



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

(An Autonomous Institution affiliated to VTU, Belgaum)

Fifth Semester, B.E. - Mechanical Engineering

Semester End Examination; Dec. - 2015

Engineering Economics

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Define and explain the terms : 10
- i) Consumer goods ii) Producer goods
- b. A product has a demand of 3000 units when priced at Rs.100 per unit. When the price is reduced at Rs. 80 per unit the sales increases to 3800 units. 10
- i) Find whether the demand is elastic or inelastic
- ii) At what quantity of sales can the demand be called elastic or inelastic?
- 2 a. Explain different kinds of taxes and their merits and demerits. 10
- b. Explain the principles and characteristics of taxation. 10

UNIT - II

- 3 a. Determine the effective interest rate for a nominal annual rate of 6% that is compounded 10
- i) Semi-annually ii) Quarterly iii) monthly iv) daily.
- b. A certain Indian treasury bond matures in 8 years has a face value of Rs.1000. It means bond holder receives Rs.10,000 cash when bond's maturity date is reached. The interest rate is 8% per year. Interest payments are made every 3 months and any amount to 2% of the face value, buyer earn 10% interest. How much should this buyer be willing to pay for the bond? 10
- 4 a. A 45 year old person is planning for his retired life. He plans to divert Rs. 30,000 from his bonus as investment every year for the next 15 years. The bank gives 10% interest rate compounded annually. Find the maturity value of his account when he is 60 years old. 10
- b. Two mutually exclusive projects are being considered. project X requires Rs. 500 now and results in a return amounting to a one time only profit of Rs. 1000 in 5 years from now. Project Y also requires 500 now but will return Rs. 170 per year for each of the next 5 years. Given a minimum acceptable rate of return of 14%. Which project should be adopted? 10

UNIT - III

- 5 a. A CNC machine costing Rs. 22,00,000 is estimated to serve for 5 years after which its salvage value is estimated to be Rs. 2,00,000. Find; 10
- i) Depreciation during third year by fixed percentage method
- ii) Book value of machine after two years by sum of years digits method.

b. An asset cost was Rs. 400 when purchased 4 years ago. A scrap value of Rs. 50 was expected at the end of the 7 year useful life. Determine the depreciation charge during the coming year and the assets current book value by

i) straight line method of depreciation

ii) Declining balance depreciation (using the salvage value to determine the depreciation rate.)

10

6 a. Define the following terms :

i) MARR ii) IRR iii) ERR and explain the causes of depreciation.

10

b. The cost of the machine is Rs. 6100 and its scrap value is Rs. 100. the Maintenance cost found from experience are as follows:

Year	1	2	3	4	5	6	7	8
Maintenance cost	100	250	400	600	900	1200	1600	2000

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Where should the machine be replaced?

UNIT - IV

7 a. A company produced 30,000 units per annum. The various cost components are as follows:

Direct materials Rs. 6 per unit

Direct labour Rs. 5 per unit

Fixed overheads Rs. 60,000

Variable overheads Rs. 2.50 per unit

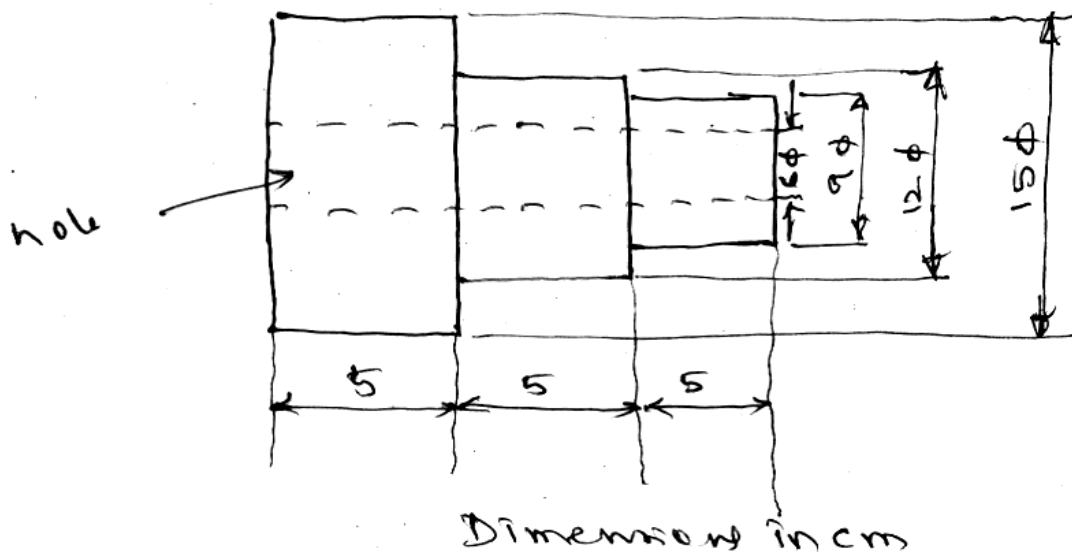
Prepare the fixed budget for the above.

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b. Explain the methods of costing.

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8 a. Explain the elements of product cost.



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- b. A Cast iron Cone pulley is shown in Fig. 8(a). Taking density of C-I as 7.0208 gm/cc. Calculate unit weight of component. What is the cost of material, if cost per kg is Rs. 15 (dimensions in cm)? 10

UNIT - V

- 9 a. Define and explain the terms : 10
i) fixed cost ii) variable cost iii) total cost iv) Sales revenue
- b. For an existing product that sells at P = Rs. 650 per unit, Fixed cost = Rs. 82,000 and variable cost = Rs. 240 per unit determine; 10
(i) BEP (ii) Volume needed to earn profit of Rs. 10,250
10. A garment manufacturing company has got following data:
Selling price for a shirt is Rs. 15
Variable cost for making a shirt is Rs. 10
Fixed cost is Rs. 250 you are required to calculate 20
i) BEP in units
ii) Sales revenue @ BEP
iii) If sales price drops to Rs. 12 what would be the new breakeven point?
iv) How many shirts are to be manufactured in order to make a profit of Rs. 500?
v) Determine BEP graphically when unit price is Rs.15

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