KATHMANDU UNIVERSITY
End Semester Examination
March, 2026

Level : B.E./B.Sc. | Course : MGTS 301
Year : III | Semester : I
Time : 2 hrs. 30mins. | F. M. : 40

SECTION "B"
[6 Q. × 4 = 24 marks]

Attempt ANY SIX questions.

1. List and briefly explain the fundamental principles of engineering economics. How does the principle of "time value of money" serve as a foundation for the others?

2. The structural engineering design section within the engineering department of a regional electrical utility cooperation has developed several standard designs of a group of similar transmission line towers. The detailed design for each tower is based on one of the standard designs. A transmission line project involving 50 towers has been approved. The estimated number of engineering hours needed to accomplish the first detailed tower design is 126. Assuming a 95% learning curve.
   a. What is your estimate of the number of engineering hours needed to design the eighth tower and to design the last tower in the project? [3]
   b. What is your estimate of the cumulative average hours required for the first five designs? [1]

OR

The purchase price of a natural gas-fired commercial boiler (capacity X) was $181,000 eight years ago. Another boiler of the same basic design, except with capacity 1.42X, is currently being considered for purchase. If it is purchased, some optional features presently costing $28,000 would be added for your application. If the cost index was 162 for this type of equipment when the capacity X boiler was purchased and is 221 now, and the applicable cost capacity factor is 0.8, what is your estimate of the purchase price for the new boiler? [4]

3. *Assuming that it is now January 1, 2026, On January 1, 2027, you will deposit $2,000 into a savings account that pays 8 percent.* [1+1+2]
   a. *How much will you have in your account on January 1, 2030, if the bank compounds interest annually.*
   b. *How much will you have in your account on January 1, 2030, if you deposited the $2,000 in 4 payments of $500 each on January 1 of 2027, 2028, 2029, and 2030.*
   c. *How much will you have in your account on January 1, 2030, if the bank compounds interest quarterly.*

OR

Mr. Devkota inspected his yearly household expenses for the last 10 years. Cost average were steady at Rs 100,000 per year for the beginning 5 years but have increased consistently by Rs 15,000 per year for each of the last 5 year. The market interest rate was 9% during the period. Calculate the total present worth in year zero.

P.T.O.