

Printed Pages – 3

ME – 501

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 4014

Roll No.

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B.Tech.

FIFTH SEMESTER EXAMINATION, 2004-2005

PRODUCT DEVELOPMENT AND DESIGN

Time : 2 Hours

Total Marks : 50

- Note :** (i) Attempt **ALL** the questions.
(ii) Give suitable examples.

1. Attempt *any four parts* of the following :- $(3\frac{1}{2} \times 4 = 14)$
- List ten products which became obsolete during the last 15-20 years
 - List five products whose demand has suddenly been reduced drastically due to introduction of new technology / new product. Also name the corresponding new technology/new product.
 - Show that the development of products, in old times, was carried out by and large through evolution. Give examples.
 - Explain the importance of analogy in product development.
 - Differentiate between "Need-based" and "Technology-based" product developments.

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- (f) Explain important changes made in different designs/models of the bicycle during its evolution.

2. Attempt *any two parts* of the following :- (6x2=12)

- (a) In morphology of design, why "Analysis of Need" is termed as divergent phase? Explain "Need statement", "Specifications" and "Performance Parameters" as applied to Analysis of need.

For any one of the following give a generalised need statement, specifications and standards of performance.

- (i) Match box
(ii) Mobile hand-set
(iii) Mosquito coils
- (b) What is Ideation? Why is it so difficult to get ideas once the "Analysis of Need" has been carried out? Explain one method to generate ideas.
- (c) Discuss the different design criteria for product development. Give suitable example in each case.

3. Attempt *any two parts* of the following :- (6x2=12)

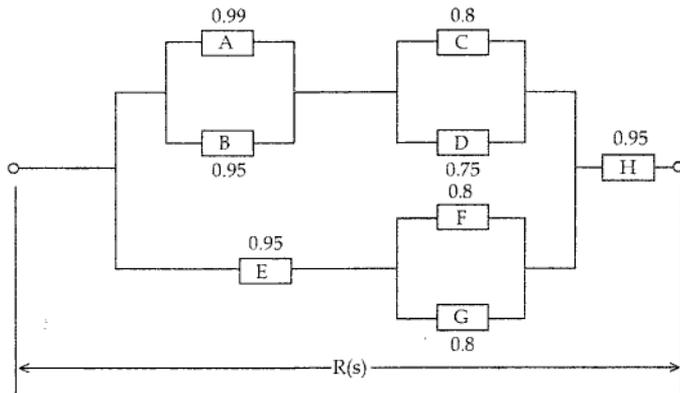
- (a) Using Transformation technique or morphological technique carry out the product development exercise for any one of the following :

- (i) Umbrella
(ii) Alarm watch

- (b) What do you understand from "utility value" of a product ? Explain decision making in product development using the concept of utility index.
- (c) Differentiate between fixed cost and variable cost. Explain break-even analysis and its application in product development.

4. Attempt *any two parts* of the following :- (6x2=12)

- (a) What is both tub curve ? Explain failure rate, MTTF, MTBF and reliability of a system.
- (b) Write a note on compatibility of displays and controls used in any system.
- (c) Find the reliability of the system given below R(s).



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