PM

PAST PAPERS

عندما تطمح في شيء وتسعى جادا في الحصول
عليه ..فإن العالم بأسره يكون في صفك
باولو كويلو

Kaizen Team 28/30

University of Jordan
Faculty of Engineering and Technology
Industrial Engineering department
Mid-term exam
Project management (0906522)
March, 25th, 2010.

Student name : ----------

student no:----------

Serial no: 40

Question 1:

1. Draw an AOA /Pert network for the activities in the following table: (5 points)

Activity	Depends on	Duration (days) optimistic a	Most likely m	pessimistic b	ECT	VCE	LS	EFT	LST	LFT	TF	FF	wF	ind.F
A	-	6	7	8	7	1/9	0	7	0	7	0	0	0	0
B	-	1	3	4	3	4/9	0	3	4	7	4	0	4	0
C	-	6	8	10	8	4/9	0	8	12	20	12			
D	A,B	7	10	13	10	1	7	17	7	17	0	0	0	0
E	B,C	2	2	2	2	0	8	10	23	25	15	0	15	0
F	D	5	8	11	8	1	17	25	17	25	0	0	0	0
G	B,C	1	1	1	1	0	8	9	24	25	16	6	10	2
H	E,G	1	2	3	2	1/9	10	12	40	42	30	30	0	15
I	D	8	8	8	8	0	17	25	17	25	0	0	0	0
J	A,B	2	7	12	7	25/9	7	14	31	38	24	11	13	11
K	B,C	1	5	9	5	16/9	8	13	20	25	12	12	0	0
L	E,F,G,K,I	13	17	21	17	16/9	25	42	25	42	0	0	0	0
M	E,F,G	1	3	5	3	4/9	25	28	39	42	14	14	0	14
N	F,J	4	4	4	4	0	25	29	38	42	13	13	0	0

2. Apply the forward pass method and the backward pass method on the AOA network. (3 points)
3. Calculate the EST, EFT, LST, and LFT for each activity. (4 points)
4. Calculate the total float, free float, interfering float, and independent float for each activity.(4 points)
5. Name the critical activities in this network. (2points) sheet A-D-F-F''-EFG'-L
   A-D-I-L
6. What is the variance of the critical path. (2 points)
7. What is the expected completion time of the project. (2points) 42
8. What is the probability to complete this project in 45 days or less. (2 points)
9. What is the probability to complete the project in 35 days or less. (1 point)
10. What is the expected completion time of this project corresponding to 85 % completion. (2points)
11. Draw the AON network for this project. (3 points).

