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

Question Paper Code:U2103

M.E. DEGREE EXAMINATION, APRIL 2024

Second Semester

21PCD203 – INDUSTRY 4.0

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Describe the need of Industry 4.0 and explain the various technologies used in industry 4.0. Discuss its significance in the context of globalization and emerging issues in contemporary industries.	C01-U	(20)
		Or		
	(b)	Discuss the significance of Big Data and Artificial Intelligence in Industry 4.0, providing examples of how they are utilized in modern manufacturing processes.	C01-U	(20)
2.	(a)	Discuss its significance in revolutionizing various sectors such as agriculture, cities, and everyday life. Provide examples of IoT applications in these domains and analyze their impact on efficiency and sustainability.	C02-App	(20)
		Or		
	(b)	Apply the concept of Digital Twins technology in manufacturing explain how it impacts the product design.	C02-App	(20)
3.	(a)	Discuss the challenges and opportunities of integrating robotics into assembly processes for complex products such as automobiles or electronics.	C01-U	(20)
		Or		
	(b)	Discuss how predictive maintenance robotics can reduce unplanned downtime, extend equipment lifespan, and optimize maintenance schedules in manufacturing plants.	C01-U	(20)

4.	(a)	Analyze the importance of quality prediction in steel manufacturing and how data analytics techniques can be applied to achieve this.	CO6-An	(20)
		Or		
	(b)	Analyze the potential impact of predictive maintenance on reducing downtime, optimizing maintenance costs, and enhancing equipment reliability in manufacturing plants.	CO6-An	(20)
5.	(a)	Apply the concepts of AR, VR, and M2M communication to propose a scenario where these technologies are integrated, such as using AR and M2M communication for remote equipment maintenance in industrial settings.	C04-App	(20)
		Or		
	(b)	Apply the AR technology to develop a quality control system that detects defects in manufactured products.	C04-App	(20)