

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

Term-End Examination

June, 2018

00853

BIMEE-002 : PRODUCT DEVELOPMENT AND DESIGN

Time : 3 hours

Maximum Marks : 70

Note : Answer any *five* questions. All questions carry equal marks.

1. (a) What do you understand by product development ? Discuss its need. Explain the factors to be considered for developing a new product. 7
- (b) Briefly describe the design of evolution and also the evolution of the safety razor. 7
2. (a) Differentiate between need based developments and technology based developments. 7
- (b) What are the different phases of product design ? Explain them briefly. 7

3. (a) Enumerate the significance of the stage-gate process in the modern industrial environment. 7
- (b) Briefly describe the systematic process for functional analysis and modeling. 7
4. (a) What are ideation techniques ? Explain any one method to generate ideas. 7
- (b) Describe decision-making in product development using the concept of utility index. 7
5. (a) Explain the importance of Break Even Analysis. What are the different types of costs associated with break even analysis ? Describe in brief. 7
- (b) Elaborate the “use of standards” in product design. 7
6. (a) What is anthropometry ? Explain the importance of anthropometric data product design. 7

- (b) List down the steps involved in the design of displays and controls. Explain how displays and controls are made compatible. 7
7. (a) What is SQC ? Explain its procedures and objectives. 7
- (b) How does customer quality relate to engineering quality in terms of evolving a reliable product ? 7
8. Write short notes on any *four* of the following : $4 \times 3 \frac{1}{2} = 14$
- (a) Removal of Blocks
 - (b) Benchmarking
 - (c) Brainstorming
 - (d) Utility
 - (e) Man-Machine Interface
 - (f) Technological Forecasting
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