Engineering Economy		Al-Balqa` Applied Universtiy
First Exam A Time: 60minutes		Faculty of Engineering Technology
Name: ID:		Department of Civil Engineering

Give the final answer for the following questions (show your calculations)

Q1: The amount of an interest earned on 3000 for 6 years at 10%/yr simple interest is----1800----

Q2: If a sum of JD 3000 is deposited now, JD 9000 three years from now, and JD 3000/year in years 6 through 10, the amount in year 10 at i=20% is---73145.1

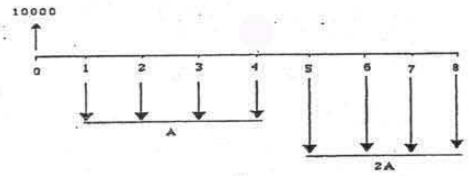
Q3: If JD 8000 is invested now that is expected to give a JD18000 after 5 years, the interest rate for this investment is ----35%----

Q4: How long does it take for an amount of money to be increased seven times the initial amount at an interest rate of 15 % yearly? n= ----14----

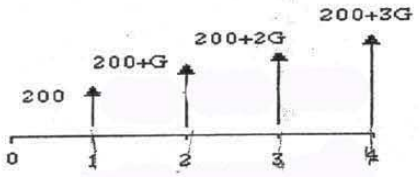
Q5: If a person deposited JD 450 now and JD 400/year for 7 years starting at year 1 then his withdrawal at the end of the 10th year will be----4185.78---- i = 10%

Q6: How much money would you have to pay each year in seven equal payments, starting three years from today, to repay a 20,000 JD loan at i=15%?-6389.3

Q7: For the cash flow shown, the value of A when i=15% is----16339----



Q8: For the cash flow shown below, the value of A disbursements that will make an equivalent increasing arithmetic gradient with G=100JD at an interest rate of 20% per year is----327.43----



Q9: A project is to be constructed with an initial cost paid as follows: JD 20,000 now and five equal payments each of 4000 started 4 years from now. The maintenance cost is 1500 for the first year that is increased 300 yearly thereafter. An extra cost of 2500 is needed every 4 years. The expected income is 9500 yearly started 5 years from now, and the salvage value is 5000 after 12 years, Find the present value of the project (use i=5%) PW=----

With Our Best Wishes

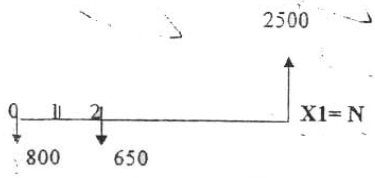
ENGINEERING ECONOMY FIRST EXAM. 16/11/09 ; MON.

NAME.....

SHOW YOUR CALCULATIONS.

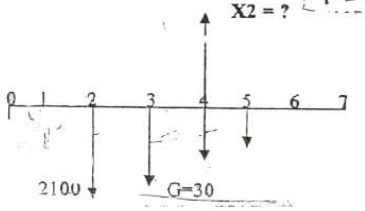
Q1: Find the Equivalent Values (X), (Use *i.= 9%* per year).

X1= 7,1822 X2= 8635,1 X3= 202,99 X4= 878,02

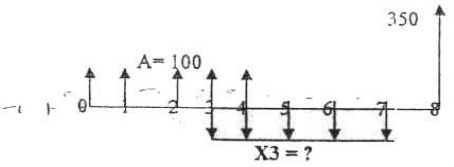


P = A(P/A 9%, 2) P = F(P/F,9%,2) + 800 = 1397,072

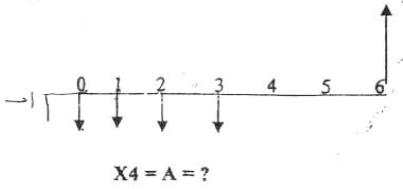
P = F(P/F,9%,n)



P = A(P/A,9%,4) − G(P/G,9%,4) , F = P(F/P,9%,3)



P = A(P/A,9%,6) , F = P(F/P,9%,3) = 580,9



P = F(P/F, 9%, 18) = 208,69

A = P(A/P, 9%, 5)

= 202,99

P = F(P/F, 9%, 7) = 2854,556

A = P(A/P, 9%, 4) =

(2)

Q2: Clearly circle "T" (for True) or "F" (for False) for each of the following statements.

a) To invest JD(1000) for 3 years at a (6%) compound interest rate, is better than at a (7%) simple interest rate. T (F)

