Civil Engineering Licensure Exam – Mock Quiz (Day 28: Engineering Economy and Construction Management)

February 24, 2025

Instructions

- Time Limit: 60 Minutes
- Coverage: Engineering Economy and Construction Management
- Total Questions: 10 (Multiple Choice & Problem-Solving)
- Show complete solutions for problem-solving questions.

Section A: Multiple Choice Questions (MCQs)

Choose the best answer.

1. The time value of money concept states that:
   (a) Money today is worth the same as money in the future.
   (b) Money today is worth more than the same amount in the future.
   (c) Money in the future is worth more than money today.
   (d) Money has no value over time.
2. The term "Net Present Value (NPV)" in engineering economy refers to:
   (a) The future value of an investment
   (b) The difference between present benefits and present costs

(c) The total interest earned over time

(d) The breakeven point in a project

3. The critical path in a construction project schedule represents:

   (a) The longest path through the network diagram

   (b) The shortest time needed to complete the project

   (c) The least expensive activities in the project

   (d) The sequence of activities that have the most slack

4. The term "Break-even analysis" is used to determine:

   (a) The maximum profit of a project

   (b) The point at which total revenue equals total cost

   (c) The amount of taxes payable on a project

   (d) The cost of raw materials used in construction

5. A construction project is considered "fast-tracked" when:

   (a) The project is completed before the deadline.

   (b) Design and construction phases overlap to reduce project duration.

   (c) The contractor is fined for delays.

   (d) The construction materials are delivered ahead of schedule.

Section B: Problem-Solving

1. A project requires an initial investment of \$200,000 and is expected to generate annual cash inflows of \$50,000 for 6 years. If the discount rate is 8%, compute the Net Present Value (NPV).

2. A contractor estimates that the cost of equipment maintenance for a project will be \$5,000 per year for 5 years. If the interest rate is 6%, determine the present worth of the maintenance costs.

3. A construction company is analyzing two project options:

   - Project A: Initial cost = \$150,000, Annual benefit = \$45,000, Life = 5 years.
   - Project B: Initial cost = \$120,000, Annual benefit = \$40,000, Life = 5 years.

   Assuming a discount rate of 7%, determine which project has the higher NPV.

4. A company calculates that their project reaches a break-even point when total revenue is \$500,000 and total cost is \$300,000. What is the break-even margin?

5. A construction schedule has the following tasks and durations:

Activity	Predecessor	Duration (days)
A	–	5
B	A	7
C	A	6
D	B, C	8

   Determine the total project duration and identify the critical path.