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عمان

اسم الطالب _____ رقمه الجامعي _____

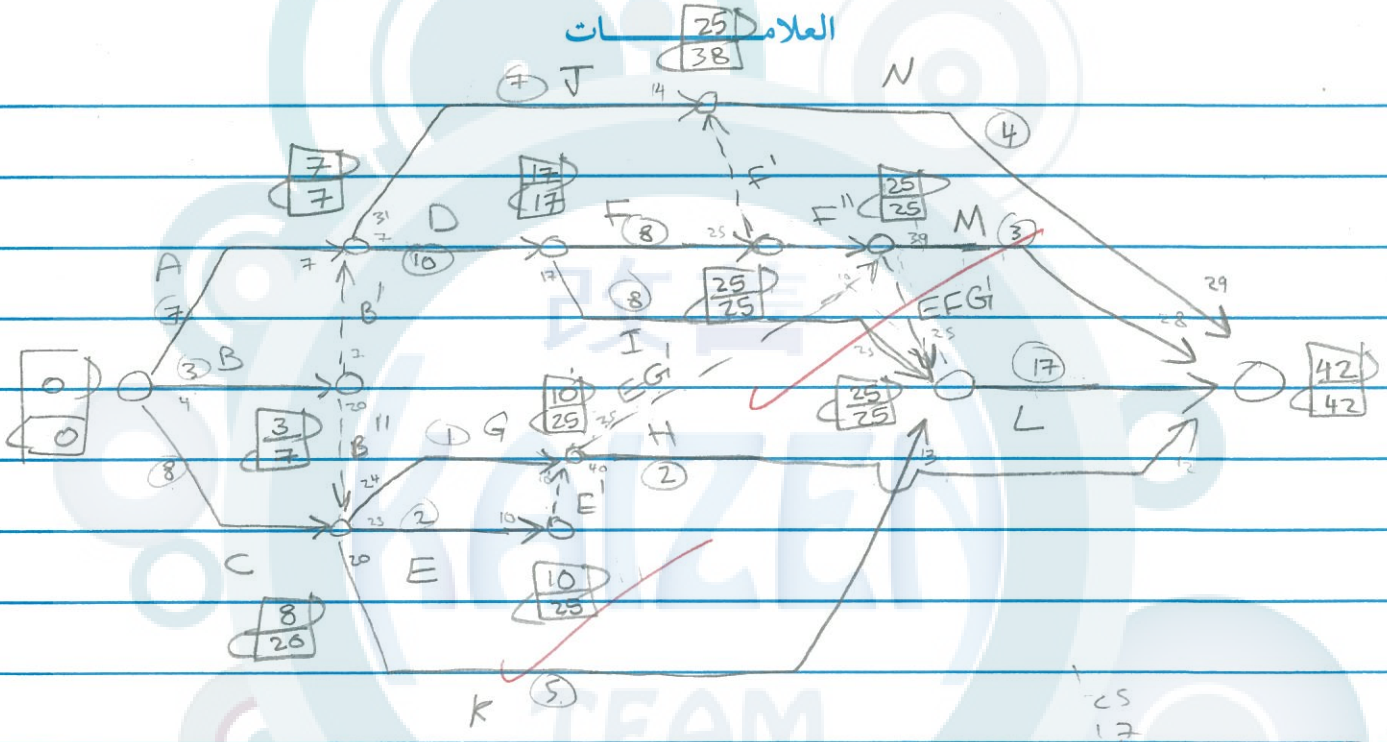
المستوى _____ الكلية _____

القسم _____ المادة PM

التاريخ _____

40

العلامات



2 critical paths

(5)

* A - D - F - F'' - EFG' - L

* A - D - I - L

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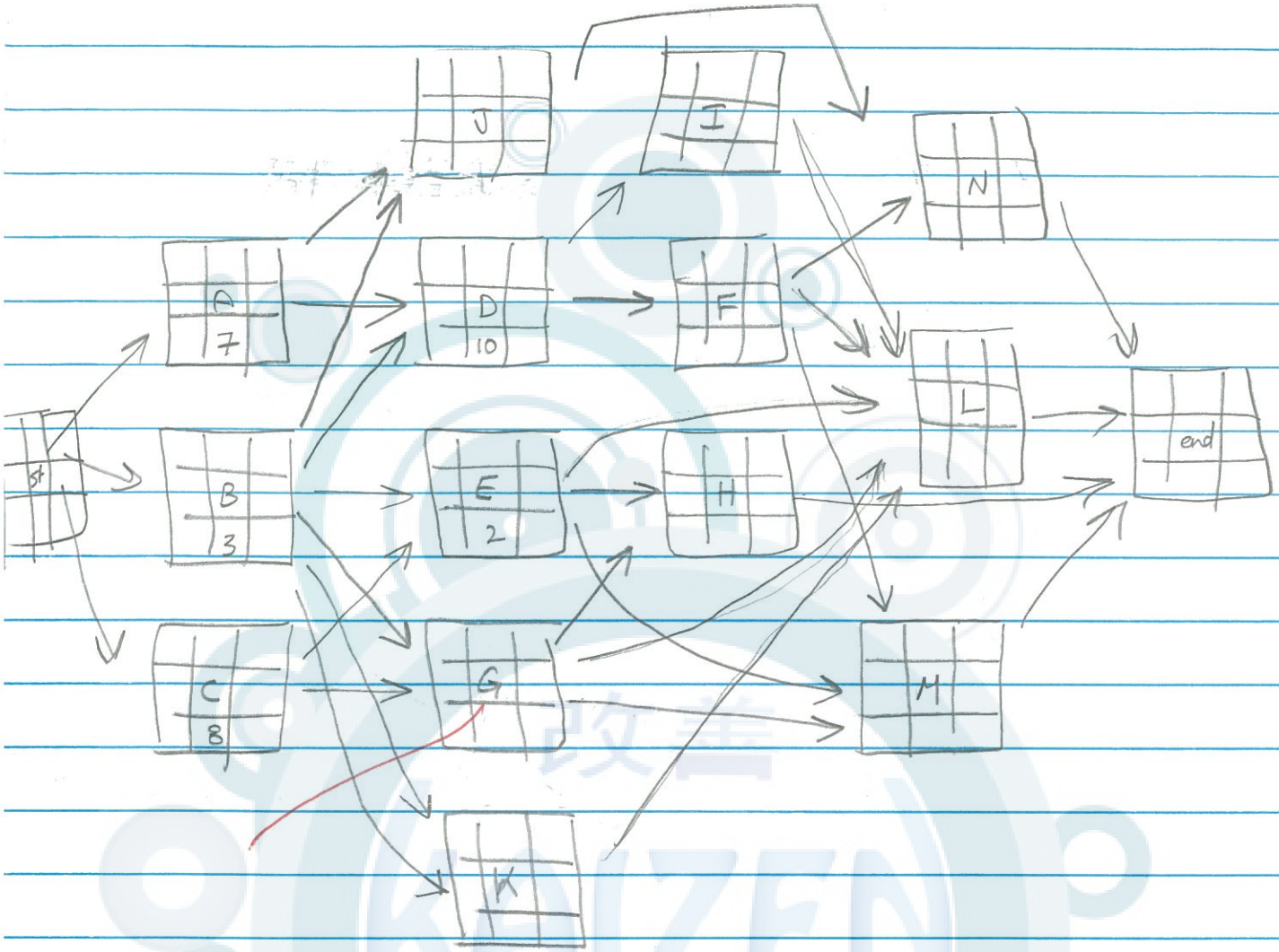

