KUMARAGURU
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B.E DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Sixth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

U18EIE0011**: INDUSTRY 4.0**

COURSE OUTCOMES

CO1: Comprehend the drivers and enablers of Industry 4.0

CO2: Understand the opportunities, challenges brought about by Industry 4.0 and how organizations and individuals should prepare to reap the benefits

CO3: Outline the various systems used in a manufacturing plant and their role in an Industry 4.0 world

CO4: Analyze the power of Cloud Computing in a networked economy.

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

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

1.	What is the role of digitalization in Industry 4.0?	CO1	[K$_2$]
2.	Define the concept of 'smart cities' in the context of Industry 4.0.	CO1	[K$_1$]
3.	What are the opportunities brought by the integration of Big Data in manufacturing?	CO2	[K$_2$]
4.	How can predictive analytics help reduce operational costs in manufacturing?	CO2	[K$_2$]
5.	Mention the significance of the Industrial Internet of Things (IIoT) for industries today?	CO3	[K$_2$]
6.	State the role of Robotics and collaborative robots (Cobots) in Industry 4.0.	CO3	[K$_2$]
7.	What is the concept of Cyber Physical Systems (CPS) in the context of Industry 4.0?	CO3	[K$_2$]
8.	Mention the role of Process Management and Automation in Industry 4.0 systems.	CO4	[K$_2$]
9.	What role does cloud computing play in predictive maintenance for Industry 4.0?	CO4	[K$_2$]
10.	Define cloud computing.	CO4	[K$_1$]

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

11.	a)	Discuss the key drivers and enablers of Industry 4.0 and explain how they transform traditional manufacturing systems.	8	CO1	[K$_2$]
	b)	Analyze the impact of digitalization and IoT in driving the transition to Industry 4.0. How do these elements facilitate innovation and efficiency in industrial operations?	8	CO1	[K$_3$]

12.	Examine the key opportunities that Industry 4.0 presents for manufacturing industries, including cost reduction, product innovation, and customization. What challenges must be addressed to fully realize these benefits?	16	CO2	[K$_3$]

13.	Evaluate the role of predictive analytics and Big Data in optimizing operations and improving decision-making in Industry 4.0 environments.	16	CO2	[K$_3$]

14.	Discuss the role of ERP, MES, SCADA, and PLC in Industry 4.0. How do these systems work together to optimize production, reduce downtime, and ensure real-time control in modern manufacturing plants?	16	CO3	[K$_2$]

15.	How do mobile computing and cloud computing contribute to seamless communication and collaboration in the modern smart factory? Discuss their synergy with IoT and IIoT.	16	CO3	[K$_2$]

16.	Cloud computing has emerged as a transformative force in Industry 4.0. Analyze its impact on product lifecycle management (PLM), supply chain optimization, and data analytics in modern industries. Discuss the benefits and challenges of adopting cloud-based systems in a networked economy.	16	CO4	[K$_3$]

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