

3 hours

80 Marks

Instructions:

1. Question Number 1 is Compulsory
2. Attempt ANY THREE Questions out of remaining FIVE.
3. Use illustrative diagrams wherever required

- Q1) Attempt any FOUR questions
- a) Write the types of products, their features and give examples. 05
 - b) Define Product development. What are the objectives of product design? 05
 - c) What is product life cycle? Draw the four phases of product life cycle. 05
 - d) Why it is necessary to integrate the basic forms and elements of a product like balance, rhythm and proportion? 05
 - e) What are the principles of Design for Manufacturing and Assembly (DFMA)? 05
 - f) List ANY FIVE methods of Prototyping a new product. Explain the need of additive manufacturing methods. 05
- Q2) a) Explain SIX steps/phases of the Generic product development process with flow chart. 10
- b) Define market research. List and explain the methods of market research required in the product design and development. 10
- Q3) a) Explain concept screening and concept scoring methodology giving example. 10
- b) What is Product Architecture? Explain the Steps in developing product architecture. 10
- Q4) a) Explain the process of identifying customer needs in concept development process. 10
- b) What is Quality Function Deployment (QFD)? Explain the phases of QFD. 10
- Q5) a) What is House of Quality (HoQ)? Explain the steps to build the house of quality. 10
- b) What is Attribute Listing technique? Tabulate and explain the various attributes to be considered for designing and development of New Bulb or Lamp product. 10
- Q6) a) What do you mean by Golden Ratio of proportion? Explain the Uses of Golden Ratio. 10
- b) Write short notes on Design for Serviceability and Design for Environment. 10