(CALCULATIONS)

Comp $F = P(1+i)^N = 1000 \times (1+6\%)^3 = 1191.016$

Simp $F = P + PiN = 1000 + (1000 \times 7\% \times 3) = 1210$

(6)

That time is $F.(P|F,i\%,1)$

b) The (P/A,i%,N) factor equals (N • (P/F,i%,1)) T (F)

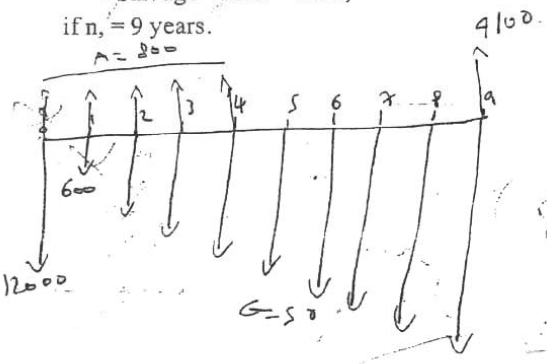
because $N.[P|F,i\%,1]$ is not a factor

c) The change in the amount of money over a given time period is called the Time Value of Money. (T) F

Q 3: Draw the CFD for a project with the following payments:

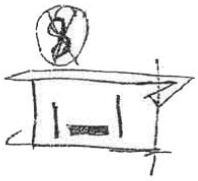
- first cost = JD 12000;
- operating cost, started from the 2nd year = JD 600, increased by JD50;
- Annual Income for the first 5 years = JD 800;
- Salvage Value = 4100;

if n, = 9 years.



GOOD LUCK

(2)

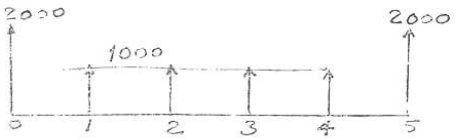


Q4: Select the correct answer for the followings (Show your calculations)

1. If the interest rate is 7% per semiannual compounded monthly, the effective interest rate per quarter is:
   a) 3.85% b) 3.54% c) 3.5% d) 3.67%

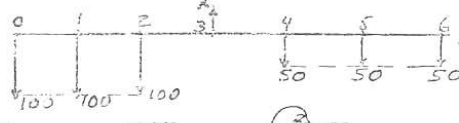
2. If the interest rate is 16% per year compounded continuously, the effective interest rate Semiannually is :
   a) 8.33% b) 17.35% c) 8.16% d) 8.85%

3. For the shown cash flow ,which of the following Statements is incorrect i=15%



   a)1000(P/A,15%,4)+2000+2000(P/F,15%,5)
   b)1000(P/F,15%,5)+1000(P/A,15%,5)+2000
   c) {1000(F/A,15%,5)+1000}(P/F,15%,5) +2000
   d) {1000(F/A,15%,4)+2000}(P/F,15%,4) +2000

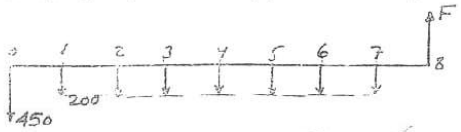
4. If i=10%per year ,the value of (X) in the following cash flow is



   a) 450 b)462 c) 457 d) 483

5. The amount of interest earned on 2000 for 5years at 10% simple interest per year is
   a) 3000 b)3221 c) 1000 d) 1221

6. If i=10%per year ,the value of (F) in the following cash flow is



   a)2550 b)2862 c) 3052 d)3252

Q5: A factory is to be constructed by an initial cost paid as follows: JD20000 now and five equal payments each of 4000 started 4 years from now. The A.O.C is 1500 for the first year increased 300 yearly thereafter. An extra cost of 2500 is needed every 4 years. The expected income is 9500yearly started after 5 years from now, the salvage value is 5000 after 12 years. If the interest rate is 10% per year :

1-Draw the cash flow diagram.

2- Find the present value of the project.

With our best wishes

ENGINEERING ECONOMY first exam **A.**

NAME.....

