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Question Paper Code : 20812

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2018.

Fifth/Seventh/Tenth Semester

Mechanical Engineering

ME 6501 — COMPUTER AIDED DESIGN

(Common to Mechanical Engineering (Sandwich)/Manufacturing Engineering/Mechatronics Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the various activities involved in product development.

2. What is the need for concatenation of transformations?

3. Distinguish between analytic curve and synthetic curve.

4. What is a hybrid solid modeler?

5. What is coherence? What are its different types?

6. What are silhouette curves?

7. List the importance of geometric tolerancing.

8. What is clearance in engineering?

9. What is an annotation entity?

10. Mention the need for standardization in computer graphics.

PART B — (5 × 13 = 65 marks)

11. (a) Discuss the stages in the product life cycle and the importance of each stage.

Or

(b) Discuss the significance of concurrent engineering approach in limiting design changes.

12. (a) Write short notes on parametric representation of synthetic surfaces.

Or

(b) Discuss the following for B-rep and CSG schemes: (i) how to represent surface normals and neighborhoods (ii) how to develop a classification algorithm.

13. (a) With a diagram, explain generic hidden line algorithm.

Or

(b) Briefly explain various visibility techniques. Give suitable sketches wherever possible.

14. (a) Briefly explain the following traditional tolerance analysis methods with examples. (i) Worst-case analysis (ii) Root sum of squares.

Or

(b) Write short notes on (i) Assembly modeling (ii) Mechanism simulation.

15. (a) Explain the Initial Graphics Exchange Specification methodology.

Or

(b) Write short notes on (i) Standards for computer graphics (ii) OpenGL.

PART C — (1 × 15 = 15 marks)

16. Generating and displaying contour images in engineering applications (ex: stress contours in finite element analysis) provide designers with valuable information for sound design decisions. Propose a method and algorithm to develop these contours and their images with a detail case study.

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