Reg. No.															

Question Paper Code	13607

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fourth Semester

Mechanical Engineering

20MEPC403 - COMPUTER AIDED DESIGN AND MANUFACTURING

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following best defines the Product Cycle? (a) Tool path generation (b) Sequence of stages in a product's life (c) Numerical control programming (d) Coordinate system conversion	1	K1	CO1
2.	Identify the term 'Homogeneous Coordinates' (a) Coordinates in a single plane (b) Used only in 2D modeling (c) Coordinates with fixed origin (d) Used to simplify transformations	1	K1	CO1
3.	Define Hermite Curve _____. (a) Curve with only start and end points (b) Curve with position and tangent control (c) Freehand-drawn spline (d) Circular arc	1	K1	CO2
4.	Select the modeling technique used to interpolate surfaces from curves (a) Extrusion (b) Revolution (c) Coon's patch (d) Lathing	1	K1	CO2
5.	Which modeling method uses Boolean operations? (a) Wireframe (b) B-rep (c) CSG (d) Sweep	1	K1	CO3
6.	Which of the following is a characteristic of Boundary Representation (B-rep)? (a) Objects are defined by combining volumes (b) Only approximate models can be created (c) Models are described by their surfaces and edges (d) Used only for 2D drafting	1	K1	CO3
7.	Which of the following is a standard for computer graphics used for developing device-independent graphics applications? (a) IGES (b) STEP (c) GKS (d) CALS	1	K1	CO4
8.	STEP (Standard for the Exchange of Product model data) provides (a) A proprietary format for data storage (b) A neutral format to exchange product data (c) A raster image format (d) A format for 2D drawings only	1	K1	CO4
9.	Define Visual Realism (a) Creation of visually accurate models (b) Numerical code generation (c) Real-time control simulation (d) Text annotation	1	K1	CO5
10.	Which of the following is used for repeating subprograms in CNC? (a) M98 (b) G90 (c) G21 (d) M30	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

		Marks	K – Level	CO
11.	List the product life cycle stages.	2	K1	CO1
12.	Define a 2D transformation and give examples.	2	K1	CO1
13.	Classify the types of curves used in geometric modeling.	2	K2	CO2
14.	Tell about convex hull property.	2	K1	CO2

15.	Compare Bezier surfaces and B-Spline surfaces.	2	K2	CO3
16.	List the various solid modeling techniques.	2	K1	CO3
17.	Define OpenGL.	2	K1	CO4
18.	State the importance of standards.	2	K1	CO4
19.	List the visual realism techniques used in CAD.	2	K1	CO5
20.	Outline the process of creating an assembly model.	2	K2	CO5
21.	Compare manual and CNC machining.	2	K2	CO6
22.	Define G-codes and M-codes used in CNC part programming.	2	K1	CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a) i)	Explain the stages of the product life cycle with relevant examples.	7	K2	CO1
	ii)	Compare sequential and concurrent engineering.	4	K2	CO1
		OR			
	b)	Infer the role of homogeneous coordinates in transformation matrices.	11	K2	CO1
24.	a)	Outline the process of creating B-spline curves and their features.	11	K2	CO2
		OR			
	b)	Classify the various surface modeling techniques and explain any two.	11	K2	CO2
25.	a)	Explain the mathematical basis of Bezier and B-spline surfaces.	11	K2	CO3
		OR			
	b)	Illustrate how Boolean operations are used in Constructive Solid Geometry.	11	K2	CO3
26.	a)	Identify the purpose and function of the Graphical Kernel System (GKS).	11	K3	CO4
		OR			
	b)	Develop the structure and uses of the IGES standard.	11	K3	CO4
27.	a)	Classify and explain the types of shading techniques used in CAD visualization.	11	K4	CO5
		OR			
	b)	Analyze the role of computer animation in design simulation.	11	K4	CO5
28.	a)	Examine the role of drives and CNC controllers.	11	K3	CO6
		OR			
	b)	Develop a part program to mill the given component shown in Fig. 28. b.	11	K3	CO6

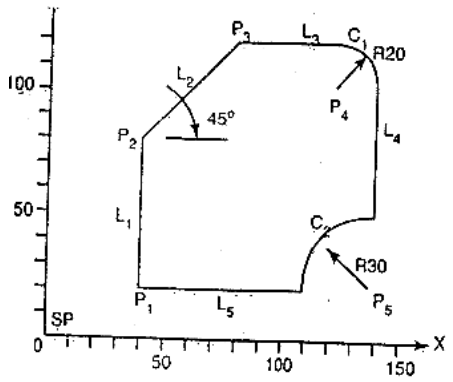

Fig.28. b