Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VI • EXAMINATION – WINTER • 2014

Subject Code: 161704   **Date: 05-12-2014**
Subject Name: Analog and Digital Communication
Time: 02:30 pm - 05:00 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)**	Derive equation for AM wave. Draw amplitude spectrum for m=1. Also draw the frequency spectrum of AM wave	**07**
	(b)	Discus the types, causes and effects of the various forms of the noise which may be created within a receiver or an amplifier.	**07**
Q.2	**(a)**	Describe frequency modulation with the help of necessary wave from and derive the formula for the instantaneous value of an FM voltage.	**07**
	(b)	Two resistors 10 kΩ and 25 kΩ are at room temperature for a bandwidth of 150 kHz .Calculate thermal noise for each resistor, if two resistors are in series and two resistors are in parallel. Assume room temperature = 290 K.	**07**

OR

	(b)	The antenna current of an AM transmitter is 8A if only the carrier is sent, but it increases to 8.93A if the carrier is modulated by a single sinusoidal wave. Determine the percentage modulation. Also find the antenna current if the percent of modulation changes to 0.8.	**07**
Q.3	**(a)**	Explain adaptive delta modulation.	**07**
	(b)	Give comparison between amplitude modulation, frequency modulation and phase modulation.	**07**

OR

Q.3	**(a)**	Explain the pre-emphasis & De-emphasis.	**07**
	(b)	Explain ASK, FSK and PSK with waveforms	**07**
Q.4	**(a)**	Write a note on cyclic redundancy check as a synchronous error detection method.	**07**
	(b)	Describe quadrature phase shift key modulator.	**07**

OR

Q.4	**(a)**	Explain the 8PSK Modulator.	**07**
	(b)	Explain high-level data link Control protocol.	**07**
Q.5	**(a)**	Discuss advantages and disadvantages of communication using optical fiber.	**07**
	(b)	Explain the X.25 packet switch protocol	**07**

OR

Q.5	**(a)**	Explain different network topologies in detail.	**07**
	(b)	Mention about serial and encoded data formats with example.	**07**

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