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

Subject Code:3161715   **Date:16-12-2022**
Subject Name:Industrial Data Communication and Distributed control system
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 DCS? Explain its concept in brief.	03
	(b)	Describe Block diagram of Hierarchical computer system for a large manufacturing process.	04
	(c)	List out types Display of DCS and show any one display in one application.	07
Q.2	(a)	Explain concept of redundancy in DCS.	03
	(b)	Distinguish DCS V/S SCADA.	04
	(c)	Brief about: (i) HLOI (ii) LCU and (iii) Multiplexer	07
		OR	
	(c)	Explain in Detail Position Algorithm.	07
Q.3	(a)	How a communication capability between two devices is established?	03
	(b)	Match the following:	04

Sr. No.   DCS Model   Sr. No. Manufacturer
1   TDC 3000   a)   Schneider
2   CS 3000   b)   Emerson
3   Delta V   c)   Yokogawa
4   M340 Series   d)   Honeywell

	(c)	Explain software configurations in the context of DCS.	07
		OR	
Q.3	(a)	What is field bus? Explain it in brief.	03
	(b)	Explain MAP and TOP Protocol.	04
	(c)	Write short note on Network topologies in DCS.	07
Q.4	(a)	Explain the benefits of SCADA system.	03
	(b)	Explain any one application of SCADA in brief.	04
	(c)	What is SCADA? Draw and explain functional architecture of SCADA.	07
		OR	
Q.4	(a)	What is the concept of Man Machine Interface?	03
	(b)	Explain PROFIBUS in brief.	04
	(c)	Explain SMART Transmitter in detail with suitable diagram.	07
Q.5	(a)	What is super-commutation and sub-commutation?	03
	(b)	Briefly explain Serial Linkages in data communication.	04
	(c)	Brief about executive program and its task. What is application program?	07
		OR	
Q.5	(a)	Discuss maintenance considerations for DCS.	03
	(b)	Describe integrating of PLC with DCS.	04
	(c)	Discuss features of DCS Keyboard used in control console equipment.	07

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