

4/10/13

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**B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2013**

**MECHANICAL ENGINEERING**

Second Semester

**ME 8251 DESIGN CONCEPTS IN ENGINEERING**

(Regulation 2012)

(Common to Mechanical, Material Science and Manufacturing Engineering)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

**PART – A (10 x 2 = 20 Marks)**

1. Define static and dynamic products.
2. Distinguish codes and standards and explain their needs in design.
3. List down minimum of four private sources of information for engineering design.
4. What are the uses of prototype modeling and simulation?
5. Write down some positive steps you can take to enhance your creative thinking.
6. Define the Concept map and list down the steps to develop the Concept map.
7. What are the importances of aesthetic aspect in the design of a component?
8. Define the term 'ergonomics' and bring out its importance in the design.
9. What are the factors to be considered while selecting material?
10. State the importance of value engineering.

**PART – B (5 x 16 = 80 Marks)**

11. Explain briefly each of the following
    - (i) Empirical design
    - (ii) Rational design
    - (iii) Adequate design
    - (iv) Adaptive design
    - (v) New design
  - 12.a) (i) Explain any four methods of gathering information from customers to identify their needs. (8)  
(ii) What are the steps involved for evaluating the customer needs? (8)
- (OR)**
- 12.b) (i) Explain the various library sources of information available for developing professional expertise. (8)  
(ii) Explain any four types of product design specifications. (8)

- 13.a) (i) Explain the 5 stages of creative process. (6)  
(ii) Draw and explain the mind map for the project on the recycling of steel and aluminum scrap. (10)

(OR)

- 13.b) (i) Explain the different types of mental blocks. (10)  
(ii) Explain creativity methods. (6)

- 14.a) (i) Explain the four kinds of inter-actions between human and products. (6)  
(ii) Explain the different factors that are to be considered for a user friendly design. (10)  
Give at least two examples for each factor.

(OR)

- 14.b) Write the short notes on : (i) Marketing Aspects (ii) Presentation Aspects

- 15.a) Explain the guidelines, with neat sketch, the design for manufacturing.

(OR)

- 15.b) Explain material selection methods in detail.