

Time: 3 Hours

Marks: 80

N.B. (1) Question no. 1 is compulsory.

(2) Attempt any 3 out of remaining questions.

(3) Assume any suitable data if necessary & indicate it clearly.

(4) Draw neat sketches wherever required.

1. (a) Explain supply schedule. 5
- (b) Discuss need of hierarchy with suitable diagram. 5
- (c) Explain price discrimination. 5
- (d) What is depreciation and explain physical and functional depreciation. 5
2. (a) Discuss different types of tax and insurance. 10
- (b) A bond has maturity value of Rs. 2000 and is paying discrete compound interest of an effective annual rate of 4.5 % determine the following at a time 5 years before bond reached its maturity value
- (i) Present worth
- (ii) Discount
- (iii) Discrete compound rate of effective interest which will received by a purchaser if bond were obtained for rs. 1000 10
3. (a) Explain cash flow in chemical industries with suitable diagram. 10
- (b) Calculate the 1994 cost for a vacuum rotary filter 7 m long and 3 m in diameter if cost of similar filter was Rs. 40000 per 60 m² of peripheral area in 1974. The cost index in 1974 was 161 and in 1994 it was 183. 10
4. (a) What is break-even point ? Explain with graph and also derive relation for break-even point. 10
- (b) A new equipment costs Rs. 20000 and will have a scrap value of Rs. 4000 at the end of its useful life period of 20 years and interest is compounded at 8% per year. What is the capitalized cost of equipment? 10
5. By using following % purchased equipment cost estimate the following:
- (i) Direct plant cost
- (ii) Fixed capital investment
- (iii) Total capital investment
- Purchased equipment cost = E =200000 Rs
- Installation cost = 29% of E
- Instrumentation = 18% of E
- Piping = 3.5 % of E
- Electrical = 10% of E
- Building = 22% of E
- Yard improvement = 10% of E
- Service facility = 55% of E
- Engineering and supervision = 32% of E

- Construction expenses = 34 % of E
- Contractors fees = 5 % (direct + indirect)
- Contingencies = 10% (direct + indirect)
- Material and labor = 85 % of fixed capital investment
- Working capital = 20% of total capital investments

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6. (a) An existing plant has been operating in such a way that a large amount of heat is being lost in waste gases. It has been proposed to save money by recovering heat being lost. Four different heat exchangers have been designed to recover the heat and all prices savings have been calculated for each of the design are given in the table. The company wants at least 16% annual return on initial investment. Which one of the four designs should be recommended?

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Item	Design 1	Design 2	Design 3	Design 4
Initial installed cost Rs	350000	500000	600000	750000
Operating costs Rs	8500	8500	9500	9500
Fixed charges Rs	25000	30000	60000	75000
Value of heat saved Rs/year	200000	240000	260000	280000

(b) Write a short note on balance sheet.

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