



Reg. No. :

Name :

Third Semester B.Tech. Degree Examination, May 2015
(2013 Scheme)
13.304 : ANALOG COMMUNICATION (T)

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **two** marks. **(10x2=20 Marks)**

1. Draw the frequency response of vestigial sideband transmission used for TV signals.
2. Write the disadvantages of filter method used for generation of SSB.
3. In an AM system for a modulation index of 0.4 and carrier power of 400 W, determine total sideband power and transmitted power.
4. Write reason for occurrence of double spotting in receivers.
5. For a receiver with IF and RF frequencies of 455 kHz and 900 kHz respectively, determine the local oscillator frequency, image frequency.
6. Write factors that are taken into account in the choice of intermediate frequency in a receiver.
7. With block diagram explain basic method of obtaining FM from PM.
8. Write the advantages of FM over AM.
9. Describe functions of an echo suppressor and echo canceller in telephony.
10. State sampling theorem.





PART – B

Answer **one full** question out of two from **each** Module.

(4×20=80 Marks)

Module – I

11. a) Derive the mathematical expression for the spectrum of an AM wave and plot it. 10
- b) Draw block diagram and explain high level modulation in AM transmitters. Compare the merits and demerits with low level modulation. 10

OR

12. a) With circuit diagram and supporting derivation, explain the working of balanced modulator using FETs for generation of DSB SC signals. 10
- b) Explain with a block diagram Independent Sideband system. 10

Module – II

13. a) Draw block diagram of a superheterodyne receiver and explain the function of each block. Write advantages of superheterodyning. 10
- b) Sketch the circuit of a diode detector and explain its operation, how is AGC obtained from this detector. 10

OR

14. a) An amplifier circuit having a noise figure of 9 dB and power gain of 25 dB is followed by a mixer having a noise figure of 16 dB. Calculate overall noise figure of the combination. 10
- b) Define the receiver characteristics like sensitivity, selectivity. Write how it is measured and significance of the parameters. Draw the typical curves showing their variation with frequency. 10

Module – III

15. a) With block diagram explain Armstrong method of FM generation. 10
- b) In an FM system, a modulating (or baseband) signal of frequency 7 kHz modulates 107.6 MHz carrier wave so that the frequency deviation is 50 kHz. Find i) carrier swing in FM signal and modulation index (m_f), ii) the highest and lowest frequencies attained by the FM signal. 5
- c) Explain difference between narrowband and wideband FM. 5

OR



16. a) Explain the reason for the use of preemphasis and deemphasis in FM. Draw the circuit diagrams and the characteristics. 10
- b) Explain with block diagram how Automatic frequency control can be achieved in FM. 10

Module – IV

17. a) Describe what is meant by a i) two wire circuit ii) four wire circuit as related to telephony. 10
- b) Briefly describe a local subscriber loop. 10

OR

18. a) Explain with block diagram the steps involved in generation and detection of PPM signals. 10
- b) Briefly describe dual tone multifrequency signalling and write where it is used. 10

