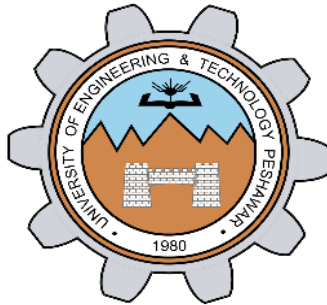


Engineering Economics

Fall 2024, 5th Semester

Lab Report



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Section: A

"On my honor, as a student at the University of Engineering and Technology Peshawar, I have neither given nor received unauthorized assistance on this academic work."

Signature:

A handwritten signature in black ink that reads "Hassan".

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Engineering Economics Assignment

QUESTION 01: With respect to the selection of alternatives, state one thing that engineering economy will help you to do and one thing that it will not. Explain with the help of an example.

Solution: Engineering economy is a helpful tool for making financial decisions, but it doesn't consider every aspect of a situation.

What Engineering Economy Will Help With: Engineering economy assists in comparing different options based on costs and benefits to find the best financial decision.

Example:

- **Scenario:** A family is deciding whether to buy a gas or an electric car.
- **Analysis:** The gas car has a lower initial cost but incurs higher fuel and maintenance expenses over the years. In contrast, the electric car costs more upfront but offers savings on fuel and lower maintenance costs.
- **Conclusion:** By applying engineering economy, the family can calculate the total cost of ownership for each car over several years, helping them choose the option that saves the most money in the long run.

What Engineering Economy Will Not Help With: Engineering economy does not consider non-financial factors like comfort, convenience, or personal preferences.

Example:

- **Scenario:** Continuing with the car choice, the family may prefer the gas car because they enjoy the driving experience more.
- **Conclusion:** Even if the gas car has higher long-term costs, personal preferences may lead them to choose it. Engineering economy focuses solely on financial data, while personal preferences also significantly influence decision-making.

QUESTION 02: What evaluation criterion is used in economic analysis? Give 2 examples.

Solution: Economic analysis uses specific criteria to determine whether a project is worthwhile based on profitability.

Two common criteria are:

1. Net Present Value (NPV):

NPV helps assess if a project will be profitable by calculating the present value of expected income minus costs. A positive NPV indicates that the project is likely to be financially beneficial.

Example:

- **Scenario:** A city council is considering building a community park.
- **Analysis:** They calculate the NPV to determine if the future benefits, such as increased property values and more visitors, outweigh the construction costs.
- **Conclusion:** If the NPV is positive, it suggests that the park will provide good returns to the community.

2. Rate of Return (RoR):

RoR measures the percentage of profit on an investment, showing if it meets or exceeds a target return.

Example:

- **Scenario:** An individual is choosing between two investment options.
 - **Analysis:** Investment A offers a 10% rate of return, while Investment B offers only 5%.
 - **Conclusion:** The individual would likely prefer Investment A because it promises a higher profit, aligning better with their financial goals.
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QUESTION 03: The analysis techniques that are used in engineering economic analysis are only as good as what? Give 2 examples to clarify your answer.

Solution: The effectiveness of engineering economic analysis relies on using accurate data and realistic assumptions. If the information is incorrect, it can lead to poor decisions.

Example 1:

- **Scenario:** A company bases its budget for a new project on outdated cost estimates.
- **Analysis:** If construction costs for materials have increased but the company uses old data, they may underestimate their actual expenses.
- **Conclusion:** This can lead to financial trouble when the project exceeds the budget.

Example 2:

- **Scenario:** A small bakery expects to sell 200 cakes for a special event based on past sales data.
- **Analysis:** They mistakenly believe demand will remain the same. If they prepare too many cakes and only sell 100, they end up wasting ingredients and losing money.
- **Conclusion:** This situation illustrates how inaccurate demand forecasts can lead to overproduction and financial loss.