

Reg. No. :

**Question Paper Code : 80901**

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2023.

Elective

Manufacturing Engineering

MF 5012 – COMPUTER AIDED PRODUCT DESIGN

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the term concurrent engineering.
2. Mention (any two) software used for drafting.
3. Distinguish between wire-frame from surface models.
4. List the main topological items / primitives of boundary representation.
5. What is meant by function tree?
6. Mention the factors in manufacturing planning.
7. Define the Altshuller's TRIZ principle of segmentation with example.
8. What is meant by product metrics?
9. Write the objectives of QFD.
10. What is meant by design for product life cycle?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the various phases of systematic design with suitable examples.

Or

- (b) Discuss the computer hardware and peripherals used in engineering design with suitable diagrams.

12. (a) Explain the various 2D transformation with suitable examples and diagrams.

Or

- (b) Describe the basic concept, working, and applications of Constructive Solid Geometry with suitable examples.

13. (a) Explain the basic functionality of Product Data Management with suitable examples.

Or

- (b) Explain the concept of Product Life Cycle management with suitable diagram and examples.

14. (a) Discuss the guidelines used in design for casting with suitable examples and diagrams.

Or

- (b) Explain the guidelines used in Design for Assembly with suitable examples and diagrams.

15. (a) Discuss the steps in creating an FMEA chart with suitable examples and diagrams.

Or

- (b) Explain the concept, advantage and applications of poke yoke with suitable examples and diagrams.

PART C — (1 × 15 = 15 marks)

16. (a) Describe the Quality Function Deployment (QFD) process with a suitable example and diagrams.

Or

- (b) For an out of round condition (smaller the better) of a steel shaft, the true indicator readings for eight shafts are 0.05, 0.04, 0.04, 0.03, 0.04, 0.02, 0.04, and 0.03 mm.

- (i) If the average loss at 0.03 is Rs. 15.00, then, determine the loss function. (5)  
(ii) What is the loss at 0.05? (5)  
(iii) What is the average loss? (5)