

**B. Tech. MECHANICAL ENGINEERING
(BTMEVI)****Term-End Examination****December, 2013****BIMEE-002 : PRODUCT DEVELOPMENT
AND DESIGN***Time : 3 hours**Maximum Marks : 70*

Note: (i) Answer *any five* questions.
(ii) All questions carry *equal* marks.

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| 1. | (a) | Briefly discuss the need of product design and development with an example. | 7 |
| | (b) | Differentiate between need based developments and technology based developments. | 7 |
| 2. | (a) | What are the different phases of product design ? Explain them briefly. | 7 |
| | (b) | Briefly describe the ideation techniques with suitable example. | 7 |
| 3. | (a) | What is anthropometry ? Explain the importance of anthropometric data in desing. | 7 |
| | (b) | Explain man-machine interface with the help of suitable examples. | 7 |
| 4. | (a) | Briefly discuss brainstorming and its advantages with suitable example. | 7 |
| | (b) | Briefly explain the objectives a designer has to fix up in design synthesis. | 7 |

5. (a) Explain with the help of suitable examples, how a product is appraised. 7
(b) Explain the techniques that improve the method and quality of products. 7
6. (a) List down the steps involved in the design of displays and controls. Explain how displays and controls are made compatible. 7
(b) Explain the terms "Failure Rate", "MTTF" and "MTBF". 7
7. Write short notes on **any four** of the following :
(a) Design by evolution **$3\frac{1}{2} \times 4 = 14$**
(b) Ergonomics
(c) Applications of computers in product design
(d) Innovation V/s invention
(e) Statistical quality control
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