CBCS SCHEME

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18IM54

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Engineering Economy

Time: 3 hrs. Max. Marks: 100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. Use of interest factor tables is permitted.

Module-1

1 a. Explain how the problem solving process leading ultimately to decision making is carried out, with a neat block diagram. **(10 Marks)**

b. Define engineering economics : i) Intuition and analysis ii) Tactics and strategy. **(10 Marks)**

OR

2 a. Explain earning power of money from lender's point of view and borrowers point view. **(06 Marks)**

b. Define interest. With an example explain simple and compound interest. **(06 Marks)**

c. Determine the effective interest rate for a nominal annual rate of 18% that is compounded :
i) Semiannually ii) Quarterly iii) Monthly iv) Daily. **(08 Marks)**

Module-2

3 a. Explain the "Rue of 72" as applied to present worth comparisons. **(05 Marks)**

b. Write a note on cash flow diagram. **(05 Marks)**

c. An investor can make three end of year payments of Rs.15,000, which are expected to generate receipts of Rs.10,000 at the end of year 4 that will increase annually by Rs.2500 for the following 4 years. If the investor can earn a rate of return of 10% on other 8 year investments, is this alternative altercative? Use Net Present Worth method. **(10 Marks)**

OR

4 a. How are assets with unequal lives compared? Briefly explain. **(05 Marks)**

b. Briefly explain comparison of assets assumed to have infinite lives. **(05 Marks)**

c. A proposed improvement in an assembly line will have an initial purchase and installation cost of Rs.1,75,000. The annual maintenance cost will be Rs.6,000. Periodic overhauls once in every 3 years, excluding the last year of use, will cost Rs.11,500 each. The improvement will have a useful life of 9 years, at which time it will have no salvage value. What is the present worth of the 9 – year costs of the improvement at i = 8%? **(10 Marks)**

Module-3

5 a. List and explain the conditions for annual worth comparison. **(06 Marks)**

b. Two types of power converters Alpha and Beta are under consideration for a specific application. An economic comparison to be made at an interest rate of 10% and the following cost estimates have been obtained.

	Alpha	Beta
Purchase price	Rs.10,000	Rs.12,000
Estimated service life	5 years	5 years
Salvage value	0	Rs.1,000
Annual operating cost	Rs.1,200	Rs.1,100

Determine the annual equivalent costs of the alternative systems. **(14 Marks)**

OR

6 a. Briefly explain situations for equivalent annual worth comparison. **(10 Marks)**

b. A patch of land adjacent to the International Airport is likely to increase in value. The cost of the land is now Rs.20,00,000 and expected worth is Rs.50,00,000 within 6 years. During this period it can be rented for a small industry at Rs.50,000 per years. Annual taxes are Rs.15,500 and likely to remain constant. Solve to find annual equivalent worth when required rate of return is 10%. **(10 Marks)**

Module-4

7 a. Define depreciation. Briefly explain different causes of depreciation. **(10 Marks)**

b. Calculate the depreciation fund at the end of each year if the first cost of the machine is Rs.10,000, salvage value is Rs.500 and life is 5 years. Use sum of years digits method and declining balance method. **(10 Marks)**

OR

8 a. List and explain the basic reasons for replacement of assets. **(10 Marks)**

b. A fleet owner finds from his past experience records that cost of he machine is Rs.6,000 and the running costs are given below, at what stage the replacement is due? Purchase cost of machine is Rs.6,000.

Year	1	2	3	4	5	6	7	8
Maintenance cost Rs.	1000	1200	1400	1800	2300	2800	3400	4000
Scrap or resale value Rs.	3000	1500	750	375	200	200	200	200

(10 Marks)

Module-5

9 a. Explain the importance of estimating and costing. **(06 Marks)**

b. Briefly explain different types of overhead with suitable examples. **(08 Marks)**

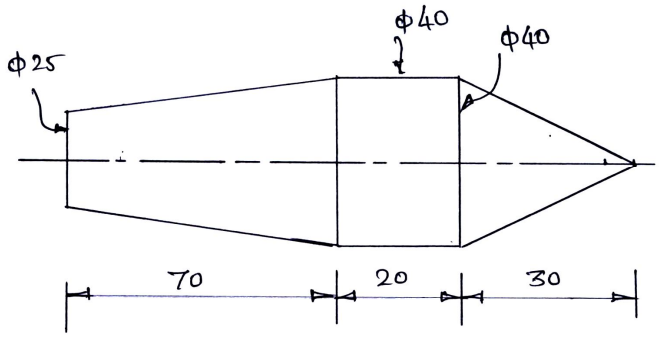
c. Bosch company produces 500 spark plugs per day, involving direct material cost of Rs.40,000, Direct labour cost of Rs.35,000 and factory overhead of Rs.10,000. Assuming a profit of 15% of the selling price and selling overheads to be 30% of the factory cost, solve to find the selling price of one spark plug. **(06 Marks)**

OR

10 a. Briefly explain the elements of cost. **(06 Marks)**

b. Summarize how the selling price is fixed for a product and show all the components of cost. **(06 Marks)**

c. A high carbon steel dead centre is shown in Fig.Q10(c) below. Solve to find the weight of the component. Also what is the cost of material, if cost/kg of material is Rs.12? Density of the material = 7.009g/cc.



Fi.gQ10(c) All dimensions are in mm **(08 Marks)**

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