

GANPAT UNIVERSITY
M. Tech. (AMT) Sem.-II Mechanical Engineering
CBCS Regular Examination April - June 2015
3ME203 - Product Design

[Time: 3 Hour]

[Total Marks: 60]

Instructions:

- (1) Attempt all questions.
- (2) Figures to the right indicate full marks.
- (3) Section – I and Section – II write in separate answer book.

SECTION - I

Que. 1

- (a) Explain the significance of product design. Enlist and explain the main techniques designed to analyze the product concept in the context of its restrictions. [5]
- (b) Explain various types of strategies of the product design with their significance in product design, adopted by an organization for designing a product. [5]

OR

Que. 1

- (a) Explain the phases of generic product development process with neat sketch. [5]
- (b) Explain the followings with reference to simplification in product design. [5]
 - (i) Importance of simplification in product design.
 - (ii) The pros and cons of simplification.
 - (iii) Effect of simplification on Pareto diagram with neat sketch.

Que. 2

- (a) Explain the major steps of product life cycle with neat sketch. [5]
- (b) What do you mean by concept generation? Explain the concept generation methodology with neat sketch. [5]

OR

Que. 2

- (a) Explain the significance of Kano model for customer satisfaction with suitable sketch. Enlist the steps of establishing the target specifications process. [5]
- (b) For designing a product, explain with proper illustration, how analysis of need is reflected in the design specifications. [5]

Que. 3

- (a) Explain with neat sketch, the different methods of increasing total profit in context of economic analysis. [4]
- (b) Define aesthetics. Enlist the steps of guidelines used in the designing of appearance. [3]
- (c) Explain any case study in detail for ergonomic considerations in product design. [3]

SECTION - II

Que. 4

- (a) Discuss a case study on value engineering. [5]
- (b) Enlist the objectives of value engineering and explain the various phases of value Engineering. [5]

OR

Que. 4

- (a) Enlist the types of the Economic Value and explain any four economic costs. [5]
- (b) Explain the value engineering methodology and techniques using neat sketch. [5]

Que. 5

- (a) What do you understand by DFM? State and explain general guide lines of DFM. [5]
- (b) Explain the design for machining in detail. [5]

OR

Que. 5

- (a) Explain DFM Method using flow chart. [5]
- (b) Discuss the following approaches for selection of material with reference to DFM: [5]
 - (i) Membership function modification
 - (ii) Dimensionless ranking

Que. 6

- (a) Explain Fused Deposition Modeling (FDM) with neat sketch. Also enlist their advantages and limitations. [4]
- (b) Enlist the goals of DFM. Also enlist the sources from which the information are Gathered for DFM. [3]
- (c) Define value engineering. Explain the following terms with respect to value engineering. [3]
 - (i) Determining function
 - (ii) Classifying function

OR

- (c) Define rapid prototyping. Explain the principle of rapid prototyping with suitable sketches. [3]

*****END OF PAPER*****