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A - D - F - F'' - EFG' - L

(6) $V = V_{(A)} + V_{(D)} + V_{(F)} + V_{(L)}$

(1) $= \frac{1}{9} + 1 + 1 + \frac{16}{9} = \frac{35}{9} = 3.889$

(2) A - D - I - L

$= V_A + A_D + V_I + V_L$

$\frac{1}{9} + 1 + 0 + \frac{16}{9} = \frac{26}{9} = 2.889$

we take the biggest

$V = 3.887$

$6 = 1.972$

A - D - F - F'' - EFG' - L

(7) completion time = 42

(8) $Z = \frac{X - \mu}{6} \Rightarrow \frac{45 - 42}{1.972} = 1.521$

table $\Rightarrow$ 93.57 %

(9) $Z = \frac{35 - 42}{1.972} = -3.55$

table = 1 - 1 ~ zero

(10) $Z\ 0.85 = 1.04$

$1.04 = \frac{X - 42}{1.972} = 44.051$ days

الجامعة الأردنية

عمـان

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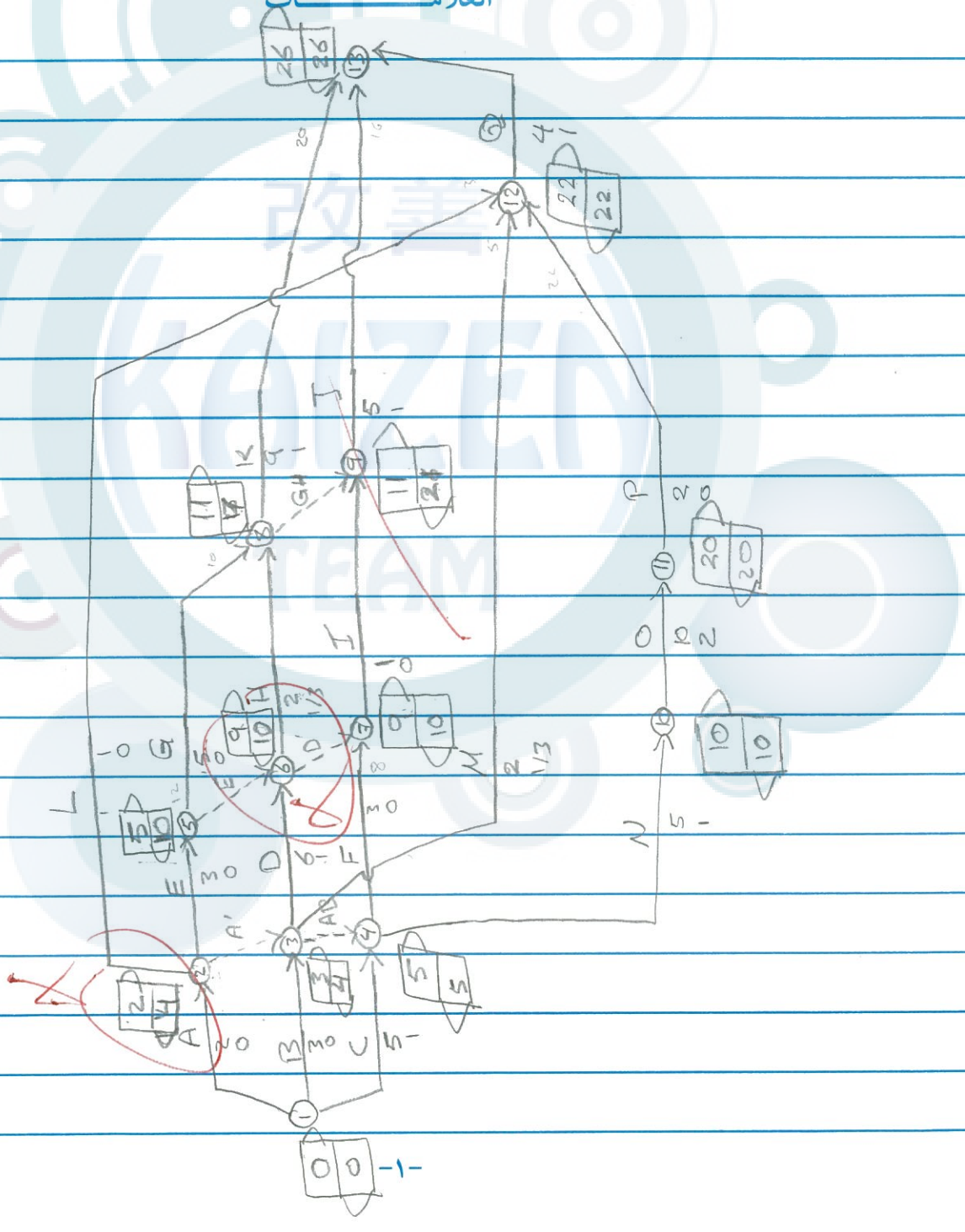
اسم الطالب _____ رقمه الجامعي _____

