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Question Paper Code	13653
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fourth Semester

Mechanical and Automation Engineering

20MUPC404 - COMPUTER AIDED DESIGN

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

	Marks	K – Level	CO
1. The basic geometric transformations are (a) Translation (b) Rotation (c) Scaling (d) All of the above	1	K1	CO1
2. Modern prototyping process are (a) Additive (b) subtractive (c) Welding process (d) Forging process	1	K1	CO1
3. The basic parameter to curve attributes are (a) Type (b) width (c) colour (d) All of the above	1	K1	CO2
4. More the control points of a Bezier curve, _____ quality of the curve (a) Higher (b) Lower (c) Bad (d) None of these	1	K1	CO2
5. Which of the following are the most commonly used primitives to create a solid? (a) cone, sphere, wedge, torus (b) Block, cylinder, wedge, torus (c) Block, cylinder, cone, sphere (d) cylinder, cone, sphere, torus	1	K1	CO3
6. Which of the following is not the standard Constructive Solid Geometry (CSG) primitive? (a) Cube (b) Box (c) Triangular prism (d) Torus	1	K1	CO3
7. Hue of colour is related to? (a) Incandescence (b) Luminance (c) Saturation (d) Wavelength	1	K1	CO4
8. The intersection of three primary RGB colour produces (a) white colour (b) Black colour (c) Magenta colour (d) Blue colour	1	K1	CO4
9. Which property is NOT typically calculated in mass property analysis? (a) Weight (b) Density (c) Center of mass (d) Electrical resistance	1	K1	CO5
10. GKS stands for (a) Graphical Kernel system (b) Graphics kernel standard (c) Generic kernel system (d) Generic kernel standard	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11. Define screen coordinate system.	2	K1	CO1
12. What do you mean by homogeneous coordinates?	2	K1	CO1
13. List the advantages of the Bezier curve.	2	K1	CO2
14. What are the characteristics of the B-spline surface?	2	K1	CO2
15. What is the significance of CSG?	2	K1	CO3
16. What do you mean by Boolean operations?	2	K1	CO3
17. What are silhouette edges?	2	K1	CO4
18. Compare 2D and 3D animation.	2	K2	CO4
19. Difference between tolerance and fit.	2	K2	CO5
20. How mass property calculation is applied in CAD/CAM?	2	K1	CO5
21. Infer the importance of standards in CAD.	2	K2	CO6
22. Classify the different file sections in IGES.	2	K2	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) Outline the various stages in the product life cycle and its importance. 11 K2 CO1
- OR**
- b) Explain DDA algorithm in detail with an example. 11 K2 CO1
24. a) Derive the equation for Hermite Cubic Spline Curve. 11 K2 CO2
- OR**
- b) Classify the different types of surfaces in detail. 11 K2 CO2
25. a) Explain the constructive solid geometry technique. What is the role of primitives and Boolean operations in CSG? Explain with a suitable example. 11 K2 CO3
- OR**
- b) With neat sketch explain B-rep techniques in solid modeling. 11 K2 CO3
26. a) Infer the Ray- tracing algorithm with neat sketch. 11 K2 CO4
- OR**
- b) Compare RGB and CMY colour model in detail. 11 K2 CO4
27. a) Interpret bottom up and top down assembly with example. 11 K2 CO5
- OR**
- b) Show the importance of tolerance analysis and mass properties in assembly modelling. 11 K2 CO5
28. a) Elaborate in detail about IGES standard with block diagram. 11 K2 CO6
- OR**
- b) Enumerate different STEP architecture with neat sketches and justify the suitable one for graphics standards. 11 K2 CO6