Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 172405   **Date: 03-12-2013**
Subject Name: Industrial Communication Systems
Time: 10:30 TO 01:00   **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)** Write down the difference between Analog communication & Digital **07**
communication.
Clearly define each of the following terms:
Bandwidth, Communication system, Demodulation, Modulation index.

(b) Draw the block diagram of Fiber Optics Communication (FOC) system and **07**
explain it. Also list down the benefits of FOC.

Q.2 **(a)** With the necessary mathematical analysis show the power relation of the A.M. **07**
wave.

(b) Explain Over modulation and define amplitude sensitivity. **07**

OR

(b) An audio signal 20sin2π (1500t) Amplitude modulation by carrier 60sin2π **07**
(100000t).
(a) Sketch the carrier.
(b) Sketch the audio signal.
(c) Construct the Modulated wave.
(d) Determine the Modulation Index μ.
(e)Determine the frequency of Audio signal & Carrier signal.
(f) What frequencies show up in the spectrum analysis of modulated wave?

Q.3 **(a)** Write a Short note On F.M. with necessary figure and mathematical analysis. **07**
(b) Draw the wave form for the different digital modulation skim. The signal is **07**
given by 100110 00001.

OR

Q.3 **(a)** Explain Synchronous and asynchronous system in detail. **07**
(b) Sketch the transmitted sequence of pulses for each of the following terms: **07**
UNRZ, URZ, PRZ, BRZ & Manchester Coding.
Sequence of pulses: 01101000111110

Q.4 **(a)** Explain PWM in detail. **07**
(b) What do you mean by balanced and unbalanced transmission lines? Explain it **07**
with suitable example.

OR

Q.4 **(a)** Explain CSMA/CA with necessary flowchart and figure. **07**
Q.4 **(b)** Compare and construct **07**
   1) Random access protocol and Channelizing protocol
   2) Control access protocol and Channelizing protocol

Q.5 **(a)** With the necessary block diagram explain OSI model. **07**
How are OSI and ISO related to each other?

(b) Write a short note on   **07**
1. Network topology.
2. Different types of Transmission Techniques.

OR

Q.5 **(a)** Different between   **07**
TCP/IP and OSI model.
Bandwidth and Throughput

(b) A telephone line has a bandwidth of 3000 Hz assigned for data communications.   **07**
The signal to noise ratio is 3162. For this channel calculate the capacity of it.
Write down the application of ICS.

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