المستـــوى _____ الكليـــة _____

القســـم _____ المـــادة _____

التاريـــخ _____

العلامـــات _____



Act	Dur	EST	EFT	LST	LFT	TF	FF	Inter.	Indp.
A	2								
B	3								
C	2								
D	3								
E	3								
F	3								
G	5								
H	1								
I	1								
J	2								
K	6								
L	1								
M	1								
N	2								
O	4								
P	2								
Q	1								

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	Time	EST	EFT	LST	LFT	TF	FF	INTF	INDF
A	2	0	2	2	4	2	0	2	0
B	3	0	3	1	4	1	0	1	0
*C	5	0	5	0	5	0	0	0	0
D	6	3	9	4	10	1	0	1	0
E	3	2	5	7	10	5	4	1	2
F	3	5	8	7	10	2	1	1	1
G	5	5	10	12	17	7	1	6	0
H	2	9	11	15	17	6	0	6	0
I	1	9	10	20	21	11	1	10	0
J	5	11	16	21	26	10	10	0	0
K	9	11	20	17	26	6	6	0	0
L	1	2	3	21	22	19	19	0	17
M	2	3	5	20	22	17	17	0	16
*N	5	5	10	5	10	0	0	0	0
*O	10	10	20	10	20	0	0	0	0
*P	2	20	22	20	22	0	0	0	0
*Q	4	22	26	22	26	0	0	0	0
A'	0	2	2	4	4	2			
AB	0	3	3	5	5	2			
E'	0	5	5	10	10	5			
D'	0	9	9	10	10	1			
GH	0	11	11	21	21	10			

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Paths	E(T)	Variance	$Z = \frac{26-\mu}{\sigma}$	Prob.
ALQ	7	1		
AEGK	19	1		
AEGHJ	15	1		
AEE'HK	16	4/3		
AEE'HGHJ	12	4/3		
AEE'D'IJ	11	1		
BDHK	20	7/3		
BDHGHJ	~~16~~	2		
BDD'IJ	15	2		
BMQ	9	4/3		
BABFIJ	~~24~~ 12	4		
BABJNOPQ	24	4		
CFIJ	14	2		
CNOPQ	26	5	Zero.	50%

(8)

$Z = \frac{29-26}{\sqrt{5}} = 1.34$ Prob. = 90.99%

(9) $\frac{26-26}{\sqrt{5}} = 0$ Prob. = 50%

(10) 90% → Z = 0.845 $\frac{X-26}{\sqrt{5}} = 0.845$ ~~X = 27.8895 days~~

X = 27.8895 days

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23/25

University of Jordan
Faculty of engineering and technology
Industrial engineering department
Eng. Lamees Al-durgham **Time: 50 Minutes**

Project management (0906522)
Midterm exam (Nov, 22, 2009)
Student name: ----------
Student number: ----------

Question 1: (25 points)

Given the following information for XYZ project.

activity	Predecessors	Time (days)			Expected time $\frac{a+4m+b}{6}$	variance 6^2
		optimistic	Most likely	pessimistic		
A	-	2	2	2	2	0
B	-	3	3	3	3	0
C	-	2	5	8	5	1
D	A, B	3	6	9	6	1
E	A	3	3	3	3	0
F	A, B, C	3	3	3	3	0
G	E	5	5	5	5	0
H	E, D	1	2	3	2	1/3
I	D, F	1	1	1	1	0
J	G, H, I	2	5	8	5	1
K	G, H	6	9	12	9	1
L	A	1	1	1	1	0
M	A, B	1	2	3	2	1/3
N	A, B, C	2	5	8	5	1
O	N	4	10	16	10	2
P	O	2	2	2	2	0
Q	L, M, P	1	4	7	4	1

