Question Paper Code:R7308

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

R21MEV308- Industry 4.0

Mechanical Engineering

(Regulations R2021)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Illustrate any four driven technologies of Industry 4.0	CO1- U
2.	Discuss difference between M2M and IoT?	CO1- U
3.	Explain how AR and Digital Twin eliminate wastages.	CO1- U
4.	Explain the term Kaizen.	CO1- U
5.	Describe the some security challenges associated with IIoT?	CO1- U
6.	Discuss IIoT applications in healthcare	CO1- U
7.	Explain the advantages and limitations of Additive manufacturing	CO1- U
8.	Explain the Laminated object manufacturing.	CO1- U
9.	Describe the various Industrial robotic applications	CO1- U
10.	Differentiate traditional robots and advanced robots	CO1- U

PART – B (5 x 16= 80 Marks)

11. (a) Explain the various industrial revolutions and how industry 4.0 differs from industry 3.0.   CO1- U   (16)

Or

    (b) Explain the megatrends technologies used in industry 4.0 industries.   CO1- U   (16)

12. (a) Explain the strategies for competing in an Industry 4.0 world.   CO2- App   (16)

Or

(b) A mid-sized manufacturing company wants to transition towards an Industry 4.0 environment. Apply your knowledge to identify the key requirements (such as smart sensors, IoT, cloud computing, cyber-physical systems, and workforce skills) needed for this transformation and explain how they can be implemented in the company. CO2- App (16)

13. (a) Explain about the Industrial Internet and Catalysts and Precursors of the IIoT CO1- U (16)

Or

(b) Explain in detail about the Industrial Internet Uses in Retail sectors. CO1- U (16)

14. (a) Explain in detail construction, working and applications of laminated object manufacturing with neat sketch. CO1- U (16)

Or

(b) Explain with neat sketch the construction and working of Selective laser sintering (SLS). Write its advantages and limitations. CO1- U (16)

15. (a) Describe the AI and Internet of Robotic Things impact on robotic applications CO1- U (16)

Or

(b) Explain the various industrial and medical applications of today's robots CO1- U (16)

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