QPC: BD18001017 AR 18 Reg. No

GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, December – 2020

(Fifth Semester)

BECPC5010 – Analog Communications

(ECE)

Time: 2 hrs Maximum; 50 Marks

The figures in the right hand margin indicate marks.

Assume suitable data wherever needed

PART – A: (Multiple Choice Questions) **(1 x 10 =10 Marks)**

Q.1. Answer ***ALL*** questions			[CO#]	[PO#]
a.	What is the carrier frequency in an AM wave when its highest frequency component is 950Hz and the bandwidth of the signal is 50Hz? (i)80Hz (ii)956Hz (iii)625Hz (iv)925Hz		3	1
b.	Bandwidth in Frequency modulation is (i) 2fm (ii) 2(fc +fm) (iii) Infinite (iv) 2fc		3	1
c.	A Tuned Radio Frequency Receiver receives in the standard broadcast frequency range from 550 kHz to 1600 kHz. The specified bandwidth of a channel is 10 kHz, the required range of Q factor of the tuned RF circuit is: (i) 45 to 120 (ii) 55 to 160 (iii) 45 to 160.5 (iii) 53.5 to 120		3	1
d.	Indicate which one of the advantages of the phase cancellation method of obtaining SSB over the filter method is **false**: (i) Switching from one sideband to the other is simpler. (ii) It is possible to generate SSB at any frequency (iii) SSB with lower audio frequencies can be generated (iv) The carrier is suppressed better.		3	1
e.	In AM Superheterodyne Receiver, the IF frequency is always (i) lower than lowest incoming signal frequency (ii) higher than the highest incoming signal frequency (iii) equal to incoming signal frequency (iv) 455KHz		3	1
f.	In AM broadcasting (i)Both DSBFC and SSBSC are used (ii)Only DSBFC (iii) Both DSBSC and DSBFC are used Only SSBSC		3	1
g.	In DSB-SC typically for generation and detection using balance modulator ..... & ..... filters are used respectively (i) HPF & LPF (ii)BPF & LPF (iv) LPF & BPF (v) BPF & HPF		3	1
h.	Modulation is needed to … (i)Transmit information to long distances (ii)Reduce the height of antenna (iii)Multiplexing (iv)All of the above		3	1
i.	The Fourier Transform of RF pulse is (i) Sampling Function (ii) Shifted Sampling Function (iii) Train of impulse (iv) Sinusoid		1	1
j.	Fourier Transform of a periodic time function consists of (i) Cosine terms (ii) Sine terms (iii) Cosine and sine terms (iv) Train of equally spaced Impulses		1	1

PART – B: (Short Answer Questions) **(2 x 5=10 Marks)**

Q.2. Answer ***ALL*** questions		[CO#]	[PO#]
a.	Explain linearity property of signals.	1	1
b.	Signal m(t) = cos 3000 π t + 2 cos 5000 π t is multiplied by the carrier c (t) = 100 cos 2 π fc t where fc = 1 MHz to produce the DSB signal . Find the expression for the upper sideband (USB) signal.	3	3
c.	In a Superheterodyne Receiver, IF is of 450 KHz and RF amplifier is tuned to 1000 KHz. Calculate the local oscillator and image frequency.	3	1
d.	Justify why Fourier Series can be applied only for Periodic signals. Justification 2	2	1
e.	Differentiate between Wide Band And Narrow band FM.	4	1

PART – C: (Long Answer Questions) **(6 x 5=30 Marks)**

Answer ***ANY FIVE*** questions		Marks	[CO#]	[PO#]
3.	Describe the Orthogonal Representation of Signal and its Importance in Communication.	4	1	2
4.	Discuss the statement "There is inverse relationship between time and frequency domain representation of signals".	4	3	3
5.	Calculate the power saving in Dual Side Band Suppressed Carrier (DSBSC) and Single Side Band Suppressed Carrier (SSBSC) as compared to Dual Side Band Full Carrier (DSB FC) for m=0.7.	4	3	1
6.	Illustrate the detection of DSB-SC modulated Waves using Coherent detection.	4	3	3
7.	Illustrate Envelope detection of a VSB wave pulse Carrier System.	4	3	1
8.	Elaborate the working of PLL for FM detection.	4	3	1
9.	The first stage of a cascade two stage amplifier has a noise figure of 3 dB and a power gain of 10 dB. The second stage has a noise figure of 4dB and a power gain of 12 dB. Find the overall noise figure in dB.	4	3	1
10.	Compare Figure of Merit ofDSBFC , SSB-SC and DSBSC systems.	4	4	1

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