

ME 6501 - COMPUTER AIDED DESIGN – 16 MARKS

UNIT I

1. What is meant by Product cycle? Explain it with a neat sketch.
2. Explain the Shigley's design model with a neat diagram.
3. Explain Concurrent and Sequential Engineering with neat diagram and also mention its advantages and disadvantages.
4. Explain the CAD process with a neat sketch and also state its applications?
5. Explain the 2-D transformation matrix for the various transformation processes.
6. Explain the 3-D transformation matrix for the various transformation processes.
7. What is the need of homogeneous coordinates? Mention the homogeneous coordinates for translation, rotation and scaling.
8. Explain the DDA hidden line algorithm with an example.
9. Explain the Bresenham's line algorithm with an example.
10. Explain Cohen Sutherland clipping algorithm with an example.

UNIT II

1. What is a Bezier curve and explain its characteristics with a neat sketch.
2. What is a B spline curve and explain its characteristics with a neat diagram.
3. Write short notes on Uniform and Non uniform B spline curves.
4. Explain in detail, the rational curves.
5. Explain the techniques involved in surface modelling.
6. Explain in detail, the Constructive Solid Geometry technique.
7. Explain in detail, the Boundary representation technique.
8. What are analytical and synthetic surfaces? Explain in detail.
9. What is surface modelling? What are its types? State its applications.
10. Explain the matrix formulation in cubic B spline curves.

UNIT III

1. Explain the hidden line elimination process in visual realism.
2. Explain any four visibility techniques in computer graphics.
3. Explain depth or priority algorithm with a suitable example.
4. Explain any hidden surface removal algorithm with a suitable example.
5. Explain the ray tracing algorithm with a suitable example.
6. What are the various shading models available? Explain Phong's shading model in detail.
7. Explain Gourand shading model with a neat diagram.
8. What are the various color models and explain any two of them in detail.
9. What are the various processes involved in computer animation. Explain them in detail.
10. Write short notes on Computer animation and colour interpolation.

UNIT IV

1. Explain the various steps in the generation of assembly model.
2. Explain any two assembly modelling approaches.
3. Write short notes on various mating conditions used in assembly model.
4. Write short notes on inference of position and orientation.
5. Explain the tolerance modelling process with a suitable example.
6. Explain any two methods of tolerance analysis.
7. Write short notes on mass property calculations.
8. Describe the techniques involved in mapping mating constraints to kinematic joints.
9. Explain Denavit Hartenberg representation in mapping mating constraints.
10. Write short notes on interference checking in assembly modelling.

UNIT V

1. What is the need for CAD standards? Explain them in detail.
2. Explain the GKS in CAD standard.
3. What are GKS primitives? Explain its features in CAD standardization.
4. Explain PHIGS process in CAD standard.
5. Write short notes on Open GL process.
6. Explain the various methods of data exchange.
7. Explain the logical concepts in IGES.
8. Explain the STEP architecture and explain its working.
9. Write short notes on PDES.
10. Explain the various approaches used in data exchange format.