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

GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC- SEMESTER–IV - EXAMINATION – SUMMER 2017

Subject Code: X41101 **Date:25/05/2017**

Subject Name: Electronic 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)**	Draw the communication system block diagram and explain each block briefly	**07**
	(b)	Explain briefly: 1. Skin effect 2.Mutual inductance	**07**
Q.2	**(a)**	Draw series tuned circuit and derive equation for resonant frequency and Q-factor.	**07**
	(b)	Draw the circuit diagram of low frequency transformer and derive the equation for reflected load.	**07**
		OR	
	(b)	A receiver tunes signals from 550 to 1600 KHz with an IF of 455KHz. Find the frequency tuning ranges and capacitor tuning ranges for oscillator section and for the RF section.	**07**
Q.3	**(a)**	In measurement of noise temperature, an avalanche diode source is used, the ENR (excess noise ratio) being 14 dB. The measured Y factor is 9 dB. Calculate the equivalent noise temperature of the amplifier under test.	**07**
	(b)	Draw and explain block diagram of Electronically Tuned Receiver(ETR) for AM.	**07**
		OR	
Q.3	**(a)**	Derive expression of noise factor and noise temperature for Amplifiers in cascade.	**07**
	(b)	Explain Phasing method for SSBSC generation.	**07**
Q.4	**(a)**	For amplitude modulation, derive the following parameters: modulation index, Frequency spectrum and average power.	**07**
	(b)	Write a short note on foster-Seeley Discriminator.	**07**
		OR	
Q.4	**(a)**	With circuit diagram and waveform, explain amplitude demodulator. Also explain diagonal peak clipping.	**07**
	(b)	Describe FM generation with clapp oscillator utilizing varactor diode.	**07**
Q.5	**(a)**	Enlist all the properties of Fourier transform. Prove the time shifting property.	**07**
	(b)	Describe double conversion super heterodyne receiver.	**07**
		OR	
Q.5	**(a)**	Find the Fourier transform of the signal: $x(t)=e^{-5\|t\|}$	**07**
	(b)	Write short note on Automatic Gain Control.	**07**

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