3/5 1. Draw an AOA network.
2. Apply the forward pass method and the backward pass method.
2/3 3. Find the earliest start time (EST), Earliest finish time (EFT), latest start time (LST), and latest finish time (LFT) for each activity.
1/3 4. For each activity find the total float, free float, interfering float, and independent float.
1/2 5. What are the critical activities of this project? C, N, O, P, Q
~ 6. What is the expected completion time of the project? 26
~0 X 7. The variance of the critical path is equal to ___5___. (show your calculations)
1/2 8. The probability the project will be done in 29 days or less is equal to _90.99%_. (show your calculations).
~ 9. The probability the project will be done in 26 days or less is equal to _50%___. (show your calculations).
~ 10. The completion time corresponding to 80%. X=?

Question 2: (5 points)

True or false (correct the false).

3.5/5
✓ 1. Any activity on arrow network can be converted to activity on node network. T
X 2. The AON network can be drawn from the Gantt chart. T
✓ 3. The finish to start relationship can't be represented using AOA. F (Can be)
✓ 4. PERT method can't be applied using activity on node representation. F (Can be)
✓X 5. Project completion time equals to the summation of all critical activities durations. F
of Critical Path.
one

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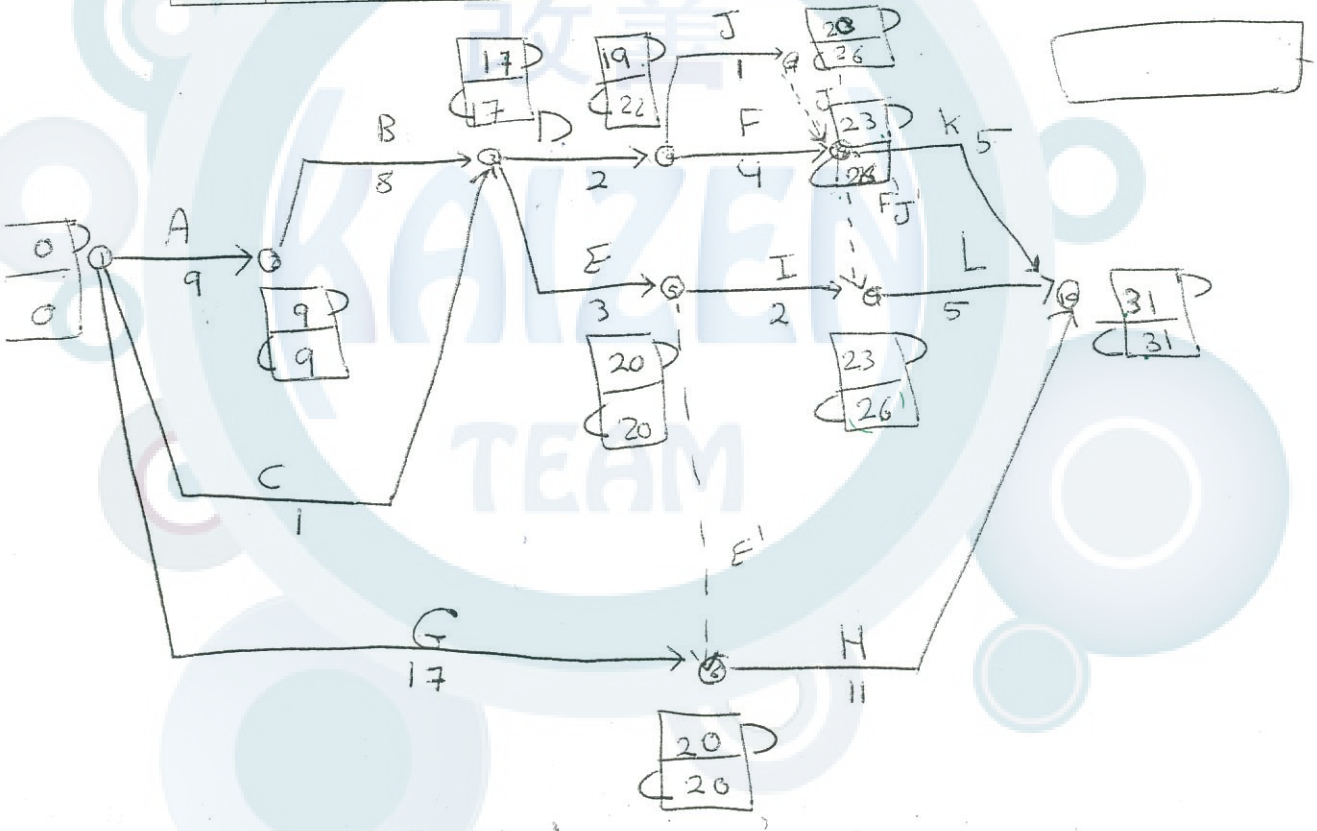
Quiz # 2

