Sub: Chemical Engineering **QP Code :14707**
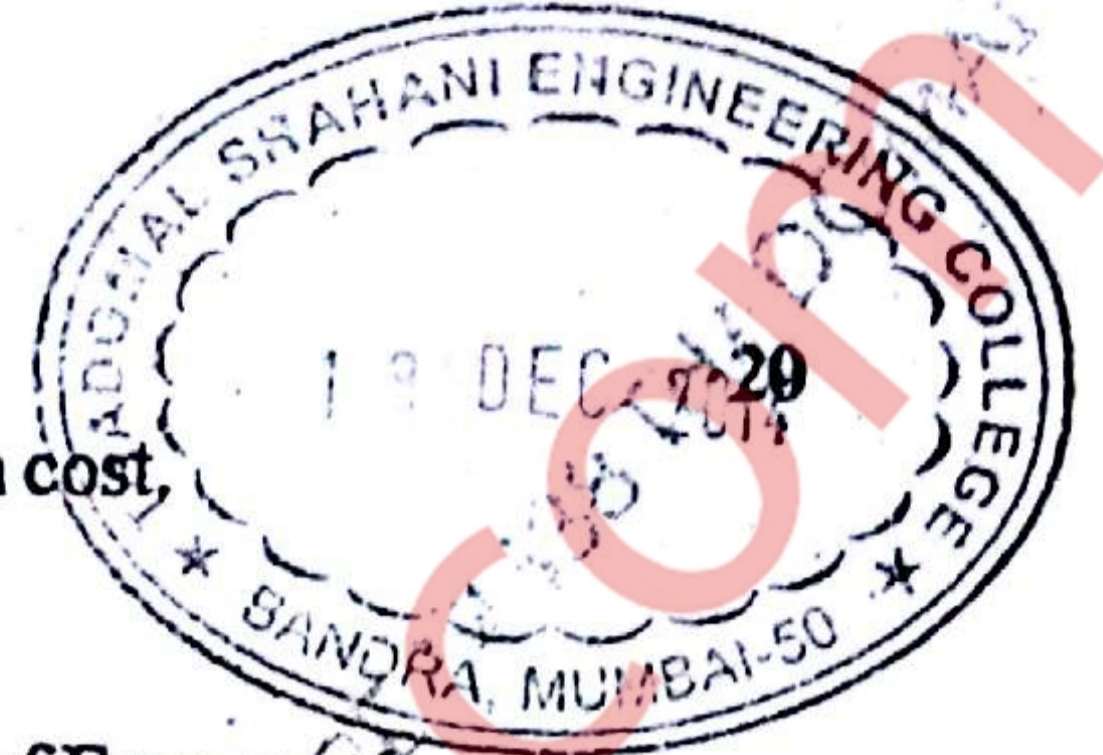Economics

(30)

(3 Hours)   [Total Marks : 80

N.B : (1) Question No. 1 is compulsory.
   (2) Solve any **three** out of remaining five.
   (3) Assume suitable data if required.

1.   Answer the following (any **four**) :—
   (a) What are the factors affecting investment and production cost,
   (b) Explain various methods for profitability evaluation.
   (c) What is total product cost explain in detail?
   (d) What is Basic principle of Economy? Write importance of Economy?
   (e) Write a short note on Tax and insurance.

2.   (a) It is desired to borrow ₹ 5000 to meet a financial obligation. This money can be   **14**
      borrowed from loan agency at a monthly interest rate of 1.5%. Determine
      (i)   The total amount of principle plus simple interest due after 3 yeas, if no
         intermediate payments are made.
      (ii) The total amount of principle plus compound interest due after 3 years, if
         no intermediate payments are made.
      (iii) Nominal interest rate when the interest is compounded monthly.
      (iv) The effective interest rate when the interest is compounded monthly.
   (b) A person borrows ₹90,000/- at annual effective compound interest rate of 12%. A   **6**
      person wants to pay off in debit in 8 years, by making equal payment at the end of
      each year. How much will each payment have to be?

3.   (a) The total capital investment for a chemical plant is ₹10 lakhs and working capital is   **10**
      ₹1 lakh. If the plant can produce an average of 2500 kg of final product per day,
      what selling price per kg of product would be necessary to give a turn over ratio
      1.0? Production is carried out for 365 days.
   (b) What is B.E.P? It is possible to operate chemical plant below B.E.P.   **10**

4.   (a) The cash flow pattern of two medium scale chemical industries is given below.   **10**

year →		0	1	2	3	4
Cash flow	Project A	10.0	7.2	9.0	11.2	13.4
₹(Million)	Project B	10.0	9.0	9.4	10.2	12.0

      Which project would you recommend if the minimum rate of return expected is
      35%?
   (b) An industrial unit with initial value of ₹2,00,00,000/- has got a salvage value of   **10**
      ₹20,00,000/- at the end of 20 year. It is sold at ₹1,45,00,000/- at the end of 10
      years. What is the profit or loss if .... d depreciation method at 8% com-
      pounded annually was adopted.

GN-Con.:11994-14.   [TURN OVER

5. (a) A warehouse is worth ₹5 crores and goods in it are worth ₹4 corores. The annual   10
        insurance rate is 1.1% p.a. on ware house and 0.95% p.a. on stored goods.
            If a sprinkler system is installed both rates would come down to 0.75% p.a.
    The sprinkler system costs ₹20,00,000/- and annual maintenance cost would be
    ₹30,000/-. Life of sprinkler is 20 years. The warehouse is giving 8% ROR. Give the
    reason why you would or would not recommend installing the sprinkler system.

    (b) Prepare a balance sheet applicable at the data when 'X' corporation had the following
        assets and liabilities.   10
        Cash - ₹20,000
        Account payable
            B company ₹ 2000
            C corporation ₹ 8000
        Account receivable ₹ 6000
        Inventories ₹ 15000
        Mortgage ₹ 5000
        Common stock sold ₹ 50,000
        Machinery and equipment at present value ₹ 18000
        Furniture fixtures ₹ 5000
        Government bonds ₹ 3000
        Surplus ₹ 2000.

6. (a) An equipment worth ₹20,00,000/- is owned by company 'A' which follows sum of
        the years digits method for depreciation. The life of 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 Declining balance method for valuation.
        (i)   Should the offer of B be accepted by A after a= 5 years.
        (ii) Should it be accepted after a = 8 yeras.
        (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?

    (b) What is B.E.P? Explain B.E.P by showing theoretical graph?

1994-14.