

Faculty of

Time: 3hoursdata:

Level 500



engineeringsub: engineering economy

9/8/202

production&designdept.

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**Choose five questions from the following:-**

- 1- Here is a series of cash flows with an interest rate of 8% per period

End of period	Project x	Project y
1-5	\$1000	\$2000
6-10	\$2000	\$1000

- a- Find the equivalent present value of the two projects.  
b- Find the equivalent values of the two projects at the end of 10 periods.  
c- Find the equivalent uniform series of the two projects.(a7)
- 2- Labor costs for a certain operation are \$8000 per week, occurring at the end of each week over a 3-year period. If the effective discount rate is 15% per year, determine the equivalent present value of these costs.(a7&a9)

$$\text{(Note: } P = A \left[ \frac{(1+i)^N - 1}{i(1+i)^N} \right] = A(P/A, i, N)$$

- 3- If interest is compounded continuously, what effective rate per period,  $i$  corresponds to a nominal rate,  $r$  of 10%.(a16&b8)
- 4- In order to finance the purchase of computer equipment the S.C.Equipment Corporation borrows \$ 100,000, to be repaid in 40 equal ends-of- month payments at an interest rate 1.5% per month.  
a- Determine the amount of the monthly payments.  
b- Determine the amount remaining on the loan after 2-years.  
c- Determine the principal portion the 25<sup>th</sup> payment.(d7)
- 5- Two gas-powered electric generators are being considered purchase. Relevant data are:

	Economy generator	Deluxe generator
Initial cost	\$12,000	\$20,000
annual operating expense(during year)	\$1,600	\$900
Salvage value	\$3000	\$2000
Operating life	6year	12year

Assuming 10% interest rate, determine which alternative is more economical.

(Stat all necessary assumption). (b9)

- 6- The cost of a project is 100,000 L.E, and the expected returns in next four years are 35000, 40000, 30000 and 25000 L.E. If the expected inflation ratio are 5%, 5%, 8% and 6% respectively. Determine the net present worth in case of neglected and take into consideration the inflation. The annual rate of interest is 12%.(a7)