Student name: ---------- **Student no:** ----------

Draw the project network for the following set of activities using AOA method.
Apply the forward and the backward pass methods to complete the following table.
Find the critical path / paths.

activity	predecessors	Duration (days)	EST	EFT	LST	LFT	TF	FF	INTF	INDF
A	-	9	0	9	0	9	0	0	0	0
B	A	8	9	17	9	17	0	0	0	0
C	-	1	0	1	16	17	16	16	0	16
D	B, C	2	17	19	20	22	3	0	3	0
E	B, C	3	17	20	17	20	0	0	0	0
F	B, D	4	19	23	22	26	3	0	3	3
G	-	17	0	17	3	20	3	3	0	3
H	E, G	11	20	31	20	31	0	0	0	0
I	E	2	20	22	24	26	4	1	3	1
J	D	1	19	20	25	26	7	3	4	0
K	F, J	5	23	28	26	31	8	3	5	0
L	F, J, I	5	23	28	26	31	8	3	5	0



The critical path is A - B - E - E' - H

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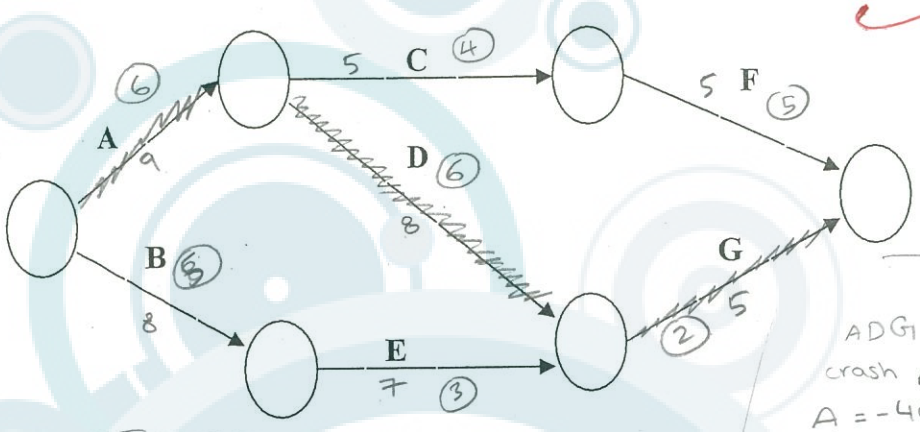
Student name:---------- student no:----------

Given the following network for (XYZ) project.



activity	Time (weeks)		Cost (1000 $)		Cost slope
	normal	crash	Normal	crash	
A	9	6	10	16	-2
B	8	5	9	18	-3
C	5	4	7	8	-1
D	8	6	9	19	-5
E	7	3	7	15	-2
F	5	5	5	5	0
G	5	2	8	23	-5
Partial crashing is allowed for all activitIes			55	58	

A. Calculate:
1. the normal time and the normal cost of the project
2. The minimum cost to complete the project in 15 weeks, 17weeks, and 20 weeks.

B. If the indirect cost is equal to $(10 +3 * Te) * 1000, where Te is the expected time to complete the project, calculate the total cost to complete the project in 15 weeks, 17 weeks, and 20 weeks.

