

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019****Subject Code:2162410****Date:18/05/2019****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 Modulation. List out the advantages of modulation. **03**
 (b) Clearly define each of the following terms: **04**
 (1) Bit rate (2) baud rate (3) Communication (4) Bandwidth
 (c) (1) Explain the Power relation of the AM wave with necessary mathematical analysis. **07**
 (2) Calculate the maximum bit rate for a channel having bandwidth 3.1KHz and signal to noise ratio of 10dB.
- Q.2** (a) Draw the AM waveforms for with 100% modulation and with 0% modulation. **03**
 (b) Explain in details about PWM. **04**
 (c) List out Modulation index measurement methods. Explain any one with necessary circuit & suitable waveforms. **07**
- OR**
- (c) Compare FSK, ASK and PSK in all tabular forms. **07**
- Q.3** (a) Explain in brief communication modes. **03**
 (b) Compare Synchronous and asynchronous transmission. **04**
 (c) Write a detailed note on: satellite communication. **07**
- OR**
- Q.3** (a) Explain in brief the UART receiver. **03**
 (b) Sketch the transmitted sequence of pulses for RZ and NRZ for Sequence of pulses: 01010011110 **04**
 (c) Write a technical note on: Network Topologies. **07**
- Q.4** (a) An Amplifier has a Noise figure of 3dB. calculate its equivalent noise temperature(assume $T_0=23^\circ\text{C}$). **03**
 (b) Explain the troubleshooting serial data communication circuit. **04**
 (c) Write a detailed note on Suppression techniques. **07**
- OR**
- Q.4** (a) Explain in brief HART protocol. **03**
 (b) List the benefits of FIELDBUS and DEVICE NET system. **04**
 (c) Explain the theory of operation of fiber-optic cables. List the limitations of fiber-optic cables. **07**
- Q.5** (a) Explain in brief about USB. **03**
 (b) Differentiate balanced and unbalanced transmission lines? **04**
 (c) What is the protocol? Explain TCP/IP. **07**
- OR**
- Q.5** (a) Explain in brief sources of Noise. **03**
 (b) Explain RS-232 interface standards. **04**
 (c) List MODBUS functions. Explain message format, synchronization and memory notation of MODBUS protocol. **07**
