Department of Computer Systems Engineering,
University of Engineering and Technology, Peshawar,
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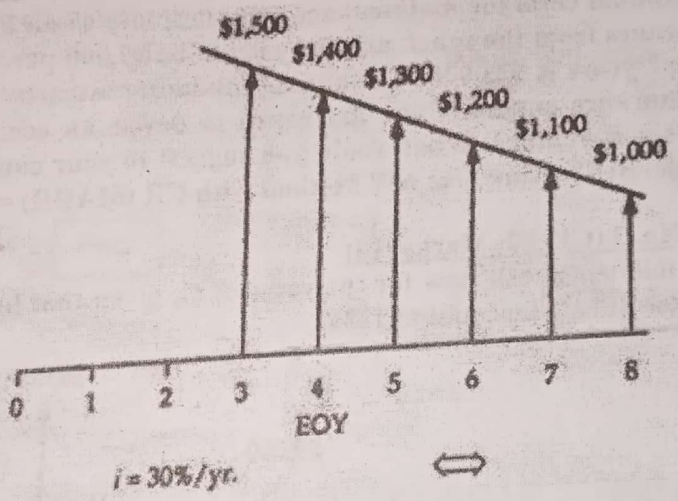
Exam: Final term (Fall 2022) **Time:** 2 Hours
Paper: CSE-305 (5th Semester) **Marks:** 50

Note: Attempt all questions on the answer sheet.

Question No. 1 (CLO 2-3, Marks 20):
Attribute suitable engineering economic terminology to the following scenarios.

a. **Devise a single-line notational expression for the following gradient series at N=8. (3 Points)**

$F = A\left(\frac{(1+i)^N - 1}{i}\right)$



b. **Devise the sinking fund notation for 10% interest and 8-time stamps. (1 Point)**

c. **Devise the single cash flow that represents the following notational expression for the present worth: $2000 (P/A, 5%, 20) + $175 (P/F, 5%, 1) + $200 (P/G, 5%, 20). (3 Points)**

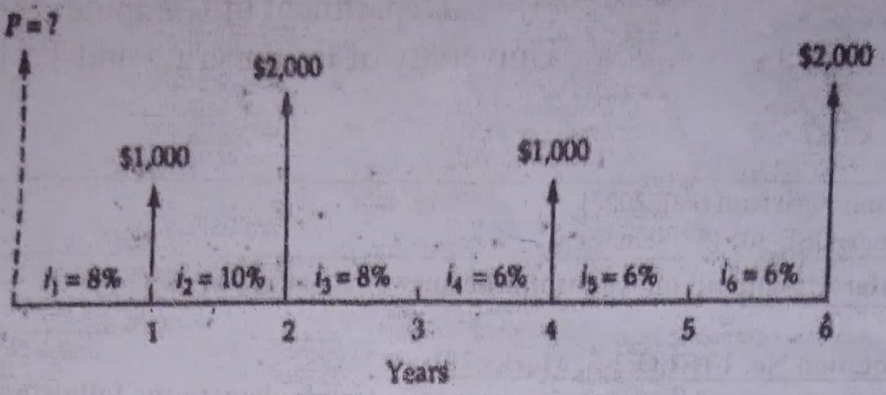
d. **Evaluate the rate of interest that can reduce a single payment at the EOY-10 to 5 times at present. (4 Points)**

e. **Provided nominal interest rate APR of 10% compounded monthly and the uniform payment made quarterly, devise the expression for the effective interest rate EIR for this venture. (2 Points)**

f. **Calculate the number of time stamps required to increase an initial investment to fifteen times its initial value at the rate of 12.5%. (3 points)**

g. **Devise a single-line notational expression for the following multiple single payment cash flow at P: (3 Points)**

h. **Name the formal economic terminology for (P/F, i%, N). (1 Point)**

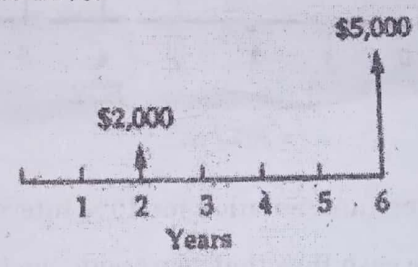


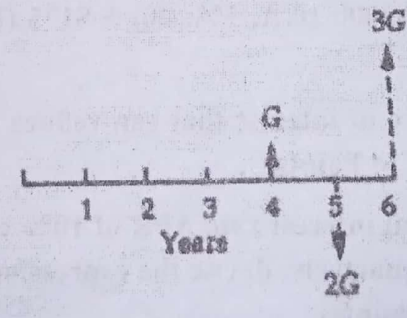
Question No. 2 (CLO 3, Marks=10)

The running businesses of Wilbur trout ranch are for sale and your company wants to purchase it for a more wanted investment after 7 years. The initial costs for the business are $50,000. Annual costs for maintenance, supplies, and so on are estimated to be $3,000 per year. Revenues from the ranch are expected to be $7,000 per year. The salvage value of the land after 7 years is $25,000. The annual minimum attractive rate of return is 12%. As a quality assurance engineer, you are asked to devise an economic feasibility plan for the company's new venture. What would you suggest to your company based on the feasibility plan you devised? [Hint: Use AW Method with CR (MARR) = (I-S) (A/F, i%, N) - I (i%)]

Question No. 3 (CLO 2, Marks=10)

Solve the following cash flow for the value of G, given that both cash flows are equivalent. Let the interest rate be equal to 12%.





Question No. 4 (CLO 3, Marks=10)

The retirement plan for a venture is made for the $100 (A) saved at the end of each month (K) that earns at the rate of 4.5% (r) interest compounded continuously (∞) per year. Determine the accumulated amount saved with this plan at the end of 30 years. If this plan is not selected and the same savings are made to another venture that earns at 5% (r) interest compounded monthly (M), will this accumulated amount at the end of 30 years overcome the amount gained with the previous plan? [Hint: Determine which plan is better by finding the future worth]