Reg. No.: ☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 72210

B.E/B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017

Eighth Semester

Mechanical Engineering

MG6863 – ENGINEERING ECONOMICS

(Regulation 2013)

Time: Three hours   Maximum: 100 marks

Answer ALL questions.

PART – A (10 x 2= 20 marks)

1. State the law of supply and demand.

2. What is sunk cost?

3. Define Value Engineering.

4. What is effective interest rate?

5. What is future worth?

6. State the applications of rate of return method

7. Define economic life of an asset.

8. Distinguish between challengers and defenders.

9. Define Depreciation

10. State the merits of annuity method of depreciation.

Part – B (5 x 16 = 80 marks)

11	a	Explain the concept and scope of engineering economics.	16

(OR)

	b	i.	Discuss opportunity cost	16
		ii.	Describe process planning	

12	a	i.	Discuss make or buy decision	16
		ii.	Explain value engineering procedure	

(OR)

b   i.   Describe the functions and aims of value engineering   16

ii.   A company has to replace a present facility after 10 years at an outlay of Rs. 5,00,000. It plans to deposit an equal amount at the end of every year for the next 10 years at an interest rate of 20% compounded annually. Find the equivalent amount that must be deposited at the end of every year for the next 10 years.

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13 a i. Explain present worth method   16

      ii. Data on two mutually exclusive investment options are as follows:

         Cash flow in lakhs of rupees at the end of year

Alternative	0	1	2	3	4
A	-45	20	20	20	20
B	-40	18	18	18	18

    Find the best option taking 18% interest by future worth method.

<p align="center">(OR)</p>

b A firm is diversifying into a new business. The life of the business is 10 years without   16
any salvage value at the end of the life. The initial outlay required is Rs. 20,00,000/-
and the annual net profit estimated is Rs. 3,50,000/-. Find the rate of return for the new
business. Check whether the business is worth for a cost of capital of 12%.

14 a i. Explain different types of maintenance   16

      ii. Differentiate between individual and group replacements

<p align="center">(OR)</p>

b Three years back, a municipality purchased a 10 hp motor for pumping drinking water.   16
Its useful life was estimated to be 10 years. Due to the fast development of that
locality, the municipality is unable to meet the current demand for water with the
existing motor. The municipality can cope with the situation either by augmenting an
additional 5 hp motor or replacing the existing 10 hp motor with a new 15 hp motor.
The details of these motors are now tabulated.

	Old 10 hp motor	New 5 hp motor	New 15 hp motor
Purchase cost (P) Rs.	25,000	10,000	35,000
Life in years	10	7	7
Salvage value at the end of the machine life (Rs)	1,500	800	4,000
Annual operating & maintenance cost (Rs)	1,600	1,000	500

The current market value of the 10 hp motor is Rs. 10,000. Using an interest rate of
15%, find the best alternative.

15 a Two equipments are purchased each for Rs. 12,000 with an estimated life of five years.   16
The estimated salvage value of the equipment at the end of its lifetime is Rs. 2,000.
Determine the depreciation charge and book value at the end of various years using the
straight line method of depreciation and demonstrate the calculations of the declining
balance method of depreciation by assuming 0.2 for K.

<p align="center">(OR)</p>

b A machine costs Rs. 5,00,000. Its annual operation cost during the first year is Rs.   16
40,000 and it increases by Rs. 5,000 every year thereafter. The maintenance cost during
the first year is Rs. 60,000 and it increases by Rs. 6,000 every year thereafter. The
resale value of the machine is Rs. 4,00,000 at the end of the first year and it decreases
by Rs. 50,000 every year thereafter. Assume an interest rate (discounting factor) of
20%. Find the economic life of the asset.

<p align="center">2</p>