Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 42919

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Eighth Semester

Mechanical Engineering

MG 2451 – ENGINEERING ECONOMICS AND COST ANALYSIS

(Common to Automobile Engineering, Materials Science and Engineering and Production Engineering)

(Also Common to PTMG 2451 – Engineering Economics and Cost Analysis for B.E. (Part-Time) Seventh Semester – Mechanical Engineering – Regulations 2009)

(Regulations 2008)

Time : Three Hours | Maximum : 100 Marks

Use of Statistical Tables are permitted.

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. How does Marshall explains the Law of Demand ?
2. What is Margin of Safety ?
3. Mention the criteria for make decision.
4. Mention any two applications of various interest formulas.
5. What is meant by discounting ?
6. Write down the techniques for comparing the worthiness of a project.
7. Distinguish between breakdown maintenance and preventive maintenance.
8. Write short notes on reasons for replacement.
9. What is Sinking Fund ?
10. What is amortization ?

PART – B (5×16=80 Marks)

11. a) Krishna Company Ltd. have the following details :

Fixed cost = Rs. 40,00,000

Variable cost per unit = Rs. 300

Selling price per unit = Rs. 500

Find

i) The break-even sales quantity

ii) The break-even sales

iii) If the actual production quantity is 1,20,000, find the following :

1) Contribution

2) Margin of safety by all methods.

(OR)

b) i) Define break-even point. Draw a break-even chart and explain its components. (8)

ii) Discuss the factors which influence demand and supply. (8)

12. a) i) Explain the criteria for make or buy decision and its approach. (10)

ii) Write the equation for Interest compounding of a capital Yearly, Half yearly and Quarterly compounding. (6)

(OR)

b) The management of a company finds that while the cost of making a component part is Rs. 10, the same is available in the market at Rs. 9 with an assurance of continuous supply.

Give a suggestion whether to make or buy this part. Give also your views in case the supplier reduces the price from Rs, 9 to Rs. 8. (16)

The cost information is as follows :

Particulars	**Rs.**
Material	3.50
Direct Labour	4.00
Other variable expenses	1.00
Fixed expenses	1.50
Total	**10.00**

13. a) Alpha Industry is planning to expand its production operation. It has identified three different technologies for meeting the goal. The initial outlay and annual revenues with respect to each of the technologies are summarized in table. Suggest the best technology which is to be implemented based on the present worth method of comparison assuming 20% interest rate, compounded annually. **(16)**

	Initial outlay (Rs.)	Annual revenue (Rs.)	Life (years)
Technology 1	12,00,000	4,00,000	10
Technology 2	20,00,000	6,00,000	10
Technology 3	18,00,000	5,00000	10

(OR)

b) A company is planning to purchase and advanced machine centre. Three original manufacturers have responded to its tender whose particular's are tabulated as follows :

Manufacturer	Down payment (Rs.)	Yearly equal Installment (Rs.)	No. of installments
1	5,00,000	2,00,000	15
2	4,00,000	3,00,000	15
3	6,00,000	1,50,000	15

Determine the best alternative based on the annual equivalent method by assuming i = 20%, compounded annually. **(16)**

14. a) Discuss the types of Maintenance.

(OR)

b) There are 10,000 bulbs in a decorative set. When any bulb fails to be replaced, the cost of replacing a bulb individually is Rs. 1 only. If all the bulbs are replaced at the same time, the cost per bulb would be reduced to Rs. 0.35. The Percentage of bulbs surviving at the end of Month (t) i.e. S(t) and the probability of failure during the month (t) i.e P(t) are given below.

t	0	1	2	3	4	5	6
S(t)	100	97	90	70	30	15	0
P(t)	–	0.03	0.07	0.20	0.40	0.15	0.15

Determine the optimal replacement Policy.

15. a) Original cost of the machine : Rs. 20,000

Life time : 5 years

Scrap or residual value : Rs. 2,500

Find out the rate of depreciation for the machine using double declining balance method. (16)

(OR)

b) i) Explain sinking fund method of calculating depreciation. (8)

ii) Write short notes on inflation adjusted decisions. (8)