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53 (FPT '801) PDPE

2017

**PLANT DESIGN AND PROJECT
ENGINEERING**

Paper : FPT 801

Full Marks : 100

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

Answer ***any five*** questions.

1. (i) What are the general design considerations of a plant design. 5
- (ii) "Food processing sector is different from other processing industries"— Justify the statement. 5
- (iii) What is a feasibility survey ? Explain in detail including all the items to be considered in the survey. 10

Contd.

2. (i) What factors do you consider for design and construction of a building for a food plant ? 8
- (ii) What general guidelines you need to follow for locating a food processing industry ? 10
- (iii) What are the basis of design of equipments for fluid flow ? 2
3. (i) What is a plant layout ? What are the objectives of any effective plant layout ? 7
- (ii) List out the various advantages of effective plant layout. 5
- (iii) How many types of plant layout are available ? Describe stating their advantages and disadvantages if any ? 8
4. (i) Draw the figure of a product life cycle and explain it. 5
- (ii) 'The life cycle of most of the food products is very short' — What are the reasons for this ? 7
- (iii) What are the basic objective in the development of a successful process route ? 8

5. (i) Choose the correct answer : 1×5
- (a) There is a *continuous need* / *periodic need* for R and D and diversions in a food processing sector.
 - (b) Life cycle of product is hardly in the range *5-6 years* / *3-4 years*.
 - (c) The building height should be atleast *2m above* / *20m above* the height of the tallest equipment in the building.
 - (d) *Extrusion* / *Extraction* is a forming operations.
 - (e) It is advisable to *locate* / *not to locate* the food plants in places where the labour union activities are vibrant.
- (ii) What queries do you rise for making an economic analysis of a product ? 6
- (iii) What is a breakeven analysis ? Explain it with a proper diagram. 9
6. (i) Write short notes : 5×2
- (a) Fixed Capital
 - (b) Working Capital

(ii) What is depreciation ? What are the methods of calculating the depreciation ? 2+8

7. Draw a plant layout for any food processing plant. Explain the arrangement and the direction of the process plant route. 20