

GANPAT UNIVERSITY
M. Tech. (AMT) Sem-II Mechanical Engineering
CBCS Regular Examination May 2014
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) Show the morphology of the design process as per Asimow's model with neat sketch and explain the phases related to production consumption cycle in detail. [5]
- (b) Write short note on three S's related to product design. [4]
- (c) Explain essential factors considered for product design. [3]

OR**Que. 1**

- (a) Explain the characteristics of successful product development and also explain challenges faces while development of product. [5]
- (b) Discuss the procedure adopted by industrial designers for product design. Also explain types of modes designed by industrial designers. [4]
- (c) Explain different strategies used by product designers for designing engineering products. [3]

Que. 2

- (a) Write short note on product planning and product planning process. [5]
- (b) Discuss on "organize the need in to hierarchy". Explain in brief, the main concerns of structuring hierarchy. [4]
- (c) Explain five step concept operation methodology in brief with neat sketch. [3]

OR**Que. 2**

- (a) Explain factors influencing objective and performance related to product specifications. [5]
- (b) Enlist the ground rules for creative techniques and explain techniques in use for brainstorming. [4]
- (c) Discuss procedure to establish functional structure with the example of automatic can crusher. [3]

Que. 3

- (a) **Attempt any two.** [8]
 - (i) Explain the role of profit and competitiveness in economic analysis of product design.
 - (ii) Explain design of display with neat sketch and types of display related to ergonomi in product design.
 - (iii) Explain short note on quality function deployment method.
- (b) Explain different product strategies in detail. [3]

SECTION - II

Que. 4

- (a) Enlist the types of the Economic Value and explain any four economic costs. [6]
- (b) Explain value engineering methodology and technique with suitable sketches and its comparison with conventional method. [6]

OR

Que. 4

- (a) Enlist the objectives of value engineering and explain the various causes of unnecessary cost that leads to poor value. [6]
- (b) Explain the value engineering job plan with suitable sketch. [6]

Que. 5

- (a) What do you mean by rapid prototyping? Explain benefits of rapid prototyping in detail. Also write their applications. [6]
- (b) Explain Three-Dimensional Printing (3DP) with neat sketch. Also enlist their advantages and limitations. [5]

OR

Que. 5

- (a) Explain Solid Ground Curing (SGC) with neat sketch. Also enlist their advantages and limitations. [6]
- (b) Explain important issues in rapid prototyping. [5]

Que. 6 Attempt any three.

[12]

- (a) State and explain salient DFM aspect of any manufacturing processes.
- (b) What do you understand by DFM? State and explain general guide lines of DFM.
- (c) Explain the design for sheet metal working.
- (d) Explain the Design for Machining in detail.

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