

P. Pages : 2

Time : Three Hours

**AW - 3387**

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Diagrams and chemical equations should be given wherever necessary.
 5. Illustrate your answer necessary with the help of neat sketches.
 6. Discuss the reaction, mechanism wherever necessary.
 7. Use of cell phones strictly prohibited.
 8. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain general safety measures to be taken in chemical process plants. 7
b) Explain time sequence of steps involved in development of any project. 6

OR

2. a) Give details of techno-economic feasibility of any chemical process plant. 7
b) Explain different types of flow diagrams used in process industries in detail. 6
3. a) Explain the factors to be considered while selecting a plant site for chemical process industries. 7
b) Explain the objectives of a good plant layout. 6

OR

4. a) Explain the types of plant layouts adopted in process industries with its advantages. 7
b) Compare the advantages of rural versus urban plant location in detail. 6
5. a) Discuss the breakdown of fixed capital investment items for chemical process plants. 7
b) Explain simple Interest, compound Interest, Nominal Interest & Effective interest with it's formulae of calculations. 7

OR

6. Explain the significance and applications of cost indexes used in estimating capital investment of chemical industries. 14

SECTION - B

7. a) An equipment costs Rs. 5,00,000/- and its salvage value is estimated as Rs. 60,000/- with the useful service life of 10 years. Determine the depreciation amount and subsequent book value at the end of second, fourth and eighth year by Straight line and Sum of the years digits methods. 9

- b) Explain depreciation & it's reasons to happen in detail. 5

OR

8. An equipment having initial cost Rs. 20,00,000 has an estimated service life of 8 Yrs. It's salvage value is Rs. 60,000. The interest rate is 12%. Calculate the Depreciation amount and book value at the end of second and sixth year by using straight line, declining balance, sum of the year's digits & sinking fund methods of depreciation. 14

9. a) Explain practical factors in alternative and replacement investment analysis. 7

- b) Explain net present value method used in replacement decision with the help of formulae. 6

OR

10. a) Discuss the reasons of replacement of an existing property in detail. 5

- b) A process engineer has two alternatives available either to purchase a dryer -1 that will cost Rs. 1,20,000/- installed and useful service life of 5 years or dryer -2 that will cost Rs. 60,000/- installed with a useful service life of 2 years. The cost of replacement is Rs. 1,00,000/- & Rs. 50,000/- respectively.
Money is worth 12% per annum. Which dryer is best and selected if process unit life is a) Ten Years b) seven years? Justify. 8

11. a) Explain any three methods of Inventory control in detail. 7

- b) Explain the essential contents of a design report and common errors in design reports in detail. 6

OR

12. a) Explain the scheduling of a project using CPM method in detail. 7

- b) Critically compare analytical and graphical methods in determining optimum plant operation conditions. 6
