Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2161704 **Date:11/05/2016**

Subject Name: Analog and Digital communication

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)**	Explain general communication system with block diagram.	**07**
	(b)	Define amplitude modulation and modulation index. Derive relation between the output power of an AM transmitter and depth of modulation.	**07**
Q.2	**(a)**	Explain mathematical representation of FM.	**07**
	(b)	Explain Shot noise and Johnson noise briefly.	**07**
		OR	
	(b)	First stage amplifier has a voltage gain of 20, a 500Ω input resistor, a 1600Ω equivalent noise resistance and 25kΩ output resistance. For second stage, these values are 25, 80kΩ, 10kΩ and 1MΩ respectively. Calculate equivalent input-noise resistance of two-stage amplifier.	**07**
Q.3	**(a)**	For a stream of data 1011001010 show the different encoded data formats in UNZ,URZ,BNZ-AMI, BRZ-AMI, Manchester(Biphase) and Differential Manchester codes.	**07**
	(b)	List error detection and correction methods. Explain any one in detail.	**07**
		OR	
Q.3	**(a)**	Explain the three network topology.	**07**
	(b)	How many Hamming bits required when using Hamming code with extended ASCII synchronous message “Help!” ?Determine states of Hamming bits inserted into the message “Help!” at every other bit position starting with the LSB. (example: …..Hb3Hb2Hb1Hb0H) (H= 48H, e= 65H, l= 6CH, p= 70H, ! = 21H)	**07**
Q.4	**(a)**	Explain RS -232 interface standards.	**07**
	(b)	Explain balanced modulator.	**07**
		OR	
Q.4	**(a)**	Explain regular and adaptive delta modulator.	**07**
	(b)	Explain pulse code modulation.	**07**
Q.5	**(a)**	What was the purpose for forming the IEEE 802 committee? Describe differences between LAN, WAN, MAN, CAN and GAN.	**07**
	(b)	Explain optical detectors with neat sketch.	**07**
		OR	
Q.5	**(a)**	Explain GEO, LEO and MEO satellites .	**07**
	(b)	Describe SONET topology and its frame.	**07**