

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER-VI EXAMINATION – WINTER 2025****Subject Code:3161926****Date:04-12-2025****Subject Name:Industry 4.0****Time:02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

<b>Q.1</b>	(a) What is Industry 4.0?	<b>03</b>
	(b) Explain in brief the history of industrial revolution.	<b>04</b>
	(c) Briefly write how India is preparing for Industry 4.0.	<b>07</b>
<b>Q.2</b>	(a) Enlist the key components of Industry 4.0.	<b>03</b>
	(b) Write properties of Embedded systems.	<b>04</b>
	(c) Enlist seven design principles considered for modern manufacturing industries and explain any two.	<b>07</b>
	<b>OR</b>	
	(c) Write short note on: Cloud technologies for Industry 4.0	<b>07</b>
<b>Q.3</b>	(a) What is adaptive robotics?	<b>03</b>
	(b) Write short note on: Additive manufacturing for Industry 4.0	<b>04</b>
	(c) Briefly explain the key benefits of technology road mapping of Industry 4.0.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) What is technology road mapping?	<b>03</b>
	(b) Discuss briefly the challenges for Industry 4.0 transformation.	<b>04</b>
	(c) Explain the phases of technology roadmap for Industry 4.0.	<b>07</b>
<b>Q.4</b>	(a) What is the function of actuator used for robots?	<b>03</b>
	(b) Explain the working of magnetic positioning sensors used for adaptive robotics.	<b>04</b>
	(c) What is a COBOT? Explain working of a COBOT with a neat sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Write the difference between Augmented Reality and Virtual Reality.	<b>03</b>
	(b) Discuss the basic features of Augmented Reality.	<b>04</b>
	(c) Write short note on Internet of Robotics things & cloud robotics.	<b>07</b>
<b>Q.5</b>	(a) Explain the importance of data security in digital framework.	<b>03</b>
	(b) Explain the role of AR in product design and development.	<b>04</b>
	(c) Write short note on: Obstacles in implementation of industry 4.0	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) What is poor data in digital framework?	<b>03</b>
	(b) Discuss the industrial application of augmented reality.	<b>04</b>
	(c) Explain the importance of Cyber security in tackling the obstacles in Industry 4.0 with suitable examples.	<b>07</b>

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