SE. Sem - III (Chem.)

QP Code : **NP-18785**

Chemical Engineering Economics

(3 Hours) [Total Marks : 80

N.B. (1) Questions No. **1** is **compulsory**.
(2) Attempt any **three** from remaining.
(3) **All** questions carry **equal** marks.
(4) Assume any data if **required**.

1. (a) Describe the general outlines of accounting procedure. 5
   (b) Explain the different types of cost estimates and cost indexes used for cost estimation. 5
   (c) What is capital gain tax ? 5
   (d) Give any four factors affecting the investment and production cost. 5

2. (a) Draw tree diagram showing cash flow for industrial operation. 10
   (b) Two company 'A' and 'B' purchase the same equipment cost ₹1,00,000/- company 'A' decides to use straight line method for depreciation with useful life of 10 years and zero salvage value company 'B' decides to use declining balance method for depreciation with useful life of the 10 years, and salves value of ₹ 10,000/-. If both companies set up depreciation funds, when will be the amount collected in two funds be equal. 10

3. (a) A new piece of completely installed equipment cost ₹ 3,60,000/- and will have scrap value of ₹ 60,000 at the end of its useful life. If the useful life period is 10 years, and the interest is compounded at 6% per year. What is the capitalized cost of equipment ? 8
   (b) A company is offering an easy installement option while selling a boiler worth ₹ 3,00,000/- At a time of purchase of ₹ 60,000/- in cash and the remaining amount in 30 equal monthly installements of ₹ 10,000/- each. A bank is also willing to pay 75% of the boiler cost and recover it in 30 installement of ₹ 8,500/- each. Which option is better ? Why ? 12

4. (a) What information is requirement to calculate break even point of operation ? Show graphically ? 10
   (b) A original loan of ₹ 2000 was made of 6% simple interest per year for 4 years. At the end of this time no payment has been paid and loan was extended for 6 years, by compound interest at the rate of 8% per annum. What is total amount owned at the end of 10 years ? If 'no' intermediate payments are made. 10

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5. A proposed manufacturing plant requires an initial fixed capital investment of ₹ 9,00,000/- and ₹ 1,00,000/- of working capital. It is estimated that the annual income will be ₹ 8,00,000 and the annual expenses including depreciation will be ₹ 5,20,000 before income tax. A minimum annual return of 15% before income taxes is required before the investment will be worth while. Income taxes amount to 34% of all pretax profits. Determine– 20
   (1) Annual return on initial total investment before income taxes to the percent annual return on the total initial investment, after income taxes.
   (2) The percent annual return on total initial investment before taxes based on the capital recovery with minimum profit.
   (3) Annual percent return on an average investment before income tax assuming straight line method (with zero salvage).

6. An equipment worth ₹ 2,00,000/- is owned by company 'A' which follows sum of the years digits method for depreciation. The life of the equipment is 10 years and its scrap value ₹ 20,000/-. Company 'B' offers to buy the equipment after 'a' years of use. However company B would use Double declining balance method for valuation– 20
   (i) Should the offer of B be accepted by A after 'a' = 5 years ?
   (ii) Should it be accepted after 'a' = 8 years.
   (iii) What is minimum usage (in years) of equipment after which the offer can be safely accepted ?
   (iv) What is the maximum benefit company A can hope to achieve by this transaction ? At what value of 'a' ?
