Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
Engineering Economy

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 factor table is permitted.

PART – A

1   a.   Explain with suitable examples for the engineering economic problems encountered by engineers. **(05 Marks)**
    b.   Discuss the problem-solving process with a figure. **(05 Marks)**
    c.   Explain how cash flow diagrams are helpful to the decision makers to understand and solve engineering economic problems. Draw cashflow diagrams from the viewpoint of Borrower's and Lender's. **(10 Marks)**

2   a.   What are the conditions for present worth comparisons? Explain. **(06 Marks)**
    b.   XYZ company is considering two assets having same capability and satisfactory function. Asset A_2 has an initial cost of Rs.3200 and an expected salvage value of Rs.400 at the end of its 4 year service life. Asset A_1 costs Rs.900 less initially, with an economic life of 1 year shorter than that of asset A_2; but asset A_1 has no salvage value, and its annual operating costs exceed those of asset A_2 by Rs.250. When the required rate of return is 15 percent, state which alternative is preferred when comparison is made by the repeated-projects method. Draw cash flow diagrams. **(09 Marks)**
    c.   A company is considering a project with an initial cash outlay of Rs.10,000, and have a life of 5 years. The company's required rate of return is 10 percent and pays tax at a 50 percent rate. The project will be depreciated on a straight line basis. The net cash flows (before taxes) expected to be generated by the project are as follows:

Year	1	2	3	4	5
Project (Rs)	4000	4000	4000	4000	4000

Calculate the payback period of the project. **(05 Marks)**

3   a.   Define and explain the terms:
         (i) Service life   (ii) Accounting life   (iii) Economic life **(09 Marks)**
    b.   Two models of small machines perform the same function. Type 1 machine has a low initial cost of Rs. 9500, relatively high operating costs of Rs.1900 per year more than that of type 2 machine, and a short life of 4 years. The more expensive, type 2 machine costs Rs.25,100 and can be kept in service economically for 8 years. The scrap value from either machine at the end of its life will barely cover its removal cost. Which is preferred when minimum rate of return is 8 percent? Draw cash flow diagrams. **(11 Marks)**

4   a.   What does IRR mean? What are its limitations? Explain. **(05 Marks)**
    b.   What is the internal rate of return of the following cash flow stream? **(06 Marks)**

Year	Cash Flow (Rs.)
0	−1,00,000
1	30,000
2	30,000
3	40,000
4	45,000

c. What do you mean by depreciation? What are the causes of depreciation? Mention.

(04 Marks)

d. A machine is purchased for Rs.49,000 and its erection and installation expenses are Rs.1000. The effective life of the machine is estimated as 15 years and its salvage value is Rs.15,000. If the rate of interest on the invested depreciation fund is 5 percent, compute the rate of depreciation by sinking fund method. (05 Marks)

PART – B

5 a. What do you mean by costing? What are its objectives? (05 Marks)

b. With examples, explain the following:
(i) Direct material cost   (ii) Direct labour cost
(iii) Fixed overheads   (iv) Prime cost   (08 Marks)

c. Two operators are engaged on a forging machine for 25 jobs, each weighing 4 kg in a shift of 8 hours. The operators are paid at the rate of Rs.100 and Rs.80 per day. The forged material costs Rs.35 per kg. If the factory and administrative on costs are twice the labour cost, find the cost of production per unit. (07 Marks)

6 a. What are 'financial statements'? What are the functions served by them? Explain. (07 Marks)

b. From the following Trial Balance of XYZ Company, prepare a Trading and Profit and Loss Account for the year ending 31st March 2013.

Particulars	Dr (Rs.)	Cr (Rs.)
Stock on 1.1.2013	2,000	-
Purchases and Sales	20,000	30,000
Returns	2,000	1,000
Carriage	2,000	-
Rent	1,000	-
Interest received	-	2,000
Salaries	2,000	-
General expenses	1,000	-
Discount	-	500
Insurance	500	-

The closing stock on 31st March 2013 is Rs.5,000. (07 Marks)

c. What are current assets? Mention them. (06 Marks)

7 a. Describe the profitability ratios with their significance. (10 Marks)

b. Explain the advantages and limitations of ratio analysis. (10 Marks)

8 a. Explain the functions of a budget committee. What role does the budget director play in the administration of budgeting? (10 Marks)

b. What are the limitations in using the budgeting system as a device to solve managerial problems? (10 Marks)

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