



**DHANALAKSHMI SRINIVASAN
COLLEGE OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING**

QUESTION BANK

SUB CODE & NAME: ME 6501-COMPUTER AIDED DESIGN

UNIT I (FUNDAMENTALS OF COMPUTER GRAPHICS)

PART-A

1. What is design process?
2. Define synthesis.
3. What is meant by analysis?
4. Define optimization.
5. Explain the characteristics of concurrent engineering.
6. What is CAD?
7. What are the factors considered for selecting CAD?
8. Write the benefits of CAD.
9. Define Computer Graphics.
10. What is transformation? List its types.
11. Define Translation.
12. What is homogeneous coordinate representation?
13. Write the applications of homogeneous coordinate representation.
14. Write the features needed to be satisfied for line drawing algorithm.
15. Define clipping.
16. What is viewing transformation?

PART – B

17. Explain product cycle model with flow chart.
18. Describe various stages of design process.
19. Differentiate sequential and concurrent engineering in detail.
20. Rotate the rectangle shown in fig 30° counter clockwise about the line EF and find new coordinates of the rectangle
21. Explain 2D and 3D transformation with matrix
22. Explain the techniques involved in line drawing algorithm.

PART-C

23. Rotate the rectangle (0,0), (2,0), (2,2), (0,2), 30° counter clockwise about the centroid and the new co ordinates of the rectangle
24. Explain viewing transformation matrix with neat sketch.
25. Briefly explain various methods of clipping.

UNIT-II (GEOMETRIC MODELING)

PART – A

1. How curves are represented?
2. What are synthetic curves?
3. What are Hermite curves?
4. How Hermitic curves can be modified?
5. What are the limitations of Hermitic curves?
6. What are the observations made in Bezier curve?



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7. What are the advantages of B-spline curve?
8. What are rational curves?
9. What is surface modeling?
10. What are the techniques available for surface modeling?
11. List the advantages and disadvantages of CSG model.
12. What are the different modeling tools?
13. What is geometric modeling?
14. What is solid modeling?
15. What are the advantages of B-rep?
16. List the differences between Bezier curve and Hermite curve.

PART – B

17. Explain Hermite curve with neat sketch?
18. Explain different types of Bezier Curves in detail.
19. Explain B-spline curves and its characteristics.
20. Briefly explain the different scheme used to generate a solid model?
21. Describe the CSG model with suitable example.
22. Explain B-rep elements and its data structure.

PART-C

23. Describe construction of “Coons patch”.
24. Describe the Bicubic patches with mathematical functions.

UNIT –III (VISUAL REALISM)

PART – A

1. What is visual realism?
2. What is rendering?
3. What are the various approaches to achieve visual realism?
4. What are the difference between object space method and image space methods?
5. What are the steps involved in creation of final image?
6. List the various test to determine visibility.
7. What are silhouette edges?
8. Define sorting.
9. What is coherence?
10. Why removal of hidden line is important?
11. State Z buffer algorithm.
12. What is ray tracing?
13. What is the basic principle of Ray tracing algorithm?
14. What is shading?
15. State Lambert’s Law.
16. How the visual realism of images can be enhanced?
17. What is a colour model?
18. What is computer animation?



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PART – B

19. Explain Z buffer algorithm with its operations.
20. Describe the Warnock algorithm with its basic operations.
21. Explain the Ray- tracing algorithm with neat sketch.
22. Explain various shading techniques with neat sketch.
23. Describe the various light sources with example.
24. Describe various colour model with neat sketch.
25. Explain 2D and 3D animation.

PART-C

26. Describe 'Pseudo code' algorithm for 2D animation
27. Explain the basic operations in Painter's algorithm

UNIT –IV (ASSEMBLY OF PARTS)

PART -A

1. Why are the needs for assembly modeling?
2. What are the main advantages and disadvantages of localized welding?
3. What are the advantages and disadvantages of adhesives techniques?
4. Define tolerance.
5. What is automated assembly?
6. What are the considerations in designing that facilities assembly process?
7. Why there is a need for tolerances?
8. When do we use Geometric tolerances?
9. How mass property calculation is applied in CAD/CAM?
10. Define simulation.
11. What are simulation models?
12. How are mechanical systems simulated?
13. What is motion simulation?
14. List the advantages and disadvantages of mechanical simulation.
15. What is interference checking?
16. What are the factors that influence interference checking?
17. What are the benefits of interchangeable parts?
18. Draw a graph plotting the relation between tolerance and cost?

PART –B

19. Describe bottom up and top down assembly with example.
20. Derive the interference free matrix with example.
21. Explain tolerance stack-up with example.
22. Describe RSS for tolerance analysis with RSS cube.
23. Discuss importance of tolerance analysis.
24. Explain the calculating method for center of gravity.
25. Describe the calculation of moment of inertia.
26. List out and describe various mass properties for a cross section.
27. Describe CAD interference checking capabilities.



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PART –C

28. Discuss the applications of simulation.
29. Explain virtual simulation.

UNIT-V (CAD STANDARDS)

PART-A

1. What are the two methods of exchanging data among the CAD/CAM system?
2. What is Graphics Kernel System (GKS)?
3. When is SET command used in GKS?
4. What is bitmap?
5. What is a graphics metafile?
6. What are metafile standards?
7. What is the simplest way to store a bitmap?
8. What is directory section in IGES?
9. What is open graphics library?
10. What is CALS?
11. What is a start section/
12. Write short notes on error handling.
13. What are fiber optic links?
14. Write short notes on standards for computer graphics.

PART-B

15. Describe graphics standards in graphics programming.
16. Explain OpenGL with schematic diagram.
17. Discuss Data exchange standards in detail.
18. Describe the structure of IGES file.
19. Explain IGES common testing methods.
20. Explain STEP architecture with neat sketch.
21. Compare CGM and CGI.

PART –C

22. Explain various layers of GKS
23. Explain IGES entities with format.