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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 — $(10 \times 2 = 20 \text{ marks})$

- 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 —
$$(5 \times 13 = 65 \text{ marks})$$

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.

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- (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.

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

PART C —
$$(1 \times 15 = 15 \text{ marks})$$

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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