

Roll No

ME-112

B.E. (All Branches) I Year II Semester

Examination, June 2016

Choice Based Credit System (CBCS)

Concepts in Engineering Design

Time : Three Hours

Maximum Marks : 60

- Note:** i) Attempt any five questions out of seven questions.
ii) All questions carry equal marks. Support your answers with graphical illustrations.
1. a) Explain briefly; the Linking of Science and Engineering with Design.
b) State any two well-publicized disasters happened due to failure in engineering design.
c) State the Challenges of Engineering Design in modern age of product development.
 2. a) State and discuss brief; 10 principles of engineering design.
b) Define the term Visualization. State why it is essential in engineering design?
c) What are the steps involved in engineering design process? State the importance of each.
 3. a) Define the term "Green Design". What are the various Environmental Performance Requirements to be considered while design?

- b) What do you mean by "Sustainable Material Life Cycle"? State its importance in engineering design. State its limitations.
 - c) Discuss the role of Aesthetics and Human Factors in design.
4. a) State and discuss seven basic Phases in Design Morphology.
b) What do you mean by "Design for Reuse and Recycling" and "Sustainable Design"?
c) What are the principles of Embodiment Design? Discuss the Journey from Design Concept to Embodiment Design of a given product.
5. a) Compare "Market Pull Product" and "Technology Push Product".
b) State and discuss three important Keys to Develop a Winning product.
c) Discuss the following phases of Product Life Cycle: (PLC)
 - i) Product Design Phase
 - ii) Product Market Phase
6. a) Define the terms: "Brainstorming", "Innovator", "Sketching and Doodling".
b) Define concept Generation. What is "Mind Mapping Process" in Design? Give suitable examples.
c) Define User-centered Design Process (UCD). State Six Key Principles and four essential activities of UCD.
7. Write a short note on following (any three) :
 - a) Stealth Technology in fighter planes
 - b) Timeline of Communication Technologies
 - c) Design Innovations in Tata Nano Car
 - d) Designing aspects for a seating chair
