

A 1398

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Seventh Semester

Mechatronics Engineering

MF 042 — PRODUCT DESIGN AND DEVELOPMENT

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the two major objectives of engineering design?
2. What is adaptive design?
3. State the importance of market research in product development.
4. Define reliability of the product.
5. What is 'value' of product?
6. What are the direct cost of product?
7. What is the significance of patent of product?
8. State the importance of trademark.
9. Distinguish between \bar{X} , R and p charts.
10. What are the types of inspection?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Discuss the process design functions of any product. (8)
(ii) How are ideas influence the creation of new product? (8)

Or

- (b) Discuss how are the following factors of product design engineer influence in the introduction of new product.
(i) Creative thinking (6)
(ii) Curiosity (5)
(iii) Imagination. (5)
12. (a) (i) How is the value of appearance of product influence marketing? Illustrate with examples. (10)
(ii) Why is the ease of maintenance is very significant factor in any product? (6)

Or

- (b) (i) What are the various aspects of quality? (6)
(ii) Discuss the role and steps involved in market research in launching a new product. (10)
13. (a) Discuss the various costs involved in product right from inception of concept till reaching customers. (16)

Or

- (b) What is value engineering? Discuss the factors/steps involved in adding the value of the product. Illustrate with example. (16)
14. (a) (i) Explain the terms novelty and utility. (8)
(ii) Discuss the classes of executive rights. (8)

Or

- (b) Describe in detail various steps involved in obtaining 'patent' of product. (16)

15. (a) (i) Define AQL, AOQL, LTPD, producer's risk and consumer's risk with respect to acceptance sampling plan. (10)
- (ii) Define MTTR, MTBF and Failure rate. (6)

Or

- (b) (i) What is the reliability of a system having 3 series single sub systems of 0.8, 0.9, 0.85 probability of survival connected in series with a system having 3 parallel systems of 0.9 probability of survival? (10)
- (ii) Discuss the role of quality control department. (6)
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