

IV B.Tech I Semester Supplementary Examinations, April/May 2005
CHEMICAL ENGINEERING PLANT DESIGN & ECONOMICS
(Chemical Engineering)

Time: 3 hours**Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

1. (a) How the design information from the literature is obtained? Briefly describe.
(b) Describe the general types of flow diagrams and cite any typical chemical process qualitative flow diagram and explain.
2. (a) Discuss the importance of the development of a pollution control system.
(b) Describe how solid wastes are disposed.
3. (a) What is six-tenths-factor rule? Where is it used?
(b) The purchased and installation costs of some pieces of equipment are given as a function of weight rather than capacity. An example of this is the installed costs of large tanks. The 1980 cost for an installed aluminum tank weighing 100 kg was Rs. 3,90,000. For a size range from 200 to 1000 kg, the installed cost-weight exponent for aluminum tanks is 0.93. If an aluminum tank weighing 700 kg is required, what is the present capital investment needed?
4. (a) Derive an expression for the relation between the amount of ordinary annuity and the periodic payments for continuous cash flow and interest compounding.
(b) A piece of equipment has an initial installed value of Rs. 12,000. It is estimated that its useful life period will be 10 years and its scrap value at the end of the useful life will be Rs. 2000. The sinking fund method for determining the rate of depreciation is used. The depreciation fund will be accumulated at an annual interest rate of 6 percent. Determine the yearly cost due to depreciation under these conditions.
5. The gross earnings for a small corporation were \$ 54,000 in 1960. What would have been the % reduction in Federal Income Taxes paid by the company if the tax rates in effect in 1973 had been in effect in 1960 ?
6. (a) Give advantages of combination method over declining balance method.
(b) A property has an initial value of Rs. 5,00,000, service life of 20 years and final salvage value of Rs 40,000. It has been proposed to depreciate the property by the textbook declining balance method. Would this method be acceptable for income tax purposes if the income tax laws do not permit annual depreciation rates greater than twice the minimum annual rate with the straight-line method?
7. Explain different methods for selecting the suitable equipment basing on alternative investments.

8. Explain briefly simplex algorithm.