C. Draw the project cost as a function of the project completion time.

another alternative

~~20 week~~ ① 20 ~~weeks~~ s

⇒ $55+5(2) = 65$ $

② 17 week

⇒ $55+5(3) = 80$ $

③ 15 weeks

⇒ $55+5(5)+8(2) = 96$

(B) total cost

direct + indirect cost

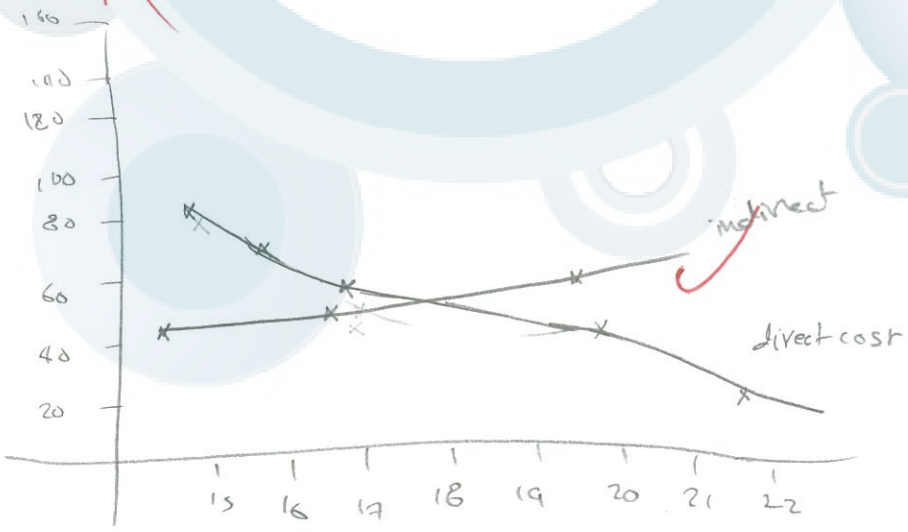
⇒ 15 week $= 96 + [10+3*15] = 151$ $

⇒ 17 weeks

$80 + [10+3*17] = 141$ $

⇒ 20 weeks

$65 [10+3*20] = 135$ $



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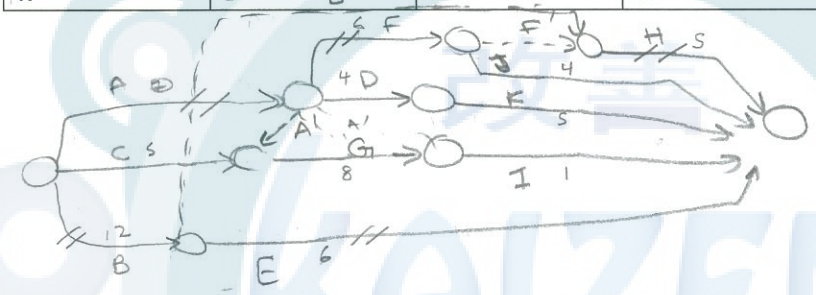
Quiz :
Student name:

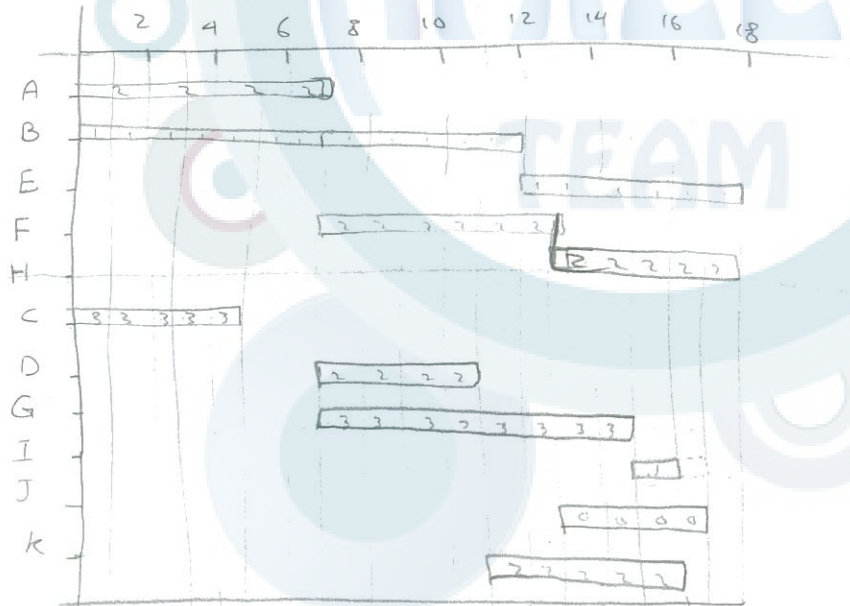
Student number:
Serial number:

Schedule the following project using Burgess technique.

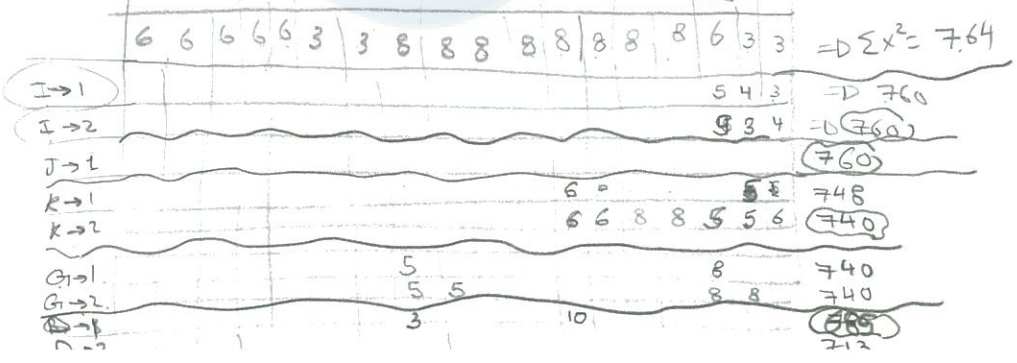
Activity	Duration (days)	Resource x (units/day)	Predecessors
A	7	2	-
B	12	1	-
C	5	3	-
D	4	2	A
E	6	1	B
F	6	2	A
G	8	3	A, C
H	5	2	B,F
I	1	1	G
J	4	-	F
K	5	2	D



