Reg. No. : | | | | | | | | | | | | |

Question Paper Code:U2103

M.E. DEGREE EXAMINATION, APRIL / MAY 2025

Second Semester

CAD / CAM

21PCD203–INDUSTRY 4.0

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	A factory implements lean principles but still faces production delays. How would you identify and eliminate bottlenecks using Industry 4.0 tools? Explain it in detail.	CO1- App	(20)
		Or		
	(b)	How can IIoT be used in predictive maintenance for heavy machinery in mining industries? Explain it in detail.	CO1- App	(20)
2.	(a)	Explain the architecture of the Internet of Things (IoT) with examples.	CO2- App	(20)
		Or		
	(b)	A company wants to create a digital twin of its production line. How can this technology improve operations, reduce costs, and enhance product quality?	CO2- App	(20)
3.	(a)	Discuss the role of cloud computing in a networked robotic community. How does cloud-based processing improve the performance and capabilities of robots?	CO3- App	(20)
		Or		
	(b)	Discuss the role of robotic arms, AI-powered inspection systems, and autonomous maintenance robots in manufacturing plants.	CO3- App	(20)
4.	(a)	Discuss how IoT-enabled predictive maintenance improves machine reliability and reduces unexpected breakdowns in industrial settings.	CO4- App	(20)
		Or		

	(b)	Compare different predictive analytics models (regression, neural networks, decision trees) and their applications in manufacturing.	CO4- App	(20)
5.	(a)	Analyze the security challenges of M2M communication in Industry 4.0 and suggest possible solutions.	CO5- App	(20)
		Or		
	(b)	Compare and contrast different AR devices (e.g., HoloLens, Magic Leap, smart glasses) in terms of their industrial applications and limitations.	CO5- App	(20)