Reg. No.

Question Paper Code

11904

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Sixth Semester

Electrical and Electronics Engineering 20EEEL608 - INDUSTRIAL DATA COMMUNICATIONS

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

$PART - A (10 \times 2 = 20 Marks)$

		Answer ALL Questions		
			Marks, K-Level, CO	
1.	Defin	he the term protocol.	2,K1,CO1	
2.		ion the fundamental characteristics of data communication system.	2,K1,CO1	
3.		e the four wire network configuration of EIA-485 network.	2,K1,CO2	
4.	Mention the relationship between a switch and router.			
5.				
6.				
7.		he various MODBUS function codes.	2,K1,CO4	
8.		ch the different levels of SCADA.	2,K1,CO4	
9.		wireless sensor networks need localization protocols?	2,K1,CO5	
10.		the different connectors used for industrial Ethernet.	2,K,CO5	
		$PART - B (5 \times 13 = 65 Marks)$		
		Answer ALL Questions		
11.	a)	(i) Describe the five components of data communication system with	5,K2,CO1	
11.	a)	necessary diagrams.	8,K2,CO1	
		(ii) Discuss in detail about the Error detection techniques.	0,K2,CO1	
		OR Illustrate in detail about ISO-OSI reference model with neat diagram.	13,K2,CO1	
	b)			
12.	a)	(i) Explain the structure of AS-i Communication interface with neat	8,K2,CO2	
	-,	sketch	5,K2,CO2	
		(ii) Distinguish RS 232 and RS 485 standard. OR		
	1. \	Inference the architecture and MAC layers of IEEE 802.11 with	13,K3,CO2	
	b)	necessary diagrams.		
			13,K2,CO3	
13	. a)	Explain Network Operating Systems and Protocols used in industrial		

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

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networks.

OR

		OK .		
	b)	(i) Discuss some applications of HART.	8,K2,CO3	
		(ii) Classify the types of layers in PROFIBUS and explain each in detail.	5,K2,CO3	
14.	a)	(i) Categorize the MODBUS functions and message format with an application.	8,K2,CO4	
		(ii) Classify the features of MODBUS. OR	5,K2,CO4	
	b)	Discuss the basic operation of SCADA and its application in Power Generating Stations.	13,K2,CO4	
15.	a)	(i) Explain the wireless sensor network architecture with a diagram.	8,K2,CO5	
13.	aj	(ii) Interpret the energy consumption rate for sensors in a wireless	5,K2,CO5	
		sensor network.		
		OR		
	b)	(i) Summarize about the wireless HART in detail.	5,K2,CO5	
		(ii) Outline the working principle of Zigbee protocol with an architecture diagram.	8,K2,CO5	
PART - C (1 × 15 = 15 Marks)				
16.	a)	Design a complete package that helps to build, test and deploy HART enabled product for a leading oil and gas company, which holds turbine meter, flow meters and flow computers.	15,K3,CO3	

b) Elaborate the basic components and architecture of Foundation field 15,K3,CO3 bus with neat diagram.