الشعبة:- ١١/١٥ - ١٢/١٥

1-What value of annual(A) uniform payments over years 1 – 5 is equivalent to a payment schedule of 200, 200, 240, 240, 240 for years 1-5 respectively at an interest rate of 10%?(Factor notation only)

A = 277.62

2- About how long would it take for $1000 to accumulate to $8000 at an interest rate of 9% per year? (Factor notation only)

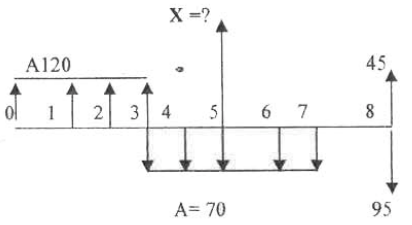
n = 24.1297 year

3- If you well invest $50,000 each year for four years starting 2 years from now. What is the present worth of the investment at an interest rate of 10% per year? (Factor notation only)

P = 130570

4-For an interest rate of 12% per year, compounded quarterly, the effective interest per six months is how much? (Equation only)

5- What is the Equivalent Value of **X** in year 5 of all the cash flow diagram showing down interest rate of 12%



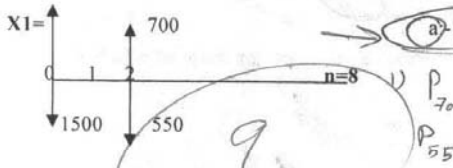
6-a. what is the interest?

b .why interest rate?

ENGINEERING ECONOMY first exam **B**.

NAME..... الإسم ..... الشعبة:- (أ / ب) 9,30 - 8

Q1: what is the Equivalent Values (X), (Use ***i.= 8%*** per year). Show the calculation for your answers



a:-1371,399 b:-2538,33 c:-3014,37 d:- non of all

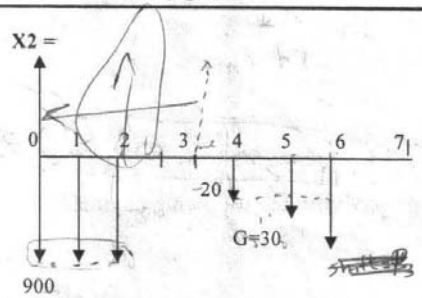
$P_{700} = 700\,(0.85734) = 600,1 \downarrow \Leftarrow P = A(P/A, 8\%, 2)$

$P_{550} = 550\,(0.85734) = 471,5 \uparrow \Leftarrow P = A(P/A, 8\%, 2)$

$X = 471,5 - 600,1 - 1500 = (1628.6 \downarrow)$

$P = 150\,(P/F\ 8\%, 2)$

$128,601$



a:-4168,044 b:-2577,765 c:-4417,84 d:-non of all

$P_A = 20\,(2,5771) = 51,542 \uparrow \Leftarrow P = A(P/A, 8\%, 3)$

$P_G = 30\,(2,445) = 73,351 \uparrow \Leftarrow P = G(P/G\ 8\%, 3)$

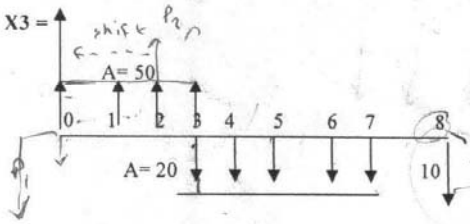
$P_3 = 51,542 + 73,35 = 124,892 \Leftarrow P_3 = P_A + P_G$

shift P_3 = $P_{03} = 124,892\,(0,73503) = (91,79 \uparrow)$

$P_{900} = 900\,(2,5771) = 2319,4 \uparrow \Leftarrow P = A(P/A, 8\%, 3)$

$P = 900\,(P/A\ 8\%, 3) + 30(P/$

$X_2 = P_3 + P_{900} = 2411,18$



a:--194,32 b:--104,985 c:-447,758 d:- non of all

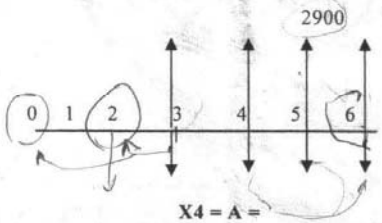
$P_1 = 50\,(3,3121) = -165,605 \downarrow \Leftarrow P = A(P/A\ 8\%, 4)$

$P_2 = 20\,(3.9927) = 79,854 \uparrow \Leftarrow P = A(P/A\ 8\%, 5)$

shift = $P_{02} = (79.854)\,(0,85734) = 68,46$

$P_3 = 10\,(0,54027) = +5.4027$

$X = P_1 + P_2 + P_3 = -165,605 + 68,46 + 5,4027 = (-91,745)$



a:-3131,980 b:-2302,086 c:-2899,968 d:- non of all

$P = 2900\,(3,3121) = 9605,96 \downarrow \quad P = A(P/A\ 8\%, 4)$

$A = 9605,96\,(0,30192) = 2900,2 \uparrow \quad A = P(A/P\ 8\%, 4)$

B

Q2: Circle "T" (for True) or "F" (for False) for each of the following statements.

