



P.E.S. College of Engineering, Mandya - 571 401
 (An Autonomous Institution affiliated to VTU, Belagavi)
Sixth Semester, B.E., - Industrial and Production Engineering
Semester End Examination; June - 2017
Economics for Engineers

Time: 3 hrs

Max. Marks: 100

Note: i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.
 ii) Missing data may suitably be assumed.

UNIT - I

- 1 a. Explain the following : 8
 i) Decision making process ii) Tactics and Strategy
 b. Mention the difference between the institutions and Analysis. 5
 c. A professor working in a college has 10 years and service before he retires. He now plans to deposit ₹ 25,000 at the end of first year and there after an annual increase of ₹ 500 for the remaining nine years. If he can expect a return of 10%. Find the future amount at the end of the 10th year. 7
- 2 a. Derive the elevation for uniform series capital recovery factor. 10
 b. Determine the effective interest rate for nominal annual rate of 6% that compounded. 10
 i) Semi-Annually ii) Quarterly iii) Monthly iv) Daily

UNIT - II

- 3 a. Mention the conditions for present worth conditions. 6
 b. Two holiday cottages are under considerations. Compare the present worth of the cost of 24 years service, at an interest rate of 5% when neither cottage has a realized savings
- | | Cottage 1 | Cottage 2 |
|------------------------------|-----------|-----------|
| First cost (F) | 4500 | 10000 |
| Estimated life (yrs) | 12 | 24 |
| Annual maintenance cost(Rs.) | 1000 | 720 |
- 14
- 4 a. Explain various definition of asset life. 6
 b. The machine A and B have same service life of 5 years. The other expenses are given below. If the money worth 10% PA, which machine is more economical? Use EAW comparison method.

Cash flows	Machine A	Machine B
First Cost	2,50,000	1,50,000
Uniform end of year maintenance(Rs.)	2000	4000
Salvage value (Rs.)	10,000	-
Yearly savings on account of less inspection	1000	-

14

UNIT - III

- 5 a. Explain the following : 6
 i) MARR ii) IRR iii) ERR

- b. A piece of land adjacent to a highway road is likely to increase in value. The present value now is ₹ 60,000 and is expected to be worth ₹ 1,30,000 within 5 years. During that period, it can be rented for pasture at ₹ 1300 per year. Annual taxes presently ₹ 650 and will likely remain constant. What rate of return will be earned on the investment if the estimates are accurate? 14
- 6. a. Describe the various causes of Depreciation. 6
- b. A melting unit for a steel boundary was purchased for ₹ 40,000, ₹10,000 more were spent on its erection for Commissioning. The estimated residual value after log_n was ₹ 12,000. Using straight rate of depreciation 14
 - i) Calculate the annual rate of depreciation
 - ii) Calculate the boon value of the machine at the end of year
 - iii) Calculate the depreciation fund collected at the end of the 8th year.

UNIT - IV

- 7 a. Define inflation. State its consequences. 8
- b. “Replacement decisions are critically important to a firm” Explain the meaning of this statement. 6
- c. Differentiate between dependent and independent alternatives. 6
- 8 a. With a practical example explain “Replacement due to Deterioration.” 5
- b. Write a note on “Causes of inflation”. 5
- c. Data for three alternative investment plans are as follows:

Alternative	Investment (₹)	Salvage value	Life in years	Annual net cash flow (₹)
X	6000	0	3	2600
Y	12000	3000	6	2500
Z	18000	0	6	4000

When the minimum attractive rate of return is 10%, which alternative should be selected under each of the following decision conditions?

- i) Individual alternative are mutually exclusive
- ii) Individual alternative are Independent.

UNIT - V

- 9 a. Derive the expression for BEP 8
- b. A gear manufacturing company sells gears at a selling price of Rs. 250 per unit. Determine 12`
 - i) The break even quantity
 - ii) Contribution
 - iii) The breakeven sales
 - iii) The margin of safety if the actual production quantity is 60,000 units.
- 10 a. What is the difference between estimating and costing? 5
- b. Distinguish clearly between the following: 4
 - i) DMC and IMC
 - ii) DLC and ILC
- c. A firm is producing 100 units per day. The DMC is found to be ₹ 60, DLC is ₹ 200 and factory overheads chargeable to it is ₹ 250. if the selling expenses are 40% of the factory cost what must be the selling price of each unit to real profit of 15% of selling price?. 11