GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI EXAMINATION – SUMMER 2025

Subject Code: 3161926   **Date: 09-06-2025**
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
Q.1	(a)	How does Industry 4.0 differ from previous industrial revolutions?	03
	(b)	Discuss the benefits of Industry 4.0	04
	(c)	How is India handling the need for skill development to meet the demands of Industry 4.0 technologies?	07
Q.2	(a)	What are the key components that constitute the core structure of Industry 4.0?	03
	(b)	What metrics and indicators are employed to monitor the progress and effectiveness of the technology roadmap in advancing Industry 4.0?	04
	(c)	What are the fundamental components and elements included in the proposed framework for the technology roadmap of Industry 4.0?	07
		OR	
	(c)	Elaborate technologies behind the industrial revolution 4.0	07
Q.3	(a)	Write a short note on Internet of robotic things	03
	(b)	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?	04
	(c)	Explain in detail the Industrial Applications of Augmented Reality (AR)	07
		OR	
Q.3	(a)	Discuss about cloud robots	03
	(b)	How does the integration of AR contribute to the overall goals and principles of Industry 4.0 in manufacturing and beyond?	04
	(c)	Describe the essential hardware technologies that constitute an Augmented Reality system in an industrial setting	07
Q.4	(a)	Which sectors in India have adopted Industry 4.0?	03
	(b)	How does the Internet of Robotic Things (IoRT) transform the way robots operate in Industry 4.0 environments?	04
	(c)	Provide examples of industries or companies successfully using AR for training purposes, and what outcomes have they observed	07
		OR	
Q.4	(a)	What is IoRT? Enlist various components of IoRT	03
	(b)	Write difference between Augmented Reality (AR) and Virtual Reality (VR)	04
	(c)	Explain how Augmented Reality is employed in quality control processes and maintenance activities in Industry 4.0	07
Q.5	(a)	How does Industry 4.0 affect workers?	03
	(b)	Write a short note on Artificial intelligence with reference to Industry 4.0	04

(c)	State methods for protection of corporate data in Industry 4.0		**07**

OR

Q.5	**(a)**	Explore the concept of cloud robotics and its role in the Industry 4.0 landscape	**03**
	(b)	How are robots utilized in manufacturing within the Industry 4.0 paradigm? Discuss specific applications and the impact on production efficiency and quality	**04**
	(c)	Provide examples of industries where robotic applications in maintenance and assembly have demonstrated significant improvements	**07**

****

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2024

Subject Code:3161926   **Date:06-06-2024**
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
Q.1	**(a)**	Define AI.	**03**
	(b)	List any three advantages of adaptive Robotics?	**04**
	(c)	How India is preparing for Industry 4.0? Explain in brief.	**07**
Q.2	**(a)**	What is end to end engineering? explain in short.	**03**
	(b)	Explain the Characteristics of smart factory.	**04**
	(c)	Explain a role of AI in Industry 4.0.	**07**
		OR	
	(c)	What are co-operative robots? Explain with two examples.	**07**
Q.3	**(a)**	What is technology road mapping?	**03**
	(b)	Explain in short virtualization and decentralization with respect to Industry 4.0.	**04**
	(c)	Explain Industry 4.0 Services.	**07**
		OR	
Q.3	**(a)**	What are benefits of technology Roadmap?	**03**
	(b)	Draw the Block Diagram of vertical integration.	**04**
	(c)	Explain AR Hardware and software Technology.	**07**
Q.4	**(a)**	What are the reasons of lack of digital strategy?	**03**
	(b)	What are the challenges in the Industry 4.0?	**04**
	(c)	What are the legal challenges in the Industry 4.0 transformation?	**07**
		OR	
Q.4	**(a)**	What is robotics? What are three main categories of parts of robots?	**03**
	(b)	Draw a diagram showing role of digitization in industry 4.0 adaption.	**04**
	(c)	Describe the new products and process development phase of technology roadmap.	**07**
Q.5	**(a)**	What is Photogrammetry?	**03**
	(b)	Write a short note on smart factories.	**04**
	(c)	Describe the challenges faced by smart factories with regard to cyber security?	**07**

Q.5 **(a)** Write a Scope of AI. **03**

(b) What is the difference between traditional robot and advanced robots? Explain with examples. **04**

