Reg. No.															

Question Paper Code	14684

M.E. / M.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Second Semester

M.E. - CAD/CAM

24PCDPC201 - DESIGN FOR MANUFACTURE, ASSEMBLY AND ENVIRONMENTS

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	Recall the meaning of process capability. a) Ability of a process b) Colour variation c) Packaging quality d) Storage method	*1*	*K1*	*CO1*
2.	Name the feature used as reference in GD&T. a) Datum feature b) Rib c) Boss d) Slot	*1*	*K1*	*CO1*
3.	Find the purpose of assembly limits. a) Control fit b) Improve paint c) Reduce noise d) Increase cost	*1*	*K1*	*CO1*
4.	Explain the influence of manufacturing process on form design. a) Changes product shape b) No influence c) Only affects colour d) Only affects label	*1*	*K2*	*CO2*
5.	Interpret the need for material selection in design. a) Improves performance b) Reduces logo size c) Changes packaging d) Avoids inspection	*1*	*K2*	*CO2*
6.	Summarize the form design considerations for castings. a) Uniform sections b) Sharp corners c) Uneven walls d) Thin projections	*1*	*K2*	*CO2*
7.	Solve machining problems by proper dowelling procedures. a) Improve alignment b) Increase vibration c) Reduce accuracy d) Avoid clamping	*1*	*K3*	*CO3*
8.	Choose a suitable feature for accessibility in assembly. a) Adequate clearance b) Deep recess c) Sharp edge d) Closed cavity	*1*	*K3*	*CO3*
9.	Build a product suitable for automatic assembly. a) Simple part handling b) Complex orientation c) Extra fasteners d) Irregular geometry	*1*	*K3*	*CO3*
10.	Compare the role of cores in casting. a) Forms internal cavity b) Improves colour c) Reduces packaging d) Increases painting	*1*	*K4*	*CO4*
11.	Inspect the effect of poor parting line selection. a) Difficult mould removal b) Better finish c) Lower cost d) Improved appearance	*1*	*K4*	*CO4*

12.	Categorize casting redesign methods.		*1*	*K4*	*CO4*
	a) Core reduction	b) Increased weight			
	c) Extra machining	d) Uneven thickness			
13.	Apply environmental objectives in product development.		*1*	*K3*	*CO5*
	a) Reduce pollution	b) Increase waste			
	c) Avoid recycling	d) Increase emissions			
14.	Develop a method for reducing material usage.		*1*	*K3*	*CO5*
	a) Optimize design	b) Add excess material			
	c) Increase scrap	d) Use heavy sections			
15.	Utilize recyclable materials in product design.		*1*	*K3*	*CO5*
	a) Material recovery	b) Permanent disposal			
	c) Higher emissions	d) Extra waste			
16.	Differentiate energy efficient and inefficient designs.		*1*	*K4*	*CO5*
	a) Based on energy use	b) Based on logo			
	c) Based on paint	d) Based on packaging			

PART – A (ii) (Short Answer Questions)
(8 × 3 = 24 Marks)
Answer ALL Questions

17.	Show the importance of strength and mechanical factors in manufacturability.	*3*	*K3*	*CO1*
18.	Extend the use of tolerance stacks in assembly analysis.	*3*	*K3*	*CO1*
19.	Relate material choice with form design considerations.	*3*	*K3*	*CO2*
20.	Analyze the form design requirements for forged components.	*3*	*K4*	*CO2*
21.	Construct suitable machining features for milling cutters and keyways.	*3*	*K3*	*CO3*
22.	Examine the redesign of cast members to avoid cores.	*3*	*K4*	*CO4*
23.	Distinguish economical casting designs from uneconomical designs.	*3*	*K4*	*CO4*
24.	Apply lifecycle assessment techniques in environmental product design.	*3*	*K3*	*CO5*

PART - B (Descriptive Answer Questions)
(5 × 12 = 60 Marks)
Answer ALL Questions

25.	a)	Illustrate the general design principles for manufacturability with suitable examples.	*12*	*K3*	*CO1*
		OR			
	b)	Develop the application of feature tolerances and geometric tolerances in assemblies.	*12*	*K3*	*CO1*
26.	a)	Interpret the factors influencing form design in manufacturing industries.	*12*	*K3*	*CO2*
		OR			
	b)	Investigate the influence of materials on welded members, forgings and castings.	*12*	*K3*	*CO2*
27.	a)	Design suitable machining features for drills, keyways and counter sunk screws with examples each.	*12*	*K3*	*CO3*
		OR			
	b)	Organize the principles of manual and robotic assembly systems.	*12*	*K3*	*CO3*

28.	a)	Apply the redesign of castings considering parting line and core requirements.	*12*	*K4*	*CO4*
		OR			
	b)	Inspect the methods used to modify uneconomical casting designs.	*12*	*K4*	*CO4*
29.	a)	Analyse the methods used in design for environment and recyclability.	*12*	*K4*	*CO5*
		OR			
	b)	Infer the techniques used to reduce environmental impact and improve energy efficiency.	*12*	*K4*	*CO5*