ISE 307, Term 153

ENGINEERING ECONOMIC ANALYSIS

## HW# 1

Due date: Wednesday, July 20

Q.1. Which of the following alternatives would you choose, assuming an interest rate of 10% compounded annually?
- Alternative 1: Receive $100 today;
- Alternative 2: Receive $150 two years from now.
- Alternative 3: Receive $200 six years from now.

Q.2. How many years will it take to triple your investment of $5,000 if it has an interest rate of 10% compounded annually?

Q.3. If you want to withdraw $10,000 at the end of two years and $20,000 at the end of four years, how much should you deposit now into an account that pays 10% interest compounded annually?

Q.4. You deposit $5,000 today, $5,000 two years from now, and $5,000 fours years from now. How much money will you have at the end of year six if there are different annual compound-interest rates per period such that interest rate in the first two years is 5%, 7% in the third and fourth years and 8% in the fifth and sixth year?

Q.5. If $500 is deposited in a savings account at the beginning of each year for 12 years and the account earns 10% interest compounded annually, what will be the balance on the account the end of the 15 years (F)?

Q.6. Five annual deposits in the amounts of $20,000, $18,000, $16,000, $14,000, and $12,000 are made into a fund that pays interest at a rate of 10% compounded annually. Determine the amount in the fund immediately after the fifth deposit.

Q.7. Suppose that an oil well is expected to produce 1,200,000 barrels of oil during its first production year. However, its subsequent production (yield) is expected to decrease by 9% over the previous year's production.

(a) Suppose that the price of oil is expected to be $120 per barrel for the next five years. What would be the present worth of the anticipated revenue trim at an interest rate of 10% compounded annually over the next five years?

(b) Suppose that the price of oil is expected to start at $120 per barrel during the first year, but to increase at the rate of 5% over the previous year's price. What would be the

present worth of the anticipated revenue stream at an interest rate of 10% compounded annually over the next five years?

Q.8. From the following cash flow diagram, find the value of C that will establish economic equivalence between the deposit series and the withdrawal series at an interest rate of 8% compounded annually.
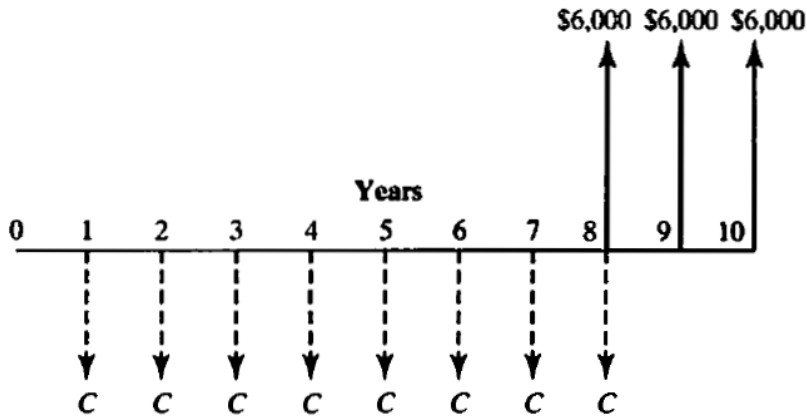
Q.9. It is said that a lump-sum amount of $40,000 at the end of five years is equivalent to an equal-payment series of $4,000 per year for 10 years, where the first payment occurs at the end of year 1. What earning interest is assumed in this calculation?

*This assignment can be solved based on a group of two students. The solution should be well organized. Submit a soft copy of your solution. Your solution should be submitted in a **pdf file** that contains the following items:*

    i.   *Your names and IDs*

    ii. *Assignment number*

    iii. *Problem statement*

    iv. *Your solution*