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

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2151004 **Date:09/05/2016**

Subject Name:Electronic and 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)**	Answer the following questions. 1) What is White Noise and what is its power spectral density. 2) Define Image rejection. 3) What is Carson's rule? 4) What is diagonal clipping? 5) What is the figure of merit in DSB-SC and SSB-SC?	**10**
	(b)	Explain the Skin effect.	**04**
Q.2	**(a)**	Find the Fourier Transform of following functions. 1) $e^{-at}u(t)$	**03**
		2) $X(t) = \text{rect}(t/\tau) = \{ 1 \text{ for } -\tau/2 < \tau/2 \}$ 0 otherwise	**04**
	(b)	A mixer stage has a noise figure of 20 dB, and this is preceded by an amplifier that has a noise figure of 9 dB and available power gain of 15dB. Calculate the overall noise figure referred to the input.	**07**
		OR	
	(b)	Find overall noise figure of three stage cascaded amplifier, each stage having a power gain of 10 dB and noise figure of 4 dB.	**07**
Q.3	**(a)**	Explain trapezoidal method of monitoring A.M waveform directly on an oscilloscope. Sketch trapezoidal pattern for $0 \le m \le 1$.	**07**
	(b)	Explain Balanced modulator. Why a ring modulator is known as a double balanced modulator.	**07**
		OR	
Q.3	**(a)**	Explain Phasing method for generation a SSBSC signal in detail.	**07**
	(b)	Explain the working of diode envelope detector and give the remedies for Negative Peak.	**07**
Q.4	**(a)**	Discuss the Advantages & Disadvantages of FM Over AM	**07**
	(b)	List all FM demodulators. Explain Foster - Seeley discriminator in detail.	**07**
		OR	
Q.4	**(a)**	Explain a Varactor diode Modulator for FM Generation.	**07**
	(b)	Explain the importance of pre-emphasis and de-emphasis circuits. Why it is not useful in phase modulation but useful in frequency modulation?	**07**
Q.5	**(a)**	Explain Superhetrodyne principal and superhetrodyne receiver.	**07**
	(b)	Explain automatic gain control in superhetrodyne receiver	**07**
		OR	
Q.5	**(a)**	Define noise factor & derive Friis's formula.	**07**
	(b)	What is Ham radio? Discuss importance of Ham radio during natural calamities.	**07**

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