

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) - EXAMINATION – SUMMER 2016****Subject Code:2162410****Date:13/05/2016****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.

- Q.1** (a) Define Followings: **03**  
 (1) Communication (2) Baud rate (3) Modulation
- (b) Define Modulation Index. Draw the Amplitude modulated waveforms for less than 100%, with 100% modulation. **03**
- (c) Explain the Power relation of the AM wave with necessary mathematical analysis. **04**
- (d) The Bandwidth of a Channel is 2 MHz and its signal to noise ratio is 63. Calculate the appropriate bit rate and signal level. **04**
- Q.2** (a) (1) Explain source of electrical noise. **07**  
 (2) Define Noise Factor & Noise Figure. The signal power and noise power measured at the input of an amplifier are 150  $\mu$ W and 1.5  $\mu$ W respectively. If the signal power at the output 1.5 W and noise power is 40 mW, find amplifier Noise Factor & Noise Figure
- (b) Compare the ASK, FSK and PSK in all aspects. **07**
- OR**
- (b) Draw and explain the block diagram of Fiber Optics Communication (FOC) system. Also list down the benefits of FOC. **07**
- Q.3** (a) Explain Synchronous and asynchronous system in detail. **07**  
 (b) Explain CSMA/CA with necessary flowchart and figure. **07**
- OR**
- Q.3** (a) Explain the UART transmitter and receiver with the help of block diagram. **07**  
 (b) Write a note on: - Cellular digital packet network. **07**
- Q.4** (a) Explain the functional description of the interchange circuits of RS-232 standard. **07**  
 (b) List the benefits of FIELDBUS and DEVICE NET system. Describe three Network classes of FIELDBUS and DEVICE NET system. **07**
- OR**
- Q.4** (a) Explain the RS-485 interface standard in detail and draw the typical two wire multidrop network. **07**  
 (b) List the benefits of HART protocol. Explain the application layers of HART protocol. **07**
- Q.5** (a) What is the protocol? Explain TCP/IP. **07**  
 (b) What is an USB? Explain with suitable examples. **07**
- OR**
- Q.5** (a) List Modbus functions. Explain message format, synchronization and memory notation of Modbus protocol. **07**  
 (b) Differentiate between PSK and PWM. **07**

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