U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

June 2025 Semester End Main Examinations

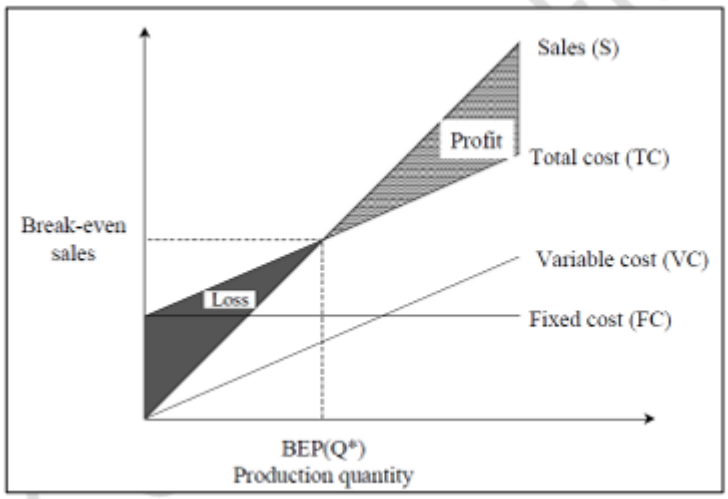
Programme: B.E. **Semester: VI**

Branch: Electronics and Communication **Duration: 3 hrs.**

Course Code: 19GC6HSEEC **Max Marks: 100**

Course: Engineering Economics

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	*CO*	*PO*	Marks
1	a)	A plot of Break-Even analysis is as shown below. In this plot slope of the sales line is 200 and slope of the Total Cost Line is 100. Also in the plot, level of straight line with slope zero indicates 20,00,000.  Find the (i) Break-Even sales quantity (ii) The break-even sales (iii) If the actual production quantity is 60,000 find contribution (iv) Margin of safety using Method-1 (v) Margin of safety using Method-2	*2*	*2*	**10**
	b)	Consider Real-World Example to illustrate the effect of demand and supply on price of a commodity with proper graphs	*1*	*1*	**10**
		OR			
2	a)	Why is Productivity Important and list the factors Influencing Productivity. Explain the significance of productivity for individuals, businesses, economies, and living standards.	*2*	*2*	**10**
	b)	Enumerate the Scope of engineering economics in modern context.	*1*	*1*	**10**

			UNIT - II			
	3	a)	List the various factors in simple economic analysis and give one example each.	*1*	*1*	**10**
		b)	Two alternatives are under consideration for a hexagonal bolt fastening pin. Either design will serve equally well and will involve the same material and manufacturing cost except for the lathe and grinder operations. Design A will require 20 hours oflathe time and 8 hours of grinder time per 10,000 units. Design B will require 10 hours of lathe time and 22 hours of grinder time per 10,000 units. The operating cost of the lathe including labor is Rs. 400 per hour. The operating cost of the grinder including labour is Rs. 300 per hour. Which design should be adopted if 10,00,000 units are required per year and what is the economic advantage of the best alternative?	*2*	*2*	**10**
			OR			
	4	a)	In the design of a jet engine part, the designer has a choice of specifying either an aluminum alloy casting or a steel casting. Either material will provide equal service, but the aluminum casting will weigh 1.2 kg as compared with 1.35 kg for the steel casting. The aluminum can be cast for Rs. 80.00 per kg. and the steel one for Rs. 35.00 per kg. The cost of machining per unit is Rs. 150.00 for aluminum and Rs. 170.00 for steel. Every kilogram of excess weight is associated with a penalty of Rs. 1,300 due to increased fuel consumption. Which material should be specified and what is the economic advantage of the selection per unit?	*1*	*1*	**10**
		b)	How Material Properties & Performance influences in designing a product.	*2*	*2*	**10**
			UNIT - III			
	5	a)	Define the concept of Time Value of Money (TVM). Why is a rupee today generally considered to be worth more than a rupee received in the future?	*1*	*1*	**10**
		b)	A person who is now 35 years old is planning for his retired life. He plans to invest an equal sum of Rs. 10,000 at the end of every year for the next 25 years starting from the end of the next year. The bank gives 20% interest rate, compounded annually. Find the maturity value of his account when he is 60 years old.	*2*	*2*	**10**
			OR			
	6	a)	By applying the value engineering, discuss the procedure for concepts evaluation in engineering field.	*1*	*1*	**10**
		b)	A company has to replace a present facility after 15 years at an	*2*	*2*	**10**

			outlay of Rs. 5,00,000. It plans to deposit an equal amount at the end of every year for the next 15 years at an interest rate of 18% compounded annually. Find the equivalent amount that must be deposited at the end of every year for the next 15 years.			
			UNIT - IV			
	7	a)	Compare revenue dominated cash flow and cost dominated cash flow	*2*	*2*	**10**
		b)	The cost of erecting an oil well is Rs. 1,50,00,000. The annual equivalent yield from the oil well is Rs. 30,00,000. The salvage value after its useful life of 10 years is Rs. 2,00,000. Assuming an interest rate of 18%, compounded annually, find out whether the erection of the oil well is financially feasible, based on the present worth method.	*2*	*2*	**10**
			OR			
	8	a)	The details of the feasibility report of a project are as shown below. Check the feasibility of the project based on present worth method, using i = 20%. Initial outlay = Rs. 50,00,000 Life of the project = 20 years. Annual equivalent revenue = Rs. 15,00,000 Modernizing cost at the end of the 10th year = Rs. 20,00,000 Salvage value at the end of project life = Rs. 5,00,000.	*2*	*2*	**10**
		b)	Describe the rate of return method with necessary graph and equations.	*2*	*2*	**10**
			UNIT - V			
	9	a)	With the definition of economic life of equipment, discuss the reasons for replacement. How is break down and preventive maintenance important in economic life.	*1*	*1*	**10**
		b)	List the different methods of depreciation and explain each with necessary equations	*1*	*1*	**10**
			OR			
	10	a)	A firm is considering replacement of equipment, whose first cost is Rs. 4,000 and the scrap value is negligible at the end of any year. Based on experience, it was found that the maintenance cost is zero during the first year and it increases by Rs. 200 every year thereafter. When should the equipment be replaced if i = 0%?	*1*	*1*	**10**
		b)	List the methods of depreciation and explain with one example in detail	*1*	*1*	**10**

****