

4th Semester B.Tech. Mid Term Examination 2022-23

**ENGINEERING ECONOMICS(BTBS-T-HS-018)**

**BRANCH(S) - Computer Engineering, Computer Science and Technology, Computer Science & Engineering**

Duration: 01:30

Full Marks: 25

**1 Answer All**

- |  |   |
|--|---|
| a What are the three basic problems of an economy? | 1 |
| b Distinguish between annuity and annuity due      | 1 |
| c What is Capitalized Cost?                        | 1 |
| d Define Engineering Economics.                    | 1 |
| e What is MARR?                                    | 1 |
| f Define Depreciation.                             | 1 |

**2 Answer All**

- |   |   |
|---|---|
| a The lease on a warehouse amounts to Rs. 5000 per month for 5 years. If payments are made on the first of each month, what is the present worth of the agreement at a nominal annual interest rate of 12 per cent, compounded monthly?   | 3 |
| b Distinguish between the sinking-fund factor and capital-recovery factor.  | 3 |
| c A Company is trying to diversify its business with a new product line. The life of the project is 10 years with no salvage value at the end of its life. The initial outlay of the project is Rs. 20,00,000. The annual net profit is Rs. 3,50,000. Find the rate of return for the new business. | 3 |

**3 Answer any One**

- |  |   |
|--|---|
| a Alpha Industry is planning to expand its production operation. It has identified three different technologies for meeting the goal. The initial outlay and annual revenues with respect to each of the technologies are summarised in the table given below. Suggest the best technology which is to be implemented based on the present worth method of comparison assuming 20% interest rate, compounded annually. | 5 |
|--|---|

	Initial outlay (Rs.)	Annual revenue (Rs.)	Life (Years)
Technology 1	12,00,000	4,00,000	10
Technology 2	20,00,000	6,00,000	10
Technology 3	18,00,000	5,00,000	10

- |   |   |
|---|---|
| b Consider the following two mutually exclusive alternatives. | 5 |
|---|---|

	A	B
Initial Cost	Rs. 4000	Rs.6000
Uniform Annual Benefit	Rs.640	Rs.960
Useful life	20 years	20 years

[P. T. O]



Using a 15 % interest rate, determine which alternative should be selected based on the future-worth method of comparison

**4 Answer any One**

- a A company invests in one of the two mutually exclusive alternatives. The life of both alternatives is estimated to be 5 years with the following investments, annual returns and salvage values.

5

Particulars	A	B
Investment (Rs)	1,50,000	1,75,000
Annual equal return (Rs)	60,000	70,000
Salvage Value (Rs.)	15,000	35,000

Determine the best alternative based on the annual equivalent method by assuming  $i = 25\%$

- b A company is planning to purchase an advanced machine center. Three original manufacturers have responded to its tender whose particulars are tabulated as follows.

5

Manufacturer	Down Payment (Rs.)	Yearly equal installment	No. of installments
1	5,00,000	2,00,000	15
2	4,00,000	3,00,000	15
3	6,00,000	1,50,000	15

Determine the best alternative based on the annual equivalent method by assuming  $i = 20$  percent, compounded annually.