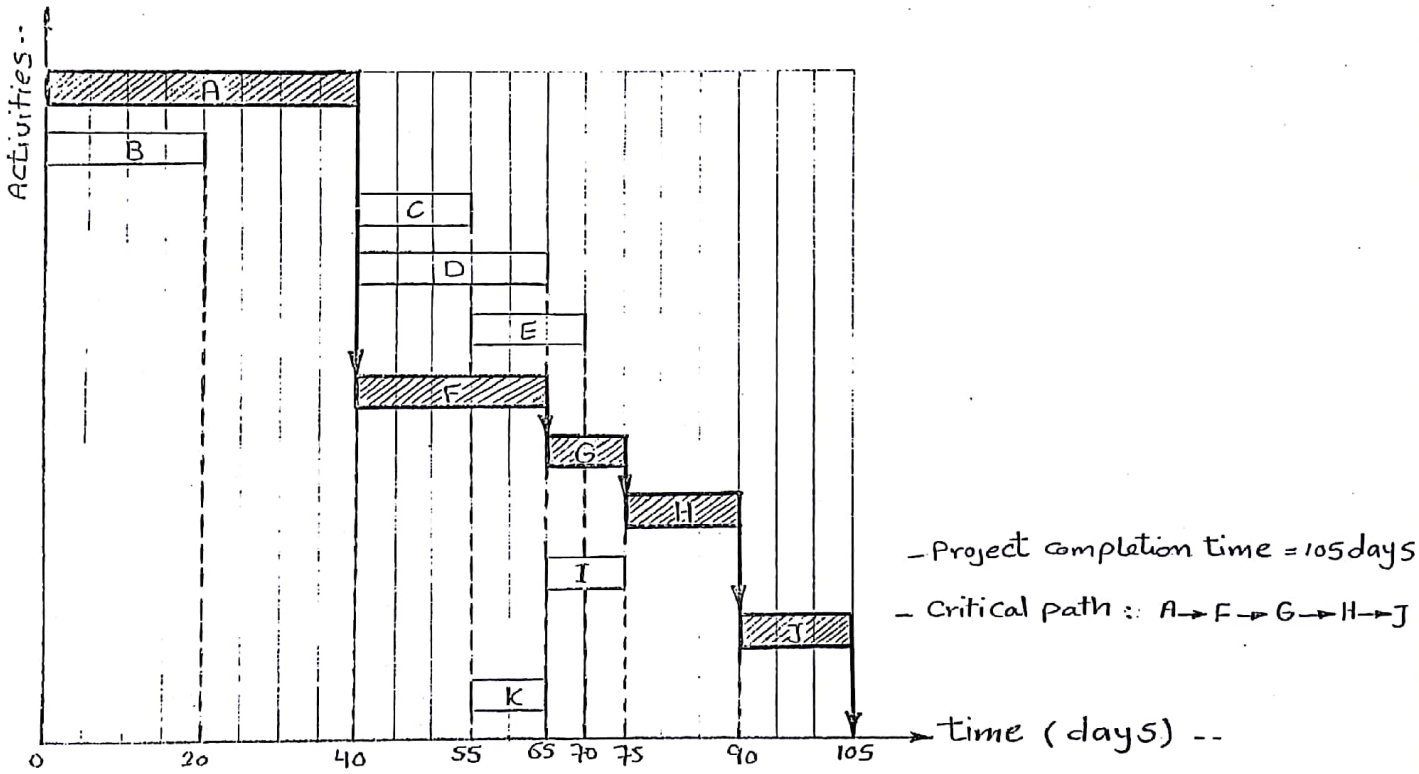
Model Answer — Project Management ..
Mid term Exam — November 2017 ..

Question 1 :

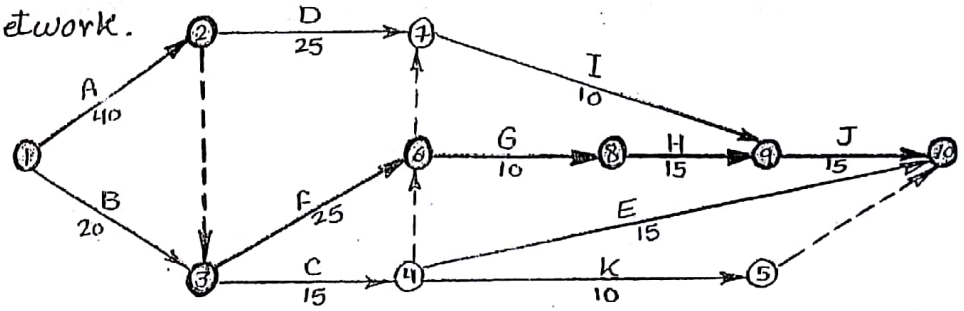
A project has 11 activities (A, B, C, ---, K). The time required for each of the eleven activities and the precedence relationships between the activities are as under:

Activity	A	B	C	D	E	F	G	H	I	J	K
Preceding Activity	–	–	A, B	A	C	A, B	A, B, C, F	B, F, G	C, D, F	I, H	C
Time days	40	20	15	25	15	25	10	15	10	15	10

