

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VII (New) EXAMINATION – WINTER 2019****Subject Code: 2173611****Date: 03/12/2019****Subject Name: Project & Plant Engineering****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

**MARKS**

- Q.1** (a) Write a note on: Project Engineering **03**  
 (b) Discuss the feasibility survey with respect to plant design. **04**  
 (c) Explain the types of designs in detail. **07**

- Q.2** (a) What is influence of territory in plant site selection? **03**  
 (b) Discuss about scale up design. **04**  
 (c) Explain the factor influencing plant location. **07**

**OR**

- (c) Explain the types of flow diagram. **07**  
**Q.3** (a) Write down the importance of laboratory development pilot plant. **03**  
 (b) Discuss the use of scale model. **04**  
 (c) Explain the different principle of plant layout. **07**

**OR**

- Q.3** (a) Write a note on: (i) Heating Oil (ii) Process water **03**  
 (b) A new medical facility, Health-care, is to be located in Delhi. The location factors, weights, and scores (1 = poor, 5 = excellent) for two potential sites are shown in the following table. What is the weighted score for these sites? Which is the best location? **04**

Sl. No.	Location factor	Weight	Scores	
			Location 1	Location 2
1.	Facility utilization	25	3	5
2.	Total patient km per month	25	4	3
3.	Average time per emergency trip	25	3	3
4.	Land and construction costs	15	1	2
5.	Employee preferences	10	5	3

- (c) Explain the Equipment's, selection criteria and specification sheets in detail. **07**

- Q.4** (a) Write a note on: Profitability standards. **03**  
 (b) Discuss the importance of break-even point. **04**  
 (c) Explain the following terms: (i) Profitability (ii) Depreciation value (iii) Salvage value **07**

**OR**

- Q.4** (a) Write a note on rate of return. **03**  
 (b) Discuss the methods of profitability evaluation. **04**  
 (c) A proposed manufacturing plant requires an initial fixed-capital investment of ₹ 900,000 and ₹ 100,000 of working capital. It is estimated that the annual income will be ₹ 800,000 and the annual expenses including depreciation will be ₹ 520,000 before income taxes. A minimum annual return of 15 percent before income taxes **07**

is required before the investment will be worthwhile. Income taxes amount to 34 percent of all pre-tax profits.

- (a) The annual percent return on the total initial investment before income taxes. **03**
- (b) The annual percent return on the total initial investment after income taxes. **04**
- (c) The annual percent return on the total initial investment before income taxes based on capital recovery with minimum profit. **07**
- Q.5** (a) Write down the alternative investments in industry. **03**
- (b) Discuss the practical factors in alternative investment and replacement studies. **04**
- (c) Explain the following methods of determining depreciation: **07**
- (i) Straight-line method
  - (ii) Declining-balance method
  - (iii) Sum-of-the-years-digits method

**OR**

- Q.5** (a) Give the practical factors in alternative investment and replacement. **03**
- (b) Discuss the factors affecting investment and production costs. **04**
- (c) Explain the CPM/PERT methods. **07**

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