

53 - 2013 scheme - Oct. 2021



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M – 5663

Reg. No. :

Name :

Third Semester B.Tech. Degree Examination, October 2021

13.304 ANALOG COMMUNICATION (T)

(2013 Scheme)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer all questions. Each question carries 2 marks:

1. If two sine waves are used to amplitude modulate a carrier with modulation index 0.4 and 0.5, calculate total radiated power.
2. Write advantage of carrier reinsertion in SSB.
3. Explain the effect of noise in angle modulation.
4. Write the reason for the use of point contact diode at higher frequencies in AM detectors.
5. Explain how constant intermediate frequency is achieved in a superheterodyne receiver.
6. Explain the reason for the use of automatic gain control in receivers. Distinguish between simple AGC and delayed AGC.
7. In an FM system, if the maximum value of deviation is 75 kHz and the maximum modulating frequency is 10 kHz, calculate the bandwidth of the system using Carson's rule.

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8. With a block diagram show the use of frequency multiplication and mixing to increase the frequency deviation in FM.
9. Explain what is Nyquist rate and Nyquist interval
10. Explain A-law companding.

(10 × 2 = 20 Marks)

PART – B

Answer one full questions out of two from each Module.

Module – I

11. (a) With block diagram explain phase shift method for generation of SSB. 10
- (b) Draw circuit diagram and explain working of envelope detector for AM. Draw waveforms at input and output. Explain the importance of RC time constants for the circuit. 10

OR

12. (a) Draw circuit of balanced modulator using FETs, for generation of DSB SC. 10
- (b) Write short notes on Vestigial Sideband transmission: principles, frequency spectrum of transmitted TV signal. 10

Module – II

13. (a) With block diagram explain working of double conversion receiver. 10
- (b) The noise figure of a receiver's 20 dB and it is fed by a low noise amplifier which has a gain of 40 dB and noise temperature of 80 K. Calculate the noise temperature of the receiver and overall noise temperature of the receiving system. 10



14. (a) A radio receiver with equivalent noise bandwidth of 10 kHz has a noise figure of 20 dB. If the input SNR to receiver is 40 dB, determine the output SNR. What is equivalent noise temperature. 10
- (b) Explain the effect of noise in DSB SC receivers for AM 10

Module – III

15. (a) Explain with a circuit diagram the working of varactor diode modulator. 10
- (b) Explain the working of Foster Seeley discriminator for demodulation of FM. 10

OR

16. (a) With block diagram explain FM stereo broadcast receivers. 10
- (b) Derive equation for frequency modulated wave. 10

Module – IV

17. (a) Derive and plot the effect of sampling on spectrum of signal band limited to 10 kHz. 10
- (b) Briefly describe C-message noise weighting and state its significance. 10

OR

18. (a) Explain with block diagram steps involved in pulse code modulation. 10
- (b) With block diagram explain working of cordless telephone system. 10



(4 × 20 = 80 Marks)

