B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Seventh Semester

MECHANICAL ENGINEERING

U18MET7003: Digital Manufacturing

COURSE OUTCOMES

CO1: Illustrate the Digital Manufacturing techniques with suitable applications.

CO2: Explain features of Digital Factory and PLM concepts.

CO3: Summarize the various features of IoT concepts.

CO4: Explain Industry 4.0 standards with relevance to industrial context.

CO5: Explain the intelligent systems in the Manufacturing environment.

CO6: Explain the IoT applications in the Industrial Environment.

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Mention the purpose of post-processing in 3D printing	CO1	[K$_2$]
2.	Explain Tool path generation.	CO1	[K$_2$]
3.	Mention the major Features of PLM System.	CO2	[K$_2$]
4.	List out the role of Virtual Manufacturing.	CO2	[K$_2$]
5.	Give two examples of Industrial IoT applications.	CO3	[K$_2$]
6.	Define RFID Technology.	CO3	[K$_2$]
7.	Define Cyber-Physical System (CPS).	CO4	[K$_2$]
8.	Write a short note on Cloud Manufacturing.	CO4	[K$_2$]
9.	Differentiate Augmented Reality and Virtual Reality.	CO5	[K$_2$]
10.	List the role of Industry 4.0 in inventory management.	CO6	[K$_2$]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	Explain the architecture of a Digital Manufacturing System. Discuss the key components and their roles in improving the manufacturing process.	16	CO1	[K$_3$]
12.	Explain different types of product data handled by PLM systems, and how does a	16	CO2	[K$_3$]

PLM system facilitate product development?

13.	a)	Describe RFID technology and explain its role in supply chain management.	8	CO3	[K₃]
	b)	Discuss the issues in implementing IoT, focusing on security, privacy, and data ownership.	8	CO3	[K₃]
14.		Compare Industry 4.0 factories with traditional factories. How does Industry 4.0 enhance productivity, flexibility, and efficiency?	16	CO4	[K₃]
15.	a)	Discuss the importance of cybersecurity in Industry 4.0.	8	CO5	[K₃]
	b)	Explain, with an example, how Intelligent Diagnostics in Industry 4.0 improves fault detection, diagnosis, and resolution in manufacturing systems.	8	CO5	[K₃]
16.		With a detailed case study discuss on application of IoT in Food Industry.	16	CO6	[K₄]

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