GANPAT UNIVERSITY

B. TECH. SEMESTER: V ELECTRONICS & COMMUNICATION ENGINEERING

CBCS REGULAR EXAMINATION NOV – DEC 2015

2EC505 COMMUNICATION ENGINEERING

Time: 3 Hours   Total Marks: 70

Instruction:
1. Attempt all questions.
2. Answers to the two sections must be written in separate answer books.
3. Figures to the right indicate full marks. Assume suitable data, if necessary.

SECTION-I

Q.1	(A)	Give Reason: Frequency modulation is referred as a constant –bandwidth system with example.	4
	(B)	Explain Equivalence between PM and FM. Also Give the comparison between Angle modulation over Analog Modulation	6
	(C)	Define Deviation ratio.	2

OR

Q.1	(A)	An audio signal of 10KHz causes the frequency of a 5MHz carrier to deviate by 4KHz when the Instantaneous amplitude is 2.2V. At some instant, the audio voltage is increased to 22V Find the Maximum Frequency deviation and Instantaneous Frequency range of FM signal.	4
	(B)	Draw and explain the circuit diagram of foster seeley discriminator FM detector.	6
	(C)	Why needed the Amplitude limiter Circuit in FM system?	2

Q.2	(A)	A receiver tunes signals from 560 to 1610khz with an IF of 455khz. Find the frequency tuning ranges and capacitor tuning ranges for the oscillator section and for RF Section.	5
	(B)	Discuss Delayed AGC and Simple AGC with Circuit Diagram.	6

OR

Q.2	(A)	For a series tuned circuit the resonance frequency is 1.3MHz the Q factor is 100 and the tuning capacitance is 57Pf. Find the impedance magnitude phase angle as a function of frequency.	4
	(B)	Draw and explain the schematic diagram of Double conversion.	4
	(C)	List out types of passive analog filters and write there transfer function. each	3

Q. 3	(A)	Define following terms in superheterodyne receiver (1) Selectivity (2) Gain	6
	(B)	Draw and explain the circuit diagram of FM modulator using varactor diode.	4
	(C)	Define the Narrowband and Wideband FM.	2

Q.4	(A)	What is modulation? Explain its types and need of modulation in detail.	6
	(B)	What is single tone and multi tone modulation? Compare AM with DSB-SC and SSBSC.	4
	(C)	How do satellite works? Give some advantages of it.	2

OR

Q.4	(A)	Explain the working of amplitude modulator circuit with necessary waveforms.	4
	(B)	Define noise. Explain thermal noise in detail.	4
	(C)	Define satellite orbit. Explain in detail Geostationary orbit.	4

| Q.5 | (A) | List out methods for SSB generation; Explain "Phase shift method" in detail. | 6 |
| | (B) | For a standard AM transmission the maximum peak-to-peak envelop voltage is 150 volts and minimum peak-to-peak voltage is 50 volts. Calculate the modulation Index value. If the modulating signal is having frequency of 5 kHz, also calculate bandwidth occupied by the same AM wave. | 5 |

OR

| Q.5 | (A) | List out types of noise. Explain external noises in detail. | 5 |
| | (B) | Explain in detail: Block diagram of SSB reception. | 6 |

Q.6	(A)	Define following terms in satellite communication. 1) Round trip time 2) Apogee 3) Perigee	3
	(B)	Explain Signal to noise ratio of tandem connection in detail.	4
	(C)	Explain FET singly balanced modulator with figure.	5

END OF PAPER