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10ME753

Seventh Semester B.E. Degree Examination, June/July 2016
Engineering Design

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting
at least TWO questions from each part.**

PART - A

- 1 a. Explain the five step process of identifying customer needs. (10 Marks)
b. Explain briefly general hints for art of eliciting customer needs data. (10 Marks)
- 2 a. With the help of a block diagram, explain the morphology of design process. (10 Marks)
b. Explain different phases of product life cycle with a neat sketch. (10 Marks)
- 3 a. Explain briefly the positive steps that can enhance creative thinking. (10 Marks)
b. Explain the steps involved in concept selection method. (10 Marks)
- 4 a. List and explain different types of models in Engineering design. (10 Marks)
b. With neat sketches explain the different methods of generating solids. (10 Marks)

PART - B

- 5 a. Explain man-machine interaction cycle with a neat sketch. (10 Marks)
b. List different types of controls. Explain the factors to be considered in design of controls. (10 Marks)
- 6 a. Define reliability. Explain Bath tub curve with neat sketch. (06 Marks)
b. Define the following:
i) Mean life
ii) MTTF
iii) MTBF (04 Marks)
c. Explain Fault tree analysis. Construct a fault tree diagram for the failure of engine. (10 Marks)
- 7 a. List the common and analytical methods of material selection. Explain briefly any three methods. (10 Marks)
b. Explain value analysis showing the components of value analysis job plan. (10 Marks)
- 8 a. Define robust design. Briefly explain the steps in robust design process. (10 Marks)
b. Explain the following experimental designs with example.
i) Full factorial design
ii) Orthogonal array. (10 Marks)

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Important Note : 1. On completing your answers, carefully draw diagonal cross lines on the remaining blank space.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.