A. Draw a bar chart, find out the project completion time and show the critical path.

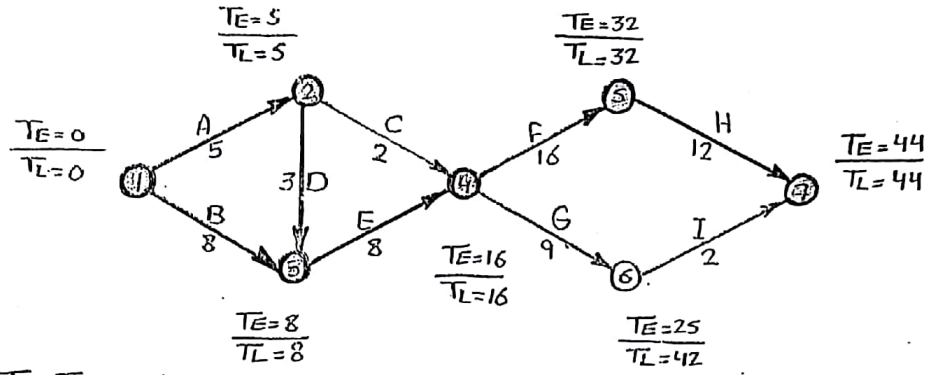


B. Draw the network.



Question 2 :

For the net work shown and the information given below, the contract calls for Project completion within 44 weeks, with penalties imposed for late delivery, find:



Activity	te (week)
A	5
B	8
C	2
D	3
E	8
F	16
G	9
H	12
I	2

a. TE, TL and slack for each event.

event	TL	TE	Slack (TL-TE)
1	0	0	0
2	5	5	0
3	8	8	0
4	16	16	0
5	32	32	0
6	42	25	17
7	44	44	0

b. The critical path or paths, the non-critical paths and the time of each path.

Path	Duration	Type
A → C → F → H	5+2+16+12 = 35	Non
A → D → E → F → H	5+3+8+16+12 = 44	Critical
A → C → G → I	5+2+9+2 = 18	Non
B → E → F → H	8+8+16+12 = 44	Critical
B → E → G → I	8+8+9+2 = 27	Non
A → D → E → G → I	5+3+8+9+2 = 27	Non

C. The project expected completion time.

- The project expected completion time = 44 weeks.

d. Is there any penalty for the company?

- There is not any penalty for the company because of the project duration equal to the contract duration = 44 weeks.

e. which activities can be delayed beyond the data of the TE without delaying the project completion time? And by how many weeks.

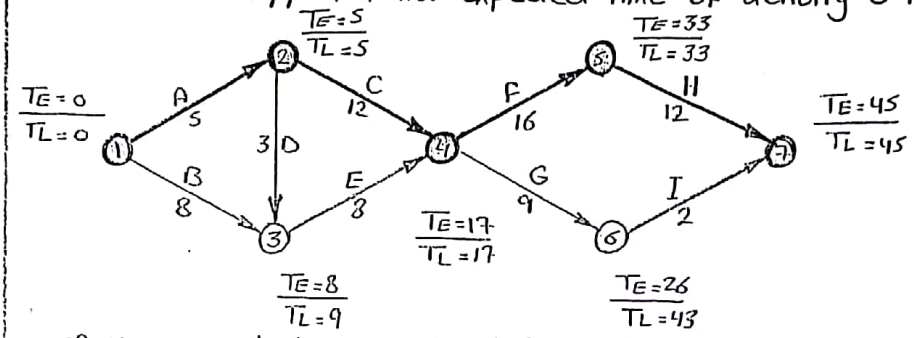
- Because of the slack time between activity G and activity I = TL−TE = 17 weeks.

(1): Activity I can be delayed 17 weeks without delaying the project completion time.

(2): or Activity G can be delayed 17 weeks without delaying the project completion time.

(3): or both of activity I and G can be delayed 17 weeks together.

F. what will happen if the expected time of activity C increases by 10 weeks.



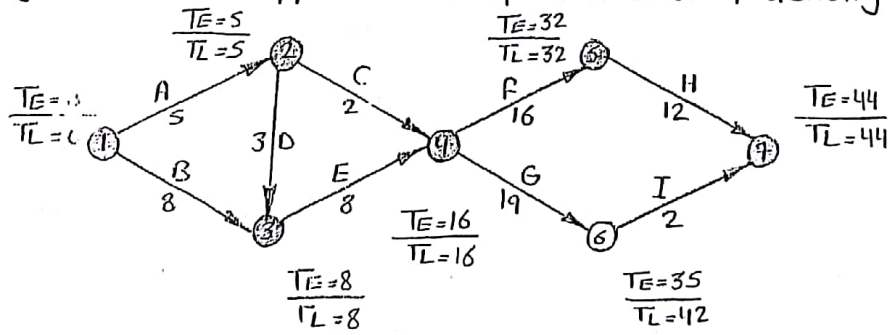
- if the expected time of activity C increases by 10 weeks :-

(1): The project completion time will increases by 1 week.

(2): The activity C will converts from non critical activity to critical activity.

(3): The critical Path will changes to : A → C → F → H.

g. what will happen if the expected time of activity G increases by 10 weeks.



- if the expected time of activity G increases by 10 weeks there is not thing will happen because of the activity G has a slack time = 17 weeks

h. If the expected time of activity F increases by 5 weeks, by how many weeks activity H must be decreased to prevent paying penalty.

- To prevent paying penalty activity H must decreased by 5 weeks if activity F increases by 5 weeks because of the two activities are critical activities.