### EX/FTBE / T / 421 /2017

# B.FTBE.--3<sup>RD</sup>YEAR--2<sup>ND</sup>SEMEXAMINATION---2017, PROJECT PLANNING LAYOUT & ECONOMICS

Time: Three hours

Full Marks: 100

Use separate Answer Script for each Part

### PART-I (50 Marks)

( Answer any FIVE questions. All questions carry equal marks )

- 1. (a) What do you mean by Capital Investment and Interest? Give a suitable example.
- (b) What are the different forms of interests presently running in the banking business?
- 2. (a) What is the difference between appreciation and depreciation?
  - (b) State the methods of generating Capitalized Cost for running a project.
- Discuss the method of solving equations for optimizing costs by linear programming process.
- 4. (a) The original value of a piece of equipment is Rs. 88 lakh, completely installed and ready for use. Its salvage value is estimated to be Rs. 8 lakh at the end of a service life to be 8years. Determine the asset (or book) value of the equipment at the end of 5 years using:
  - a) Straight -line method,
  - b) Textbook declining -balance method,
- 5. Discuss the graphical or analytical procedure for finding the optimum values of x and y for the equation to find the least value of C

$$C = 2.33 x + 11900/xy + 1.86y + 10$$

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- 6. Discuss the necessary equations for developing the optimum design of an equipment.
- 7. Discuss the importance of statistical analysis in plant design.
- 8.Discuss the application of PERT and CPM in small scale industries .
- 9. Write short notes on: (Any Two)
- a.) Continuous cash flow and Interest compounding.
- b.) Depreciation and Break -even point.
- c.) Standard deviation in variability of data.
- d.) Network diagram and Critical path.
- e. ) Optimum production rate for minimum cost per unit of production.

Ref. No.: EX/FTBE/T/ 323/ 2017

## BACHELOR OF ENGINEERING (F.T.B.E) EXAMINATION, 2017 $(3^{rd} \text{ Year } -2^{nd} \text{ Semester })$

### Project Planning ,Layout & Economics

Time: 3 hrs.

Full Marks: 100

#### Part - II

(Answer Q-1 and any two questions from the rests in this group;  $18 + 16 \times 2 = 50$ )

1. A food processing unit is producing 10,000 bottles of pickles of different verities per month.

The details of expenditures of the company are given below:

A. Non recurring expenditure  Amount (Rs.)								
1750 Fd	and & Building with	20,000/- 18.73,000/-						
B. Recurring expenditure								
(ii) Sa	(ii) Salaries and wages							
Calculate the following:		(a)	return on investment (b) return on	sales				
		(c)	break even point and also					
Prepare the profit and loss account. Take the selling price of each bottle as Rs.90/- per bottle								
					(18)			

- 2. A proposed manufacturing plant requires an initial fixed capital investment of Rs.54,00,000/- and working capital of Rs.6,00,000/-. It is estimated that the annual income will be Rs.48,00,000 and the annual expenses will be Rs.30,00,000/- before income taxes. These expenses include Rs.6,00,000/- for depreciation. A minimum annual return of 15% before income taxes is required before the investment will be worthwhile. Income taxes amount to 50% of all pretax profits. Determine the following:
  - (i) The annual percent return on the investment after income taxes
  - (ii) The annual percent return on the total initial investment before income taxes based on capital recovery with a minimum profit.
  - (iii) The annual percentage return on the average investment before income taxes assuming straight line depreciation and zero salvage value.
  - (iv) Standard minimum pay out period on profit after income taxes including as an expense a minimum annual return of 7% after income taxes. (16)

Answer any two:  $(8 \times 2 = 16)$ 

- (i) How will you determine the optimum economic pipe diameter for constant mass throughput rate
- (ii) Discuss the capitalized cost profitability concept for comparing alternative investment choices
- (iii) Discuss the importance of feasibility survey before any detailed work is done on the technoeconomic factors of the project work
- (iii) Write short note on : Methods for estimating capital investment
- 4. The following equation shows the effect of the variables X and Y on the total cost for a particular operation:

$$C_T = 2.34X + (11900/XY) + 1.9Y + 10$$

Determine the values of X and Y which give the least total cost. How will you check to make certain the preceding values represent condition of minimum cost. Establish the relation by graphical method with two independent variables. (16)

5. An existing plant has been operating in such way that the large amount of heat is being lost in the waste gas. It has been proposed to save money by recovering the heat which is now being lost. Four different heat exchangers have been designed to recover the heat and all prices, costs and savings have been calculated for each of the following design. The results are presented in the following table:

Design	No.1	No.2	No.3	No.4
Total Installation Cost	Rs.6,00,000/-	Rs.9,60,000/-	Rs.12,00,000/-	Rs.15,00,000/-
Operating cost Rs. / yr.	Rs.6,000/-	Rs.6,000/-	Rs.6,000/-	Rs.6,000/-
Fixed charges, % of initial cost /yr.	Rs.1,200/-	Rs.1,200/-	Rs.1,200/-	Rs.1,200/-
Value of heat saved Rs./yr.	Rs.2,44,000/-	Rs.3,60,000/-	Rs.4,14,000/-	Rs.5,31,000/-

The company in charge of the plant demands at least 10% annual return based on the initial investment. Only one of the four designs can be accepted. Which of the four design should be recommended as the best one?

(16)