l	Regi	istration No :	
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		5 <sup>th</sup> Semester Regular / Back Examination 2019-20	T5I1
		ANALOG COMMUNICATION	
		BRANCH : ECE, ETC  Max Marks : 100	
		Time : 3 Hours Q.CODE : HRB232	
An	swe	ਯ.ਫਰਰਾਏ : ਜਲਬ232 er Question No.1 (Part-1) which is compulsory, any EIGHT from Part-Ⅱ and any ਂ	TW
		from Part-III.	
		The figures in the right hand margin indicate marks.	
04		Part- I	(2 v
Q1	a)	Only Short Answer Type Questions (Answer All-10) Write Time scaling property with an example.	(2 x
	b)	Define power spectral density.  Write the Dirichlet's condition for Fourier series.  210	
	c) <sup>0</sup> d)	Draw the single sided frequency spectrum for a single tone amplitude modulated	
	e)	signal. Write the applications of Hilbert transform.	
	f)	Define frequency deviation for FM wave.	
	g)	Define conditional probability density function.	
	h) i)	What is the importance of Gaussian distribution? Write the drawbacks of Tuned Radio Frequency Receiver.	
	<b>4)</b> 0	Find the Fourier transform of $\delta(\omega-\omega_0)$ .	
		Part- II	
Q2	a)	Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) Summarize the cause and effects of thermal noise in electronic systems, in terms of	(6 x
	,	noise power, voltage, and spectral density.	
	b) c)	Define noise equivalent band width and derive the expression for the same.  Describe the working of a BJT-based amplitude modulator circuit.	
	d)	Explain diagonal peak clipping in diode detector circuits. 210 210	
	e)	An AM broadcast receiver has an IF of 465 KHZ and is tuned to 1000 KHz, and the RF stage has a tuned circuit with a Q of 50. Find (a) image frequency (b) image rejection	
		in decibels.	
	f)	Write short notes on Automatic frequency control and amplitude limiters.  With the help of block diagram, explain the working of costas loop.	
	g) h)	Explain the concept of pre-envelop. Obtain the Hilbert transform of the function $x(t) = sin2\pi ft$ .	
	<b>_i)</b> _0	Let X be a continuous random variable having a uniform probability distribution defined	
	j)	in the range $2 \le x \le 4$ . Let y=3X+2. Find the means $m_x$ and $m_y$ . For an AM signal $s(t) = A_c \cos[2\pi f_c t + \phi(t)]m(t)$ , find	
	3/	a. Pre-envelope	
		b. Complex envelope	
	k)	c. Natural envelope Derive the time domain expression of VSB modulated wave containing a vestige of	
		upper side band.	
	<b>4)</b> 0	With relevant block diagram explain FM stereo multiplexing. 210 210	

210		210	210	210	210	210	210	210		
210	Q3	a) b)	Only Long Answer Ty Derive the expression of An FM signal with a de input SNR is 15dB, th denominator output.	of the figure of reviation of 75K	merit of DSBSC re Hz is applied to a	ceiver. In FM demodula		(10) (6) <sup>210</sup>		
	Q4	a) b)	With spectrum diagram Show that VSB of LSB				t) sin (w <sub>c</sub> t)	(8) (8)		
210	Q5	a) b)	Write a notes on Quadrature carrier multiplexing. With the help of neat diagram of linear model of PLL, show that output is proportional to modulating signal for FM input.							
	Q6	a) b)	Define Noise Figure Factor(F) of cascaded a An SSB signal is dem	-		(8) (8)				
210		210	locally arranged carrie demodulation. What w SSB? 210	r has a phase	e error $\theta$ . Determ	ine the effect o	of the error on	210		
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