

**B.Tech. - VIEP - MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

December, 2015

BIMEE-002 : PRODUCT DEVELOPMENT AND DESIGN

Time : 3 hours

Maximum Marks : 70

Note :

- (i) *Answer any five questions.*
 - (ii) *All questions carry equal marks.*
 - (iii) *Standard terms have usual meaning.*
-
-

1. (a) How would you appreciate the need of product design and development in the present day context ? Explain using suitable example. 7
- (b) Explain the essential factors of product design. 7

2. (a) How do you identify and understand the needs of a customer and how are these needs classified ? Explain. 7
- (b) Explain man-machine interface with the help of suitable examples. 7
3. (a) Explain the role of ergonomics in product design and development. 7
- (b) What are the different types of costs associated with break-even analysis ? Explain how break-even analysis is carried out. 7
4. (a) What is reliability ? What are the factors to be considered in design with regards to product design ? 7
- (b) Explain the techniques that improves the method and quality of products. 7
5. (a) Explain the terms “Failure rate”, “MTTF” and “MTBF” with suitable examples. 7
- (b) What is SQC ? Explain its procedures and objectives. 7
6. (a) Briefly explain “Bath tub” curve with neat sketch. 7
- (b) List down the steps involved in the design of displays and controls. Explain how displays and controls are made compatible. 7

7. Write short notes on any **four** of the following : $4 \times 3 \frac{1}{2} = 14$

- (a) Brainstorming
 - (b) Mental Blocks and Removal of Mental Blocks
 - (c) Bench Marking
 - (d) Application of Computers in Product Design
 - (e) Safety Razor
 - (f) Utility Value
-