A) The change in the amount of money over a given time period is called the interest rate — T / F

B) To invest any amount of money for one year at a (6%) compound interest rate, is better than at a (6%) simple interest rate. — T / F

C) The factor (P/F,i%,n) equals $P=F/(1+i)^n$ — T / F

D) The Good Decision is depend on Good Information — T / F

Q 3:**a:-** calculate the future value if you invest 8500amount of money for 8years at 7%simple interest rate

$I = P \times i = 8500 \times 7\% = 595$

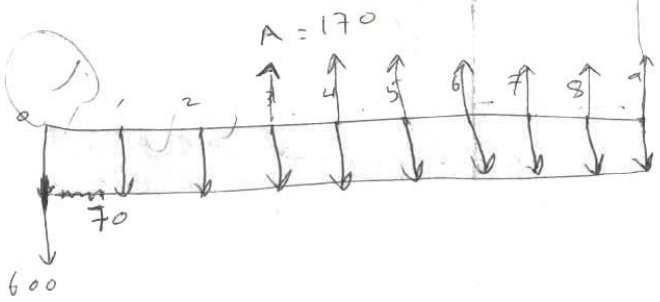
$i = 595 \times 7 = 4165$

$4165 + 8500 = 12665$

b:- Draw and calculate the equivalent value at zero (0)time the for a project with the following payments:

- first cost = JD 600;
- operating cost = JD 70,
- Annual Income for the last 6 years = JD 170;
- Salvage Value = 200;

if n, = 9 years .i=13%compounded interest



$P_A = 70 \times (5.1316) = 359,212$

$P_{170} = 170 \times (3.9975) = 679.57$

$P_{200} = 200 (0,33288) = 66,576$

$= -177.364 - 600 = -777,364$

$422,636$

GOOD LUCK

Al-Balqa Applied University
Faculty of Engineering Technology
Civil Engineering Department
Engineering Economy final Exam 2010/2011

Lecture time Student Name... Time: 2H. **(B)**

Use the given data in the following Table to solve Q1 to Q3

Items	Alt.A	Alt.B	Alt.C	Alt.D	Alt.E
F.C	8,000	11,000	5,000	400	200
Extra cost @end of 3rd yr	300	-	100	-	-
AOC	-	-	-	-	-
A.C for the first 5yrs	50	-	-	-	-
Cost every 6 months	-	500	-	-	-
A.I for the first 5yr		120		120	75
Extra cost every 5 yrs	70	-	100-	-	-
A.I for the first 5yrswith decreasing gradient(G=40)	-	-	300	-	-
S.V	-	1,000	700	150	100
Life(n) yrs	∞	7	5	8	4
i%	13%	12%per yr compounded Quarterly	13%	MARR=25%	MARR=25 %

ANSWER ANY FIVE QUESTION ONLY .

Q1: Using the **capitalized cost criterion** which is the optimal alternative A or C?

a- CC(A) is ..-8675,62 8466,865..... (4 marks)
b- CC(C) is ..-11974,52..... (4 marks)
c- The decision is....A..... (2 marks)

Q2: a-The future worth for alternative B is..... (5 marks)
b- The AW for alternative C is ..... (5 marks)

Q3: Using the **Rate of return(IRR)** which is the optimal alternative D or E?
a- ROR(D) is ..5497,2..... (4 marks)
b- ROR(E) is ..53.4..... (4 marks)
c- The decision is....D..... (2 marks)

Q4:a) If JD 200 is deposited each quarter for 6 years at an interest rate of 10 % yearly compounded continuously, the present worth is..... (5 marks)

b): The total amount due after 9 years for a loan of 9000 at 12% simple interest rate per year is..... (5 marks)

