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06ME56

Fifth Semester B.E. Degree Examination, June/July 2011

Engineering Economics

Time: 3 hrs. Max. Marks:100

Note: 1. *Answer any FIVE full questions, selecting at least TWO questions from each part.*
2. *Use of discrete interest tables is permitted.*

PART – A

1 a. Differentiate between : i) Intuition and analysis, ii) Tactics and strategy. **(08 Marks)**

b. A company 3 years ago barrowed Rs.400000 to pay for a new machine tool, agreeing to repay the loan in 100 monthly payments at an annual nominal interest rate of 12% compounded monthly. The company now wants to pay off the loan. How much would this payment be, assuming no penalty costs for early payout?
Interest factors : (A/P, 1, 100) = 0.01587 ; (P/A, 1, 64) = 47.10277. **(12 Marks)**

2 a. Explain the following :
i) Common multiple method for comparison of assets having unequal lives
ii) 72 Rule. **(08 Marks)**

b. Machine A has a first cost of Rs.90000, no salvage value at the end of its 6 year useful life, and annual operating costs of Rs.50000. Machine B costs Rs.160000 new and has an expected resale value of Rs.40000 at the end of its 9 year economic life. Operating costs for machine B are Rs.40000 per year. Compare the two alternatives on the basis of their present worths, using the repeated projects assumption at 10% annual interest.
Interest factors : (P/F, 10, 6) = 0.56447, (P/F, 10, 12) = 0.36863, (P/A, 10, 18) = 8.20141, (P/F, 10, 9) = 0.42410, (P/F, 10, 18) = 0.17986. **(12 Marks)**

3 a. Define the following :
i) Ownership life or service life ii) Accounting life iii) Economic life. **(08 Marks)**

b. A company is planning to buy an inspection device (CMM) for Rs.450000. The expected life of the device is 5 years, and the expected annual operating costs and taxes are Rs.6000 for the first year and with an added increase per year of Rs.1000 for years 2 through 5. Maintenance costs will be zero in the first 2 years because of warranty, but are expected to be Rs.10000 in year 3, Rs.15000 in year 4 and Rs.20000 in year 5. What is the minimum desired annual economic benefit of the device, assuming that these benefits will just offset the annual costs? The company uses an interest rate of 10% for economic evaluations.
Interest factors : (A/P, 10, 5) = 0.26380, (A/G, 10, 5) = 1.81013, (P/F, 10, 3) = 0.75131, (P/F, 10, 4) = 0.68301, (P/F, 10, 5) = 0.62092. **(12 Marks)**

4 a. Explain : i) MARR ii) IRR iii) ERR iv) Depreciation. **(08 Marks)**

b. A student has bought a motor cycle whose first cost is Rs.80000 with an estimated life of 5 years. The salvage value of the motor cycle at the end of its life time is Rs.30000. Determine the depreciation amount (D_t) and book value (B_t) at the end of various years by :
i) Straight line method
ii) SOYD method
iii) Double declining balance method with $K = \frac{200}{N}\%$.

Tabulate the values. **(12 Marks)**

PART – B

5 a. Explain the objectives of costing. **(08 Marks)**

b. Two operators are engaged on forging machine for 25 jobs, each weighing 4kg in a shift of 8 hours. They are paid at the rate of Rs.100 and Rs.80 per day. The forged material costs Rs.3.50 per kg. If the factory and administrative on costs put together are twice the labor cost, find the cost of production per unit. **(05 Marks)**

c. A product is manufactured in batches of 100. The direct material cost is Rs.600, the direct labor cost is Rs.750 and the factory overheads are 50% of the prime cost. If the selling expenses are 30% of the factory cost, what would be the selling price of each product so that profit is 15% of the total cost? **(07 Marks)**

6 a. Explain the following terminology as applied to financial statements (give examples) :
i) Reserves and surplus
ii) Secured loans
iii) Current assets. **(08 Marks)**

b. The following items are collected from the balance sheet of the company as at 31st March 2010. Organize them properly and prepare the balance sheet. **(12 Marks)**

	Rs.		Rs.
Fixed Assets	5,81,25,000	Provision for dividend	55,25,000
Current liabilities	4,50,50,000	Secured loans	2,50,75,000
Reserves and surplus	4,75,50,000	Debtors	2,65,55,000
Loans and advances	2,51,80,000	Unsecured loans	2,75,50,000
Investments	26,35,000	Stocks	7,70,50,000
Cash and bank balances	65,55,000	Provision for taxation	2,75,000
Share capital	4,50,75,000		

7 a. Explain the different financial ratios coming under the broad frame work (category):
i) Stability ii) Liquidity
Also explain the significance of each one. **(12 Marks)**

b. Explain the limitations of ratio analysis. **(08 Marks)**

8 a. Describe the essentials of profit planning. **(12 Marks)**

b. Explain the advantages and limitations of budgeting. **(08 Marks)**

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