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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, April / May 2019

Common to Mechanical / Materials Science/ Manufacturing Engineering

Second Semester

ME 8251-DESIGN CONCEPT IN ENGINEERING

(Regulation 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Differentiate between static and dynamic products.
2. What are the four types of benchmarking?
3. What is prototyping and why is it important?
4. How do you identify customer expectations?
5. What is the TRIZ method?
6. How do you create a mind map?
7. What are the three ergonomic risk factors?
8. What is meant by design for environment?
9. What are the different manufacturing processes?
10. What is the main purpose of DFMA?



Part – B ( 5 x 16 = 80 marks)

11. Sketch a block diagram to explain the morphology of design and elaborate the activities in each of its phase. 16
  
12. a) Write short notes on the following:
  - (i) Detail design and drawing 8
  - (ii) Modeling and simulation 8
  
- (OR)
- b) Explain how to apply Quality Function Deployment in design with appropriate example. 16

13. a) (i) Write down the difference between vertical and lateral thinking. 8  
(ii) Explain the Theory of Inventive Problem Solving (TRIZ). 8

(OR)

- b) What is a concept map? Draw and explain a concept map for recycling of metals. 16
14. a) Discuss the role of following in product design and development
- i. Marketing aspect 8
  - ii. Legal aspects 8

(OR)

- b) Explain the ergonomic and aesthetic requirements that are to be considered for the design of a car. 16
15. a) i. Describe the materials substitution in an existing design. 8  
ii. Describe the material selection for a new product design. 8

(OR)

- b) Explain in detail the guidelines of design for manufacture and assembly (DFMA). 16

