

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– VI (NEW) EXAMINATION – WINTER 2021****Subject Code:3161926****Date:07/12/2021****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.

		<b>MARKS</b>
<b>Q.1</b>	(a) Define the following terms: (1) Industry 4.0, (2) Additive Manufacturing, (3) Internet of Things	<b>03</b>
	(b) Write briefly about Industries 4.0 Roadmap Process	<b>04</b>
	(c) How is India preparing for Industry 4.0	<b>07</b>
<b>Q.2</b>	(a) Define the following terms: (1) Cloud Robotics, (2) Augmented Reality, (3) Cyber Physical Systems	<b>03</b>
	(b) List application of Industry 4.0 in Maintenance and assembly.	<b>04</b>
	(c) Which is the proposed Framework for Technology Roadmap about Industry 4.0	<b>07</b>
	<b>OR</b>	
	(c) Write a short note on Cognitive Architecture for Cyber-Physical Robotics.	<b>07</b>
<b>Q.3</b>	(a) Enlist Industrial Robotic Applications in Manufacturing	<b>03</b>
	(b) What are Cyber-Physical Systems? Elaborate.	<b>04</b>
	(c) Describe New Product and Process Development Phase in Industry 4.0.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) What is comprehensive broadband infra- structure?	<b>03</b>
	(b) Describe virtualization and decentralization with respect to Industry 4.0	<b>04</b>
	(c) Write a short note on Artificial Intelligence with reference to Industry 4.0	<b>07</b>
<b>Q.4</b>	(a) Enlist industrial application of AR	<b>03</b>
	(b) Explain financing condition for Industry 4.0 in India	<b>04</b>
	(c) What are Advanced Sensor Technologies in Robots? Enlist and explain.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Which are the design principles of Industry 4.0	<b>03</b>
	(b) Write a short note on smart factories.	<b>04</b>
	(c) Explain AR Hardware and Software Technology.	<b>07</b>
<b>Q.5</b>	(a) State methods for protection of corporate data	<b>03</b>
	(b) Write a short note on Internet of Robotic Things	<b>04</b>
	(c) Write difference between AR, VR & MR	<b>07</b>

**OR**

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|------------|------------|--|-----------|
| <b>Q.5</b> | <b>(a)</b> | What is the availability of skilled workers for Industry 4.0 | <b>03</b> |
|            | <b>(b)</b> | What is big data? Write applications of Big data.            | <b>04</b> |
|            | <b>(c)</b> | Explain Industry 4.0 Services.                               | <b>07</b> |

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3161926****Date:21/06/2022****Subject Name:Industry 4.0****Time:10:30 AM TO 01:00 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 cyber physical system?	<b>03</b>
	(b) Which industry branches are suitable for industry 4.0 development?	<b>04</b>
	(c) How is India preparing for Industry 4.0?	<b>07</b>
<b>Q.2</b>	(a) Enlist the key benefits of technology road mapping for industry 4.0.	<b>03</b>
	(b) What do you mean by Industry 4.0 and how it is associated with IoT?	<b>04</b>
	(c) Explain Proposed Framework for Industry 4.0.	<b>07</b>
<b>OR</b>		
	(c) Elaborate Technologies behind Industrial revolution 4.0.	<b>07</b>
<b>Q.3</b>	(a) Why should you implement industry 4.0 solutions?	<b>03</b>
	(b) List down all industrial revolutions. Define Industry 4.0 and give reasons for its implementation.	<b>04</b>
	(c) Explain six design principles for Industry 4.0.	<b>07</b>
<b>OR</b>		
<b>Q.3</b>	(a) How much does it cost to implement an industry 4.0 solution?	<b>03</b>
	(b) Enlist the various challenges for Industry 4.0 transformation.	<b>04</b>
	(c) Explain in detail the Industrial Applications of AR.	<b>07</b>
<b>Q.4</b>	(a) What are the risks of an industry 4.0 solution?	<b>03</b>
	(b) Explain the concept of Augmented Reality.	<b>04</b>
	(c) Explain the Industrial Robotics applications in context of 1) Manufacturing 2) Maintenance 3) Assembly 4) Training	<b>07</b>
<b>OR</b>		
<b>Q.4</b>	(a) What is IoRT? Enlist the various components of IoRT.	<b>03</b>
	(b) Write a short note on advances in sensor technology in a robotics in context of Industry 4.0.	<b>04</b>
	(c) Explain IoRT classification according to application areas.	<b>07</b>
<b>Q.5</b>	(a) What is 5G and how will it accelerate industry 4.0?	<b>03</b>
	(b) What are the various AR Hardware and software technology?	<b>04</b>
	(c) Explain the legal framework conditions for the industry 4.0.	<b>07</b>
<b>OR</b>		
<b>Q.5</b>	(a) How does Industry 4.0 affect workers?	<b>03</b>
	(b) What is Industry 4.0 Cyber Security?	<b>04</b>
	(c) What do you understand by smart factories and how do you propose the application of Artificial Intelligence and robotics will be beneficial in its implementation?	<b>07</b>

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