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

Subject Code:3161011   **Date:26-05-2025**
Subject Name:Cyber Physical systems
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 CPS used in Medical field?	**03**
	(b)	What is RTOS? Explain it in detail.	**04**
	(c)	How CPS used in Building Automation. Explain in detail.	**07**
Q.2	**(a)**	How Human and CPS are connected each other. Explain it in detail.	**03**
	(b)	What is IIOT implications? Explain it in detail.	**04**
	(c)	Explain any one CPS Attack model.	**07**
		OR	
	(c)	Explain Sense and actuation faults on control performance	**07**
Q.3	**(a)**	Explain Industry 4.0 in detail.	**03**
	(b)	How Privacy maintained in CPS.	**04**
	(c)	Explain CPS Performance Analysis in detail.	**07**
		OR	
Q.3	**(a)**	Explain CAN bus protocol in detail.	**03**
	(b)	How network congestion done in CPS engineering.	**04**
	(c)	How threats to CPS affect Medical domain.	**07**
Q.4	**(a)**	Explain High level Control model of CPS.	**03**
	(b)	How CPS SW be verified using Frama-C	**04**
	(c)	Explain Advanced Automata based modeling and analysis using an example.	**07**
		OR	
Q.4	**(a)**	List and explain any 2 Sensors used in CPS H/W.	**03**
	(b)	What are the effects of scheduling.	**04**
	(c)	How Flowpipe construction using SpaceX and Phaver tools carried out.	**07**
Q.5	**(a)**	What is Basic principles of design and validation of CPS	**03**
	(b)	Explain CPS application in Real world.	**04**
	(c)	Explain in detail : -Advanced Automata based modeling and analysis	**07**
		OR	
Q.5	**(a)**	Explain Wireless Hart in detail	**03**
	(b)	Explain Scheduling Real Time control tasks in detail.	**04**
	(c)	Explain different Threats to CPS in detail.	**07**

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