(c) What are the obstacles in the industry 4.0 transformation? **07**

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI (NEW) EXAMINATION – SUMMER 2023

Subject Code:3161926   **Date:26-07-2023**
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
Q.1	**(a)**	What is Industry 4.0?	**03**
	(b)	What is the difference between Industries 4.0 and 3.0?	**04**
	(c)	How is India preparing for Industry 4.0	**07**
Q.2	**(a)**	Discuss Benefits of Industry 4.0.	**03**
	(b)	Design principal of Industry 4.0	**04**
	(c)	Write briefly about Proposed Framework for Industry 4.0	**07**
		OR	
	(c)	Explain about Artificial Intelligence with reference to Industry 4.0	**07**
Q.3	**(a)**	List down all industrial revolutions and discuss in brief.	**03**
	(b)	Enlist the various challenges for Industry 4.0 transformation	**04**
	(c)	What are Cyber-Physical Systems explain in detail.	**07**
		OR	
Q.3	**(a)**	Brief on Internet of things in Industry 4.0.	**03**
	(b)	Discuss Autonomous Robots	**04**
	(c)	What are Advanced Sensor Technologies in Robots? Enlist and explain	**07**
Q.4	**(a)**	List Industrial robotics applications	**03**
	(b)	What is big data? Write applications of Big data	**04**
	(c)	Explain Human-Robot Collaborative Manufacturing	**07**
		OR	
Q.4	**(a)**	What do you understand by smart factories	**03**
	(b)	Role of 3 D printing in Industry 4.0	**04**
	(c)	Write a case study of any Industry implemented Industry 4.0	**07**
Q.5	**(a)**	Write difference between AR & VR	**03**
	(b)	What is the availability of skilled workers for Industry 4.0	**04**
	(c)	Explain Industry 4.0 Services.	**07**
		OR	
Q.5	**(a)**	Enlist where India have adopted Industry 4.0	**03**
	(b)	Explain financing condition for Industry 4.0 in India	**04**
	(c)	State methods for protection of corporate data in Industry 4.0	**07**

****

Seat No.: _____   Enrolment No._____

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
Q.1	**(a)**	What is cyber physical system?	**03**
	(b)	Which industry branches are suitable for industry 4.0 development?	**04**
	(c)	How is India preparing for Industry 4.0?	**07**
Q.2	**(a)**	Enlist the key benefits of technology road mapping for industry 4.0.	**03**
	(b)	What do you mean by Industry 4.0 and how it is associated with IoT?	**04**
	(c)	Explain Proposed Framework for Industry 4.0.	**07**
		OR	
	(c)	Elaborate Technologies behind Industrial revolution 4.0.	**07**
Q.3	**(a)**	Why should you implement industry 4.0 solutions?	**03**
	(b)	List down all industrial revolutions. Define Industry 4.0 and give reasons for its implementation.	**04**
	(c)	Explain six design principles for Industry 4.0.	**07**
		OR	
Q.3	**(a)**	How much does it cost to implement an industry 4.0 solution?	**03**
	(b)	Enlist the various challenges for Industry 4.0 transformation.	**04**
	(c)	Explain in detail the Industrial Applications of AR.	**07**
Q.4	**(a)**	What are the risks of an industry 4.0 solution?	**03**
	(b)	Explain the concept of Augmented Reality.	**04**
	(c)	Explain the Industrial Robotics applications in context of 1) Manufacturing 2) Maintenance 3) Assembly 4) Training	**07**
		OR	
Q.4	**(a)**	What is IoRT? Enlist the various components of IoRT.	**03**
	(b)	Write a short note on advances in sensor technology in a robotics in context of Industry 4.0.	**04**
	(c)	Explain IoRT classification according to application areas.	**07**
Q.5	**(a)**	What is 5G and how will it accelerate industry 4.0?	**03**
	(b)	What are the various AR Hardware and software technology?	**04**
	(c)	Explain the legal framework conditions for the industry 4.0.	**07**
		OR	
Q.5	**(a)**	How does Industry 4.0 affect workers?	**03**
	(b)	What is Industry 4.0 Cyber Security?	**04**
	(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?	**07**

****