18720

Use i=12%

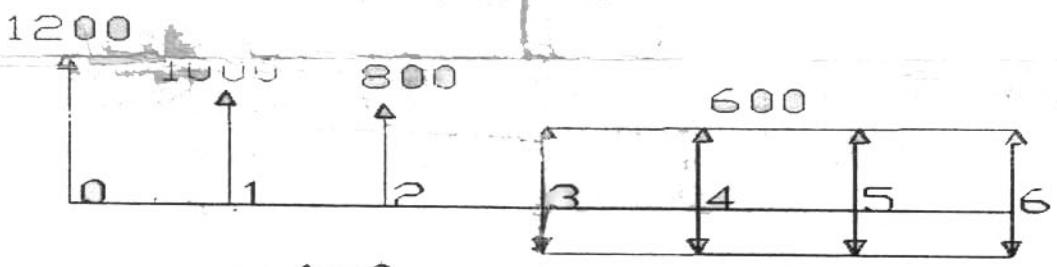
Use the given data in the following Table to solve Q5

Cash Item	F	G
Initial (first) cost	1800	2000
Annual O.C	650	18000
Annual Income or Users income	790	20000
S.V	1200	1100
Life (years)	6	3

Q5:a). For Alt F, using the SOYD method (5 marks)
The depreciation at the end of year 5 is ---------- 57,14

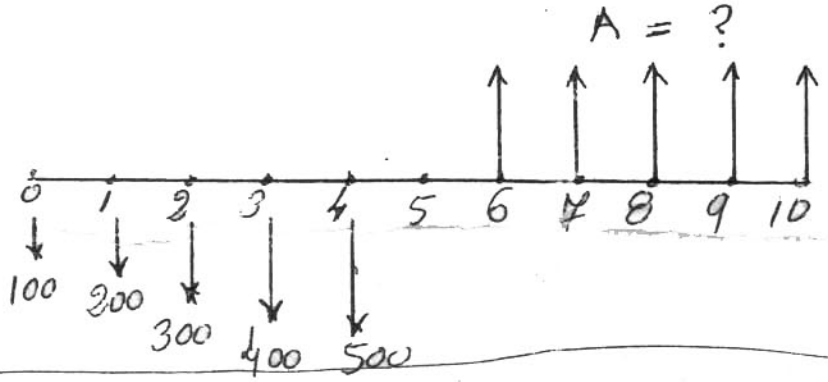
b). For Alt. G, using SL method:
The book values at years 3 and 7 are:
BV_3 ---------- $(2000 - 1100)/3 = 1100$ (3 marks)
BV_7= ---------- (2marks)

Q6: a). Find the Equivalent Values (A), (Use i.= 8% per year).---------- (5 marks)



A=1505,76

b) .the equation to find the equal payment amount A, in the cash flow diagram at i= 12% (5 marks)



a)A(P/A,12%,5)=100(F/A,12%,5) (F/P,12%,1)+100(P/G,12%,5) (F/P,12%,6)
b)A(P/A,12%,5)= 100(P/G,12%,6) (F/P,12%,7)
c)A(F/A,12%,5)=100(F/A,12%,5) (F/P,12%,6)+100(P/G,12%,5) (F/P,12%,11)
d) All of the above
e) Non of the above

Al-Balqa Applied University
Engineering Economy final Exam

Student Name..... .. Time: 100 min.

Use the given data in the following Table to solve Q1 to Q3

Items	Alt.A	Alt.B	Alt.C	Alt.D
F.C	140,000	-	15,000	65,000
Extra cost @end of 3rd yr	20,000	-	4,000	-
AOC	-	-	1,000	2,500
A.C for the first 5yrs	5,500	-	-	-
Cost every 6 months	-	500	-	-
Extra cost every 5 yrs	8,000	-	-	-
A.I for the first 5yrswith decreasing gradient(G=400)	-	-	3,000	-
S.V	-	-	7,000	5,000
Life(n) yrs	∞	7	5	4
i%	8%	20%per yr compounded quarterly	8%	MARR=10%

Q1: Using the **capitalized cost criterion** which is the optimal alternative A or C? (15 marks)

a- CC1(A) is
b- CC2(A) is
c- CC3(A) is
d- CC4(A) is

e- CC (A) is

f- CC1(C) is
g- CC2(C) is
h- CC3(C) is
i- CC4(C) is
j- CC5(C) is
k- CC(C) is ...

Q2: The future worth for alternative B is..... (10 marks)

Q3: Is alternative D

1-The value of (i^*) is:.....

2- Is alternative D Acceptable or not ...not accept

(10 marks)

Q4: If JD 2000 is deposited each semiannual for 5 years at an interest rate of 10 % yearly compounded semiannually , the future worth is.....

(10 marks)

Q5: The total amount due after 7 years for a loan of 30000 at 20% simple interest rate per year is.....

(5 marks)