A D K → 16
A F H → 18
B E 18



I → 1
I → 2
J → 1
K → 1
K → 2
G → 1
G → 2



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Quiz # 1

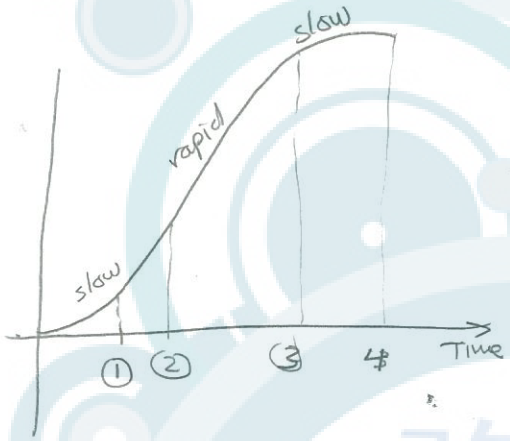
Student name: --- **Student number:**-----

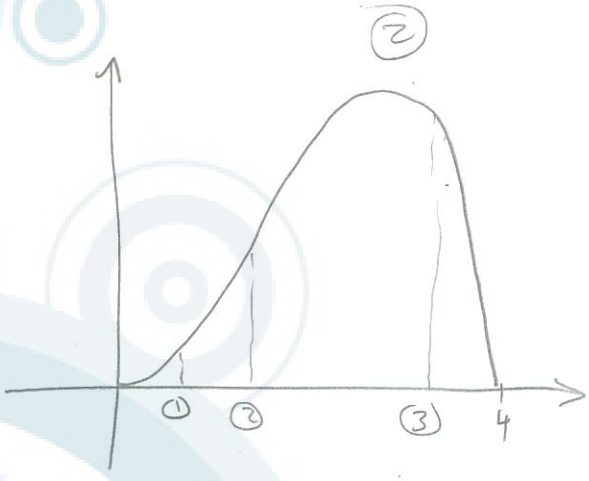
Serial number:----------

Question 1:

Describe the life cycle of a project in terms of (1) the degree of project completion (2) the required effort.

[1]





① concept

② selection

③ planning, scheduling & monitoring

④ Terminating & evaluating

Question 2:

A. The PMI definition of a project is ---temporary endeavor undertaken to create unique project or service---

B. What are the three project objectives?

1. Time
2. Cost
3. Quality

C. Explain the seven main characteristics of a project.

1. Importance: the project must be important in eyes of senior managm to justify the setting up a special organization unit.

2. Performance: project divided to sub tasks to achieve the project goals so it require a careful coordination and control in terms of timing

3. Life Cycle and finite due date: the project beginning slow and build up then peak, begin declined and finally finite with due date

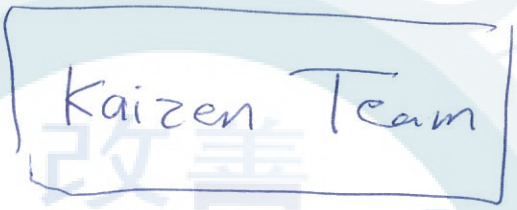
4. Independance: the project interact with other projects which stand with parent organization simultaneously ⇒

4. this interaction take a form of compitition of sources with other projects

5. Resources: each project has limited budget for resources and personnel.

6. Conflict.

7. Uniqueness. each project must has unique element not other project precise a like



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Question 3:
Discuss the project manager's responsibilities toward (1) the parent organization (2) the project team members (3) the project and the client.

① it is important to keep the senior management with fully formed of project status and cost and timing

② they must pay more and more attention to done there work (to acheive the project goal)

③ by insurring the integrity of the project is preserved in spite of conflict demand made by many parties who have ~~legitimate~~ legitimate interest in the project

Question 4:
What are the major differences between functional manager and project manager?

functional manager	PM
- specialist	- generalist
- analyst	- synthesizer
- supervisor	- facilitator

Question 5:
A. Write three types of project organizations.

1. Functional Organization
2. Project Organization
3. Matrix organization

B. Write one advantage and one disadvantage of each one.

	functional	Project
adv.	max. flexibility in the use of staff	project manager has full line authority over the project
disadv.	no individual is given full responsibility for project.	the worry about the life after the project end.