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

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

Subject Code:3161926   **Date:20-12-2024**

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
Q.1	**(a)**	Differentiate Industry 3.0 and Industry 4.0	03
	(b)	What is the cyber physical system?	04
	(c)	Explain proposed framework for Industry 4.0	07
Q.2	**(a)**	Explain cloud robotics with suitable example	03
	(b)	Define: (1) Additive manufacturing (2) Transducer	04
	(c)	Explain synthesis by vapour condensation methods	07
		OR	
	(c)	How India is preparing for Industry 4.0?	07
Q.3	**(a)**	Enlist various applications of robots in manufacturing	03
	(b)	Explain financing condition for Industry 4.0 in India	04
	(c)	What are the advanced sensor technologies in robotics? Enlist and explain any two	07
		OR	
Q.3	**(a)**	What are the risks of an Industry 4.0 resolution?	03
	(b)	What is IoT? How is it associated with Industry 4.0?	04
	(c)	Explain six design principles for Industry 4.0	07
Q.4	**(a)**	What is IoRT? Enlist various components of IoRT	03
	(b)	Explain the concept of smart factories	04
	(c)	Illustrate cognitive architecture for cyber physical robotics with required block diagram	07
		OR	
Q.4	**(a)**	How much does it cost to implement Industry 4.0 solutions?	03
	(b)	Enlist the challenges for Industry 4.0 implementation in India	04
	(c)	Explain the industrial robotic applications in context of (1) Maintenance (2) Assembly and (3) Training	07
Q.5	**(a)**	What is 5G and how will it accelerate Industry 4.0?	03
	(b)	What is big data? Give its applications in Industry 4.0	04
	(c)	Distinguish between AR, VR and MR	07
		OR	
Q.5	**(a)**	How does Industry 4.0 affect the workers?	03
	(b)	What are the various AR hardware and software technology?	04
	(c)	Explain the role of AI and Robotics in the implementation of Industry 4.0	07

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

Subject Code:3161926   **Date:22-12-2023**
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
Q.1	**(a)**	Define Industry 4.0? and what are the important tools that help to implement Industry 4.0 in an Industry?	**03**
	(b)	Explain the proposed framework for Industry 4.0?	**04**
	(c)	What are the three core and nine supportive technologies help to implementation of Industry 4.0?	**07**
Q.2	**(a)**	Write three sector and brief how they adopt Industry 4.0?	**03**
	(b)	Draw and explain a hypothetical model for revolution in Industry 4.0?	**04**
	(c)	How is India Preparing for Industry 4.0? Draw a lifecycle of Industry 4.0 and explain each topic in brief?	**07**
		OR	
	(c)	Explain the origin of Industry 4.0? also write advantages of industry 4.0 in manufacturing and Production system?	**07**
Q.3	**(a)**	Write a difference between IOT and IIOT	**03**
	(b)	Write a shot note on Cloud Robotics and Cognitive Architecture for cyber - Physical Robotics	**04**
	(c)	What is a Road map? How does this roadmap benefit for implementation of Industry 4.0?	**07**
		OR	
Q.3	**(a)**	Explain the principle of working of light sensor.	**03**
	(b)	Define sensor? and explain in details about temperature sensor and contact sensor?	**04**
	(c)	What is a robot? draw a neat sketch with proper name and explain the function of each component?	**07**
Q.4	**(a)**	How AI fulfil the requirement of Real-time analysis	**03**
	(b)	What is the meaning of Augmented Reality? Explain the main parts of the AR.	**04**
	(c)	Explain how industrial robots are used in Manufacturing, Maintenance and Assembling?	**07**
		OR	
Q.4	**(a)**	How state of art used for successful system adaptation to Industry 4.0?	**03**
	(b)	Write a brief note on Augmented Reality Hardware and Augmented Reality Software Technology	**04**
	(c)	How can you justify Industry 4.0 and robotic technology help to prevent the spread of COVID 19 in India?	**07**

Q.5	(a)	What are the obstacles for the implementation of Industry 4.0?	03
	(b)	What are the steps that make India, a leading manufacturing hub?	04
	(c)	Why legal framework required and how this will help for implementing Industry 4.0?	07

OR

Q.5	(a)	Write a short note on five layers of Internet of robotic things.	03
	(b)	How digital strategy and data connectivity affect Industry 4.0?	04
	(c)	Write a short note on Seven Types of Robotics Software that are used for Robot Programming	07

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GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI(NEW) EXAMINATION – WINTER 2022

Subject Code:3161926   **Date:22-12-2022**
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
Q.1	(a)	What is Industry 4.0?	03
	(b)	What are the benefits of Industry 4.0	04
	(c)	Main Concepts and Components of Industry 4.0	07
Q.2	(a)	What are the difference between Industry 4.0 and 3.0?	03
	(b)	Design principal for Industry 4.0	04
	(c)	Which is the proposed Framework for Technology Roadmap about Industry 4.0	07
		OR	
	(c)	Discuss preparing India for Industry 4.0	07
Q.3	(a)	Note on cloud robots	03
	(b)	Discuss Autonomous Robots	04
	(c)	Write a note on Industrial robotics application on Manufacturing ,maintenance and assembly	07
		OR	
Q.3	(a)	Brief on Internet of Robotic things	03
	(b)	List out Advance sensor technology used in Robots	04
	(c)	Discuss Human Robots collaborative manufacturing.	07
Q.4	(a)	Sectors in India which have adopted Industry 4.0	03
	(b)	Industry 4.0 what are the challenges?	04
	(c)	What are Cyber-Physical Systems explain in detail.	07
		OR	
Q.4	(a)	Role of 3 D printing in Industry 4.0	03
	(b)	Explain financing condition for Industry 4.0 in India	04
	(c)	Write a short note on Artificial Intelligence with reference to Industry 4.0	07
Q.5	(a)	Enlist industrial application of AR	03
	(b)	Write difference between AR & VR	04
	(c)	What is big data? Write applications of Big data	07
		OR	
Q.5	(a)	State methods for protection of corporate data	03
	(b)	Write a short note on Artificial Intelligence with reference to Industry 4.0	04
	(c)	Write a case study of any Industry implemented Industry 4.0	07

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