K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:VII
Class:FINAL	Program:B.Tech
Branch Code:ROB	Pattern:2022
Name of Course:Industry 4.0	Course Code:ROB224006B
Max. Marks:30	Duration:1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 01 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1	Briefly describe the highlighting features that characterized the transition points of the Industry 1.0, 2.0, 3.0, and state the core concept of the current fourth industrial revolution (Industry 4.0).	(3)	CO1
Question No. 2			
1	Explain the role of smart sensors in Industry 4.0 with suitable examples.	(3)	CO2
Question No. 3			
3a)	Compare Edge Computing and Cloud Computing in detail. Explain their architectures, advantages, limitations, and suitable use cases in Industry 4.0.	(8)	CO3
	OR		
3b)	Explain the concept of Industrial Big Data. Discuss its characteristics and importance in modern manufacturing industries. Also describe any two real-world applications.	(8)	CO3
Question No. 4			
4a)	What is simulation-based virtual commissioning? Explain its working, advantages, and how it helps in testing robotic cells, PLC logic, and automated systems before physical installation.	(8)	CO4
	OR		
4b)	Explain the role of Machine Learning and Artificial Intelligence in manufacturing. Discuss how AI improves productivity, quality control, and decision-making with suitable industrial examples.	(8)	CO4
Question No. 5			
5a)	Discuss the enabling technologies of Industry 5.0 such as collaborative robots (cobots), AI, digital twins, IIoT, and advanced analytics. Explain their role in human–machine synergy.	(8)	CO4
	OR		
5b)	Explain the major applications of Industry 5.0 in manufacturing, healthcare, agriculture, logistics, and service sectors. Provide suitable examples for each application area.	(8)	CO4

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