Silicon Institute of Technology

Silicon Hills, Bhubaneswar

| An Autonomous Institute |

4th Semester B.Tech. Mid Term Examination 2021-22

ENGINEERING ECONOMICS(BTBS-T-HS-018)

Duration: 01:30 Full Marks: 25

1 ***Answer All***

a What are the three basic problems of an economy? 1

b Why money has time value? 1

c What is sinking fund factor? 1

d What is capitalized Cost? 1

e Define IRR. 1

f What do you mean by depreciable property? 1

2 ***Answer All***

a A person is just 30 years old. He plans to invest an equal sum of Rs. 20,000 every year for the next 30 years from the end of next year. The bank gives 10 % interest compounded annually. Find the maturity value of his account when he is 60 years old. 3

b What do you mean by pay-back period comparison? Give a numerical example to explain the concept. 3

c A company takes a loan of Rs. 20,00,000 to modernise its boiler section. The loan is to be repaid in 20 equal instalments at a 12 % interest rate, compounded annually. Find the equal instalment amount that should be paid for the next 20 years 3

3 ***Answer any One***

a Find the best alternative using the present-worth method of comparison. Assume an interest rate of 15% compounded annually. 5

Alternative	**A**	**B**
Initial Cost(Rs.)	6,00,000	8,00,000
Annual receipt(Rs.)	3,00,000	2,00,000
Life (Years)	4	6
Salvage Value (Rs.)	1,00,000	50,000

b Machine A has a first cost of Rs.60,000, no salvage value at the end of its 4-year useful life, and annual operating costs of Rs.20,000. Machine B costs Rs. 90,000 new and has an expected resale value of Rs. 25,000 at the end of its 5-year economic life.Operating costs for machine B are Rs. 24,000 per year. Compare the two alternatives on the basis of their present worths, using the repeated-projects assumptions at 10 percent annual interest. 5

[P. T. O.]

4 ***Answer any One***

a Consider the following cash flow of a project: 5

Year	0	1	2	3	4	5
Cash Flow	-10,000	4,000	4,500	5,000	5,500	6,000

Find the rate of return of the project

b 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%