How to PASS Engineering Economics?

Unit -1 (7-10 marks)

1. **Define engineering economics**, importance and **principle.**
2. Define demand, supply, utility, marginal utility, and elasticity of demand. Explain law of demand / supply / diminishing utility with suitable example and figure.
3. Describe three kinds of elasticity of demand with suitable figure.

Unit – 2 (8 Marks)

1. Define cost. Explain the elements of cost.
2. **Explain manufacturing cost** and **non-manufacturing cost** with example. OR Define prime cost and overhead cost with example. OR Cost classification with example.
3. Explain **differential cost**, **opportunity cost**, **marginal cost**, **sunk cost**, **fixed cost** and **variable cost** with suitable example.
4. Following are the data for the production of a 100 badminton racquets:
   Labour rate @ Rs. 40/hr,
   Leather 50m @ Rs. 200/m,
   Gut 300 m @ Rs. 50 /m,
   Graphite 100kg @ Rs. 200/kg,
   Total annul factory overhead Rs. 500000,
   Total annual direct Labour hours 25000 hrs,
   Labour hours needed 200 hrs.
   Show the cost breakdown and calculate the total cost for per racquet.

Unit – 3 (8 Marks)

1. Explain Time Value of Money, Interest, Simple interest Vs compound interest, Nominal Vs effective interest rates.
2. **Numerical:** calculate compound**, nominal and effective interest rate.**
3. **Numerical: calculate PW/AW/FW (in cash flow diagram/ cash flow table/ language).**
4. Development of Formula between P/A/F, i and N.

Unit – 4 (15 Marks)

1. **Numerical: Calculate IRR** & ERR, is this project is feasible or not at MARR%, **draw balance diagram in IRR method**.
2. **Numerical**: **Determine both types of B/C using PW**/FW/AW method.
3. **Numerical**: **Calculate Simple and Discounted payback period**.
4. Numerical Equivalent worth methods: Calculate PW, FW & AW.
5. IRR Vs ERR

Unit –5 (15 Marks)

1. **Numerical** Comparing mutually exclusive alternative having **same useful life** by: **IRR** / ERR / **BCR** method.
2. **Numerical** Comparing mutually exclusive alternative having **different useful life** by: **Repeatability assumption / Co-terminated assumption** / Capitalized worth method.
3. Theory or Numerical Comparing mutually exclusive contingent and independent projects in combination.

Unit – 6 (8 Marks)

1. **Numerical**: **Sensitivity analysis, Break even analysis** and Scenario analysis.
2. What is project risks? Sources and method of project risks.

Unit –7 (5 - 7 Marks)

1. Explain **Ecological limits**, economic theory and **Sustainable development**.
2. Ecological **footprint** and Overcoming ecological limit.

Unit – 8 (8-12 Marks)

1. **Numerical:** Determine annual depreciation and book value using **Straight line**, **Double declining with conversion to SL**, **SOYD**, Sinking fund, MACRS methods.
2. Short Notes: Corporate income tax, VAT, taxation law in Nepal.
3. Depreciation and its causes.

Unit – 9 (5-8 Marks)

1. **Method of financing (Equity financing and Debt financing) / Cost of capital / Project funding mechanism / FIRR, EIRR**, ROE
2. **Numerical: Calculate WACC, Cost of debt.**

Unit – 10 (8-13 Marks)

1. **Explain Financial Ratios** (Major Financial Ratios).
2. **Describe income statement and balance sheet with their format.**
3. **Numerical: From the following trial balance prepare P/L account and Balance sheet.**

Short Notes:

1. **Financial Ratios / Balance sheet and P/L account**
2. **Causes of depreciation/ VAT / Corporate tax**
3. **Ecological limit / Sustainable development/ Ecological footprint**
4. **Project funding mechanisms / FIRR and EIRR**/ Capital Structure
5. **Mutually exclusive contingent and independent projects** / Capitalized worth
6. **Nominal rate Vs Effective rate**
7. IRR Vs ERR / Payback period
8. Sources of project risks
9. Types of cost / Life cycle cost
10. Stock and Bond