Exam. Seat No._____

GANPAT UNIVERSITY
M. Tech. (ME.-AMT) Sem-II Examination July 2013
3ME203 Product Design

[Time: 3 Hour] [Total Marks: 70]

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) Define product design as per Asimow's Model. Explain the feasibility study as a first phase of the morphology of the design. [5]
(b) Explain various stages of product life cycle with proper illustrations. [4]
(c) Explain the design by evolution and design by innovation with proper examples. [3]

OR

Que: 1
(a) Explain basic design considerations in detail. [5]
(b) Explain the different types of models designed by industrial designers used in the development of product. [4]
(c) Explain role of allowance, process capability, and tolerance in detailed design and assembly. [3]

Que: 2
(a) Explain Kano model for customer satisfaction with suitable sketch. Enlist the steps of establishing the target specifications process. [5]
(b) Define brainstorming. Explain the set of rules for brainstorming session and enlist the applications of brainstorming for product development and process management. [4]
(c) Explain various points which are considered while analyzing a need and main purpose of need analysis. [3]

OR

Que: 2
(a) How can the concept selection methods be used to benchmark or evaluate existing products? Perform such an evaluation for five automobiles you might consider purchasing. [5]
(b) Explain the classification of information based on its reliability and usefulness. Also explain various sources of information which are very necessary in executing project work. [4]
(c) What would be the relative advantages and disadvantages of involving actual customer in the concept generation process? [3]

Que: 3 [8]
(a) **Attempt any two.**
(i) What are the inefficiencies experiences by an organization if the product planning is not done properly? Explain the five steps of a successful product plan process in brief.
(ii) Explain the five step concept generation methodology with neat sketch.
(iii) Explain the design of displays with consideration of human engineering in product design. Also explain various types of display.
(b) Enlist the major guidelines in designing a product from an aesthetic view. Explain basic type of product forms. Also explain factors which are influenced in designing for appearance in brief. [3]

SECTION - II

Que: 4

(a) Define DFM. Explain DFMA shorten the design process using proper illustration. **[5]**

(b) Explain the Design for Machining in detail. **[5]**

(c) Enlist the goals of DFM. Also enlist the sources from which the informations are gathered for DFM. **[2]**

OR

Que: 4

(a) Explain DFM Method using flow chart. **[6]**

(b) Explain the impact of DFM decisions on development time, development cost, product quality and external factors like component reuse and life cycle costs. **[6]**

Que: 5

(a) What do you mean by rapid prototyping? Explain prototyping technologies in detail. **[6]**

(b) Many product development teams separate the "looks-like" prototype from the "works-like" prototype. They do this because integrating both function and form is difficult in the early phases of development. What are the strengths and weaknesses of this approach? For what types of products might this approach be dangerous? **[5]**

OR

Que: 5

(a) Explain Fused Deposition Modeling (FDM) with neat sketch. Also enlist their advantages and limitations. **[6]**

(b) Explain slicing strategies with suitable sketches. **[5]**

Que: 6 **Attempt any three.** **[12]**

(a) Enlist the objectives of value engineering and explain the various phases of value engineering.

(b) What is value? Explain nature and measurement of value. Also explain the terms maximum value and normal degree of value.

(c) Explain the value engineering methodology and techniques using neat sketch.

(d) Explain the reasons for unnecessary cost concern with value engineering. Also explain most significant factors responsible for savings actions in VE with neat sketch.

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