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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; August - 2023

Engineering Economics

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Understand the fundamentals of Engineering economics.

CO2: Compare the various projects using present worth/ equivalent annual worth methods.

CO3: Compute the rate of return of the project son depreciation charges of the machine /equipment.

CO4: analyze the various alternatives and criteria of replacement. Sources of capital and predict the effect of inflation on it.

CO5: Estimate the cost of production/process and judging the breakeven point.

***Note**: I) **PART - A** is compulsory. **Two** marks for each question.*

*II) **PART - B**: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.*

Q. No.	Questions	Marks	BLs	COs	POs
	I : PART - A	**10**			
1 a.	List two important considerations included in decision making role for an engineering economist.	2	L1	CO1	PO1
b.	List the consideration of asset life.	2	L1	CO2	PO1
c.	Define depreciation fund.	2	L1	CO3	PO1
d.	List any two situation of EAW comparison.	2	L1	CO4	PO1
e.	What are the advantages of linear break even analysis?	2	L1	CO5	PO1
	II : PART - B	**90**			
	UNIT - I	**18**			
2 a.	Explain the role played by intuition and analysis in decision making.	9	L2	CO1	PO1
b.	Compute the amount of money deposited in savings bank account each year, so as to accumulate rupees 5 lakhs at the end of the 5 years with 12% nominal interest, when compounding is done, i) Monthly ii) Weekly iii) Continuously	9	L3	CO1	PO2
c.	You have visited a car showroom to buy a new car with a list price of $12000 you have to pay $2000 down payment and the dealer will finance the remain remaining at nominal annual rate of 6% compounded monthly for 5 years. i) Determine the amount of monthly payment. ii) How much total interest will you pay over 5 years?	9	L3	CO1	PO2

Contd…2

UNIT - II **18**

3 a. Explain briefly the conditions for PW comparison 9 L2 CO2 PO1

b. A Bakery thinking of purchasing a small delivery truck that as a first cost of rupees 1800 and is kept in service for 6 years. The Salvage value was estimated at rupees 2500. Maintenance and operating cost were rupees 2500 for the first year and will increase at a rate of rupees 200 per year. Determine the PW of this vehicle using interest rate of 12%. Draw CFD. 9 L3 CO2 PO2

c. A company is planning to expand its cold storage facility. Two alternative site design proposal are being considered that uses MARR at 10%. Plan A requires an expenditure of rupees 35000 for land which will retain its value for 10 years while Plan B requires and expenditure of rupees 425000 which will also retain its value for 10 years. The estimated income increases due to facility available is annualized at rupees 2,48,000 per year. The company requires that a life of 10 years be used for analysis. Data pertaining to the project are given in the table below: 9 L3 CO2 PO2

Particulars	Proposal A, in Rs	Proposal B, in Rs
Building and installation.	7,00,000	4,00,000
Compressors.	1,35,000	85,000
Expected energy cost first year.	48,000	65,000
Energy cost increase for each additional year.	2,000	3,500
Annual maintenance cost.	15,000	50,000
Estimated Salvage value.	43,000	18,000

Evaluate which proposal to recommend using equated annual worth analysis.

UNIT - III **18**

4 a. What is IRR? Briefly explain the procedure involved in computation of IRR and also the misconception in it. 9 L2 CO3 PO1

b. A 9.25% coupon Bond issued by Gurley gears LLC is purchased in January 1 2011 and on December 31st 2019. The purchase price is rupees 1079 and interest is paid semiannually. If the face value of the bond is rupees 1000, determine the effective IRR. 9 L4 CO3 PO2

Contd…3

	c.	A machine is purchased for rupees 60000 and its estimated salvage value is rupees 20000 after 10 years of life. Compute; i) Depreciation fund after 5 years, using straight line method. ii) Depreciation charged for the eight years using declining balance method iii) Rate of depreciation under double declining balance method. iv) Book value after 3 years under decline balance method.	9	L4	CO3 PO2
		UNIT - IV	**18**		
5	a.	Explain briefly the structure of the set the independent and dependent alternatives for the selection of proposals.	9	L2	CO4 PO1
	b.	Explain the concept of Replacement due to obsolescence with help of an example.	9	L2	CO4 PO1
	c.	In an inflation-prone economic, it becomes imperative to conduct inflation sensitive evaluation. With respect to this briefly explain the causes and consequences of inflation.	9	L2	CO4 PO1
		UNIT - V	**18**		
6	a.	Explain the difference between Estimation and Costing. And also explain the importance of Costing to multi product companies.	9	L2	CO5 PO1
	b.	Explain briefly The three primary conditions for Linear break-even analysis.	9	L2	CO5 PO1
	c.	Determine the selling price of a gear wheel from the following data: Labour cost rupees 2500/-, Material cost rupees 3800/-, Factory overheads 50% of direct cost administration over at 25% of factory cost. Profit 30% of total cost.	9	L3	CO5 PO2

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