

GUJARAT TECHNOLOGICAL UNIVERSITY
BE IC 7th SEMESTER (NEW SYLLABUS) EXAMINATION- WINTER 2022

Subject Code: 3161715**Date:****Subject Name: Industrial Data Communication and DCS****Time:****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) List out advantages of DCS.	03
	(b) State full form DCS, MAP, MTBF and SCADA.	04
	(c) Explain main components of a distributed control system (DCS) and the functions and limitations of its building blocks.	07
Q.2	(a) List out any three names of DCS vendors available in the market.	03
	(b) Explain trend display and mimic display in DCS.	04
	(c) Discuss features of DCS Keyboard used in control console equipment.	07
	OR	
	(c) For the following protocols state their network type, advantages and disadvantages in a tabular form: Polling, Token Passing, CSMA/CD and ring expansion	07
Q.3	(a) Define following terms: Port, Modem and Baud rate.	03
	(b) State any 2 point of difference between position and velocity algorithm.	04
	(c) Explain Rackbus in detail.	07
	OR	
Q.3	(a) How a communication capability between two devices is established?	03
	(b) List out and explain 2 different applications covered by fieldbus.	04
	(c) Briefly explain PROFIBUS, its BUS access method, features & acceptance.	07
Q.4	(a) List 7 layers of OSI model.	03
	(b) Give comparison of MODBUS and PROFIBUS	04
	(c) Explain SMART Transmitter in detail with suitable diagram.	07
	OR	
Q.4	(a) Discuss role of Man Machine Interface (MMI) in system integration.	03
	(b) Explain 'Direct Digital Control' with respect to the first application of process control computers in automation.	04
	(c) Explain Network linkages in detail.	07
Q.5	(a) What is sub-commutation and super commutation in context of multiplexer system?	03
	(b) Compare features of different types of data highway cables.	04
	(c) Discuss cascade and ratio control algorithm in detail.	07

OR

- Q.5**
- (a)** What is MTBF in context of DCS? How availability of DCS system is increased? **03**
 - (b)** What is process control programming? Explain any one algorithm for process control. **04**
 - (c)** Explain in detail MODBUS bus access methods, transmission modes, application services and acceptance. **07**
