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

Subject Code:3161715   **Date:22-05-2024**
Subject Name:Industrial Data Communication and Distributed control system
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)**	Discuss generic features of DCS	**03**
	(b)	Discuss various types of Local Control Units (LCUs) available in DCS.	**04**
	(c)	Draw the hierarchical organization of a large manufacturing process. Discuss the detail tasks of level 1 and 4.	**07**
Q.2	**(a)**	Briefly discuss the evolution of Direct Digital Control (DDC).	**03**

	(b)	Give the difference between:
		    i) Hot stand-by system and Cold stand-by system
		    ii) HLOI and LLOI
			04

	(c)	Explain the role of multiplexing and party line system in DCS.	**07**

OR

	(c)	Explain various types of displays available in DCS with suitable example.	**07**
Q.3	**(a)**	Discuss the supervisory computer functions in detail.	**03**
	(b)	What is Real time operating system (RTOS)? Discuss its various types with suitable example.	**04**
	(c)	Draw the software structure of controller. Discuss the principal components of executive program.	**07**

OR

Q.3	**(a)**	"DCS is so powerful". State true or false. Justify your answer.	**03**
	(b)	Enlist steps of operating system configuration in DCS	**04**
	(c)	Write the velocity and positional form of digital PID controller. Give the advantages of velocity over positional form.	**07**
Q.4	**(a)**	Discuss the display access method in DCS.	**03**
	(b)	Differentiate: OSI model and TCP/IP model	**04**

	(c)	Write a short note:
		    i) Network topology
		    ii) Communication modes
			07

OR

Q.4	**(a)**	Discuss the role of Man Machine Interface.	**03**
	(b)	Explain the computer interface with DCS	**04**

	(c)	Explain:
		    i) Serial linkage of communication
		    ii) Network linkage for communication
			07

Q.5	**(a)**	Discuss MAP/TOP protocol.	**03**
	(b)	Discuss RACKBUS and its bus access method.	**04**
	(c)	Discuss MODBUS. Its bus access method, application services and transmission modes.	**07**

OR

Q.5	**(a)**	Describe the role of SMART transmitter.	**03**
	(b)	Explain the features of Honeywell Plantscape System.	**04**
	(c)	Discuss PROFIBUS. Its bus access method, application services and acceptance	**07**

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