

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2162410****Date: 05/05/2017****Subject Name: Industrial Communication 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.

**MARKS**

<b>Q.1</b>	<b>Short Questions</b>	<b>14</b>
	1 Define Communication.	
	2 What is the range of frequency audio frequency and F.M. band?	
	3 Explain Concept of LAN.	
	4 Define Bandwidth.	
	5 What is Maximum Cable length of RS-232?	
	6 Give the Names of Layers of TCP-IP.	
	7 Explain Half Duplex System with Example.	
	8 Write down the equation of Channel Capacity.	
	9 Define Noise.	
	10 What do you understand by Multiplexing?	
	11 What do you Understand by White Noise?	
	12 What is the protocol?	
	13 Enlist advantages of Modulation.	
	14 Define Baud rate.	
<b>Q.2</b>	(a) An Amplifier has a Bandwidth of 2 MHz with 20 K $\Omega$ Resistor. Calculate the RMS noise voltage at the input to this amplifier if the room temperature is 25° C.	<b>03</b>
	(b) Define Modulation Index. Draw the Amplitude modulated waveforms for less than 100%, with 100% modulation.	<b>04</b>
	(c) Compare the ASK, FSK and PSK.	<b>07</b>
	<b>OR</b>	
	(c) Explain the troubleshooting serial data communication circuit. Also, explain the troubleshooting and testing with RS-485.	<b>07</b>
<b>Q.3</b>	(a) Write down the equation of Total Transmitted Power in A.M. A transmitter transmits 10 KW of power without modulation and 14 KW after amplitude modulation. What is modulation index?	<b>03</b>
	(b) What is an USB? Explain with suitable examples.	<b>04</b>
	(c) Explain the UART transmitter and receiver with the help of block diagram.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Sketch the transmitted sequence of pulses for each of the following terms: UNRZ, URZ, & Manchester Coding. Sequence of pulses: 01101000111110	<b>03</b>
	(b) Explain the RS-422 interface standard.	<b>04</b>
	(c) Define synchronous system. Explain the transmission characteristic in detail.	<b>07</b>

- Q.4** (a) Explain in brief CSMA/CA with necessary figures. **03**  
 (b) Define Protocol. Explain TCP/IP. **04**  
 (c) Draw the block diagram of Fiber Optics Communication system and explain it. Also list down the benefits of FOC. **07**
- OR**
- Q.4** (a) Write a note on:- CDPD **03**  
 (b) Explain network topologies. **04**  
 (c) Write a technical note on Suppression techniques. **07**
- Q.5** (a) Explain in Brief GPIB. **03**  
 (b) List the benefits of HART protocol. **04**  
 (c) List Modbus functions. Explain message format, synchronization and memory notation of Modbus protocol. **07**
- OR**
- Q.5** (a) Explain with suitable example balanced Transmission Lines. **03**  
 (b) Explain the application layers of HART protocol. **04**  
 (c) List the benefits of Field bus and Device net system. **07**  
 Describe three network classes of Field bus and Device net system.

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