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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V- EXAMINATION – SUMMER 2016

Subject Code: 151004 **Date: 06/05/2016**

Subject Name: Electronic Communication

Time: 02:30 PM to 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 the expression for f_r , Q-factor and 3-dB B.W for Series Tuned Circuit.	**07**
	(b)	Explain in detail working of Superheterodne receiver with the help of block diagram.	**07**
Q.2	**(a)**	Define: Noise. Give the classification of Noise. Explain any one type Internal Noise.	**07**
	(b)	A mixer stage has noise figure of 20dB and it is preceded by an another amplifier with a noise figure of 9 dB and an available power gain of 15 dB. Calculate the overall noise figure referred to the i/p.	**07**
		OR	
	(b)	A DSB-SC transmitter radiates 1 kW when modulation depth is 60%. How much of carrier power is required in kW, if we want to transmit the same Message by an AM transmitter? What is the change required in transmission Bandwidth?	**07**
Q.3	**(a)**	Explain the working of diode envelope detector and give the remedies for Diagonal Peak Clipping.	**07**
	(b)	Discuss advantages, disadvantages and application of DSBFC, DSBSC and SSB system.	**07**
		OR	
Q.3	**(a)**	An AM signal is represented by $e(t) = (10+ 4 \cos 1000\pi t) \cos (2\pi \times 10^6 t)$ Find: Modulation index, total power and transmission Bandwidth required for this AM signal.	**07**
	(b)	Explain the Phasing Method of SSB generation.	**07**
Q.4	**(a)**	Write short notes on AGC in superheterodyne receiver.	**07**
	(b)	Explain the indirect method of generating FM signal with block diagram and relevant mathematical expression.	**07**
		OR	
Q.4	**(a)**	A FM wave is represented by the following equation. $V = 10\sin [5 \times 10^8 t + 4 \sin 1250t]$ Find: (1) Carrier and Modulating frequency. (2) Modulation index and maximum deviation. (3) The power dissipated by this FM wave in 5 Ω resistor.	**07**
	(b)	List out various angle detector methods. Discuss any one in detail.	**07**
Q.5	**(a)**	Explain PLL with the help of block diagram.	**07**
	(b)	Determine F.T of a signum f^n sgn(t).	**07**
		OR	
Q.5	**(a)**	Determine F.T of a Rectangular (Gate) f^n.	**07**
	(b)	List out all the properties of F.T. State and Prove any two properties.	**07**

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