Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FOURTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

Course Code: EC208

Course Name: ANALOG COMMUNICATION ENGINEERING (EC)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

			Marks
1	a)	Explain different types of noises that are generated in an amplifier.	(8)
	b)	Draw the circuit diagram of a diode detector and explain its working.	(7)
2	a)	Two resistors of values 10kΩ and 20kΩ in an amplifier are kept at 50°C. The bandwidth of the amplifier is 1 MHz. Find the equivalent thermal noise voltages generated by these resistors when they are connected (a) in series and (b) in parallel.	(6)
	b)	Derive the spectrum for sinusoidally modulated AM wave and also derive the expression for the total average power.	(9)
3	a)	Define noise factor and derive the expression for the output noise power of an amplifier in terms of noise factor.	(6)
	b)	Draw the block diagram of AM transmitter and explain it.	(6)
	c)	The tuned circuit of the oscillator in an AM transmitter employs a 50μH coil and a 10nF capacitor. The output of the oscillator is modulated by speech signal frequencies up to 4 kHz, what is the frequency range occupied by the sidebands	(3)

PART B

Answer any two full questions, each carries 15 marks.

4	a)	With the help of a block diagram, explain the phase shift method of SSB generation. Derive the expression for the output voltage.	(9)
	b)	Prove that the average power in an FM wave is equal to its un-modulated carrier power.	(6)
5	a)	What are the drawbacks of a tuned radio frequency (TRF) receiver? With the block diagram of a super-heterodyne receiver, explain that they do not suffer from these drawbacks.	(10)
	b)	Calculate the percentage power saving when the carrier and one of the sidebands	(5)

are suppressed in an AM wave with modulation index equal to (a) 1 and (b) 0.25.

6 a) With the block diagram of transmitter and receiver, explain pilot carrier SSB system. (10)

b) Make a comparison of AM with FM (5)

PART C

Answer any two full questions, each carries 20 marks.

7 a) With the block diagram, explain Armstrong method for FM generation. (10)

b) Draw the circuit diagram of amplitude limiter and explain its working. (10)

8 a) With the help of circuit diagram, explain the working of a varactor diode modulator. (10)

b) Using expressions, compare FM and PM and show that FM may be generated using PM. (5)

c) What are the basic functions of a telephone set? (5)

9 a) With the help of a circuit diagram, explain the working of a JFET reactance modulator. (10)

b) Explain the working of a cordless telephone. (10)

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