USN | | | | | | | | | | | 10ME71

Seventh Semester B.E. Degree Examination, June/July 2014

Engineering Economy

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. What is decision making? Explain the importance of decision making in engineering economics. **(06 Marks)**

b. Discuss the interest rate from borrower's and lender's point of view. **(08 Marks)**

c. If Mr. XYZ plans to deposit money in a bank, that pays 18% per year compounded daily. What effective rate will he receive (i) yearly (ii) semiannually (iii) quarterly. **(06 Marks)**

2 a. Three devices are available to perform a necessary function for 3 years. The initial cost (negative) for each device at time 0 and subsequent annual savings (positive) are shown in the following table. Compare the net present worth of these three devices, when the required interest rate is 12%. Draw the cash flow diagram. **(08 Marks)**

Year		0	1	2	3
Device-1	₹	22,000	5,000	7,000	9,000
Device-2	₹	24,000	8,000	8,000	8,000
Device-3	₹	20,000	6,000	6,000	10,000

b. A new piece of material handling equipment costs ₹5,00,000 and is expected to save ₹2,00,000 the first year of operation. Maintenance and operating costs increases are expected to reduce the net savings by ₹10,000 per year for each additional year of operations until the equipment is worn out at the end of 8 years. Determine the net present worth of the equipment at an interest rate of 10 percent. **(06 Marks)**

c. Calculate the capitalized cost of a project that has an initial cost of ₹2,50,000 and an additional investment of that project is ₹50,000. The annual expenditure for the project estimated to be ₹10,000. In addition ₹5000 will be required for the every 10 years. Assume that $i = 15\%$ per year. **(06 Marks)**

3 a. The following costs are estimated for two equal service machines in a manufacturing plants.

	Machine – 1	Machine – 2
First cost (₹)	2,60,000	3,60,000
Annual maintenance cost (₹)	8,000	3,000
Annual labour cost (₹)	1,10,000	70,000
Extra income taxes (₹)	-	26,000
Salvage value (₹)	20,000	30,000
Life (years)	4	4

If the minimum required rate of return is 15% per year, which machines should be selected? **(10 Marks)**

b. Two machine models A and B perform the same function. Type A machine has a low initial cost of ₹75,000 relatively high operating cost of ₹15,000 per year more than those of type B machine and a short life of 4 years. Type B machine cost ₹1,00,000 and operating cost of ₹5,000 per year can be kept in service economically for 8 years. The scrap value from either machine at the end of the life will barely cover its removal cost. Which is preferred using an equivalent annual cost, when the minimum attractive rate of return is 9 percent? **(10 Marks)**

4 a. Explain the following :
(i) Internal rate of return (IRR) (ii) External rate of return (ERR) **(08 Marks)**
b. Define depreciation and lists its causes. **(06 Marks)**
c. A machine is purchased for ₹10,000 the estimated life of the machine is 4 years and the scrap value is ₹400. The rate of interest on the depreciation found is 4 percent. Calculate the book value of the machine at the end of each year using sinking fund method. **(06 Marks)**

PART – B

5 a. Explain the different elements of cost. **(06 Marks)**
b. What are the different methods of cost estimating? Explain briefly. **(06 Marks)**
c. A firm is producing 100 units per day. The direct material cost is found to be ₹1600, the direct labour cost ₹2000 and factory overheads chargeable to it ₹2500. If the selling on cost is 40% of the factory cost, what must be the selling price of each unit to realize a profit as 16.6% of the selling price? **(08 Marks)**

6 a. Explain the relation between balance sheet and profit and loss account. **(08 Marks)**
b. The following are the financial statements of ABC company ltd.:

	₹
Share capital	60,000
Debtors	54,000
Creditors	30,000
Share premium	21,000
Reserves and surplus	39,000
Inventory	63,000
Dividend payable	10,800
Land and Building	14,400
Cash in hand	13,200
Bank overdraft	6,900
Plant and Machinery	32,400
Long term loan	10,200
Other assets	900

Prepare the balance sheet. **(12 Marks)**

7 a. What are the advantages and disadvantages of financial ratio analysis? **(08 Marks)**
b. The ABC company has made plans for the next year. It is estimated that the company will employ total assets of ₹8,00,000. 50percent of the assets being financial by borrowed capital at an interest cost of 8% per year. The direct cost for the year are estimated at ₹4,80,000 and all other operating expenses are estimated at ₹80,000. The goods will be sold to customers at 150 percent of the direct costs. Tax rate is assumed to be 50 percent. Calculate (i) Net profit margin (ii) return on assets (iii) assets turn over (iv) return on owner's equity. **(12 Marks)**

8 a. What are the objectives of profit planning? **(06 Marks)**
b. Discuss the importance of financial analysis. **(06 Marks)**
c. What are the types of budgets? Explain in brief. **(08 Marks)**

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