Q1) Answer the following statement with true or false:

1. ---F----In conducting a replacement analysis, the amount of money currently owed on the existing asset is used as its present value, not its original cost.
2. ----F---If the trade-in value of the currently-owned asset is higher than the asset's initial purchase price, the lower value should be used in the replacement analysis.
3. ----T---In conducting a replacement analysis over a specified planning horizon (study period), the horizon selected could be shorter, equal to, or longer than the remaining life of the currently owned asset
4. ----F---If the market value of the defender is greater than the breakeven replacement value determined by equating the defender and challenger AW relations, keep the defender.
5. ----F---Market value represents the remaining undepreciated investment on the books after the depreciation charges to date have been subtracted.
6. ----T----Although land is considered as real property, it is not depreciable.
7. ----F---Switching from declining balance depreciation to straight line depreciation is an inherent feature of the straight-line alternative (option) to the MACRS depreciation method.
8. ----F---One of the tax advantages of equity financing is that the dividends paid to stockholders is tax deductible
9. ----T---Higher percentages of debt capital tend to increase the return on equity capital committed to a project
10. ---T----In linear breakeven analysis, production above the breakeven point favors the alternative with the lower variable cost.
11. ----T---One thing in common between breakeven evaluation and payback period evaluation is that both find a quantity of a parameter that balances a relation based on PW, AW, or ROR equivalence.
12. -----T--The real interest rate is also known as the inflation-free interest rate
13. ----F---The present worth of an alternative can be determined by dividing then-current dollars by the inflation rate and then using the inflated interest rate in the present worth formulas.
14. ----T---Inflated dollars can be converted to constant-value dollars by dividing by one plus the inflation rate for each year.
15. ----T---Depreciation stops when cost of placing it in service is removed or it is retired from service
16. -----T--Tax depreciation used by a firm for state and federal income tax reporting
17. ----F---The SL method permits greater depreciation amounts in the early years, and hence reduces the book value faster than the DB method.
18. ----T---In private sector Annual worth is easy with unequal lifetimes for making evaluation.
19. ----T---Within a firm, there may be different minimum acceptable rates of return
20. Minimum acceptable rate of return before taxes will always be smaller than minimum acceptable rate of return after taxes

21. If the current interest rate is higher than the coupon rate on the bond: The sale price will be less than face value

22. Interest payments are tax deductible

Q2) Choose the most correct answer:

1. In a replacement analysis, irrelevant past costs are known as:
   a. Sunk costs   b. Marginal costs   c. Actual cost estimates   d. Equivalent annual costs

2. In an economic service life (ESL) analysis, the capital recovery term increases with each year of ownership.
   a. Increases   b. decreases   c. not effect

3. An asset with a first cost of $50,000 is depreciated by the MACRS method over a five-year period. If the asset will have a $20,000 salvage value, its book value at the end of year two will be closest to:
   a. $10,000   b. $16000   c. $ 24000   d. $ 30000

4. An asset, which had a first cost of $50,000 and an estimated salvage value of $10,000, was depreciated by the MACRS method. If the depreciation charge in year two was $16,000, the recovery period of the asset was:
   a. 3 years   b. 5 years   c. 7 years   d. 10 years

5. An asset with a first cost of $30,000 has been depreciated by the straight line method at $4,000 per year. If the asset's depreciable life was five years, the salvage value used in calculating the depreciation was closest to:
   a. $4000   b. $ 5000   c. $ 8000   d. $ 10000

6. A manufacturing process has fixed costs of $20,000 per year with variable costs of $15 per unit. If the company sells each unit for $20, the number of units that must be sold each year in order to reach breakdown is nearest to:
   a. 1000 units   b. 2000 units   c. 3000 units   d. 4000 units

7. The total cost of producing a product is represented by the equation: \[0.003Q^2 + 4Q + 3\]
   where Q is the number of units per year. If revenue is represented by 20Q, the maximum profit will occur at an annual production rate closest to:
   a. 2667   b. 4000   c. 5333   d. 6667

8. A used bulldozer with a remaining life of 5 years and $10,000 salvage value can be purchased for $40,000. The annual maintenance cost is expected to $20,000 per year. In addition, operating costs are expected to be $25 per hour. Alternatively, a bulldozer can be rented for $150 per hour. At an interest rate of 10% per year, the minimum number of hours per year the bulldozer must be utilized to justify its purchase is closest to:
   a. 310 hrs   b. 231 hrs   c. 460 hrs   d. 730 hrs
Q3) The initial cost of machinery for producing a certain item is $50,000. The machinery will have a five-year life with no salvage value. The manufacturing process has a fixed cost of $5,000 per year and a variable cost of $16 per unit. At an interest rate of 8% per year, the number of units that must be sold at $20 per unit for breakdown is nearest to:

\[
50,000 \left( \frac{A}{P, 8\%, 5} \right) + 5,000 + 16x = 20x \\
50,000(0.25046) + 5,000 + 16x = 20x \\
4x = 17,523 \\
x = 4,381 	ext{ units}
\]

Q4) The first cost of a certain piece of machinery is $60,000. The machine will be used for five years, after which time it will be salvaged for $10,000. The machine's operating cost is expected to be $20,000 per year. If the company's minimum attractive real rate of return is 24.8% per year, the present worth of the machine is closest to:

\[
P = 60,000 + 20,000\left( \frac{P}{A, 24.8\%, 5} \right) - 10,000\left( \frac{P}{F, 24.8\%, 5} \right) \\
= 60,000 + 20,000 (2.7003) - 10,000 (0.3303) \\
= $110,703
\]

Q5) A certain machine will cost $50,000 to purchase, will have a six-year life, and $5,000 salvage value. It will be updated in year 4 at a cost of $15,000. Its annual operating cost is expected to be $30,000 per year. At a real interest rate of 15.5% per year, the present worth of the machine is closest to:

\[
P = 50,000 + 30,000\left( \frac{P}{A, 15.5\%, 6} \right) + 15,000\left( \frac{P}{F, 15.5\%, 4} \right) - 5,000\left( \frac{P}{F, 15.5\%, 6} \right) \\
= 50,000 + 30,000 (3.7341) + 15,000 (0.5619) - 5,000 (0.4212) \\
= $168,346
\]