

R09**Code: 9A04501**

B.Tech III Year I Semester (R09) Supplementary Examinations December 2015

ANALOG COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

- 1 (a) What are the benefits of coding? Explain in detail.
(b) Define and describe about:
(i) Information.
(ii) Messages.
(iii) Signals.
- 2 (a) Draw and explain the low pass and band pass transfer functions.
(b) A AM transmitter radiates 1 kW when the modulation percentage is 50%. How much carrier power is required if we want to transmit the same message by an AM-DSBSC transmitter?
- 3 Write short notes on:
(a) VSB.
(b) Frequency conversion.
(c) Phase shift method of AMSSB – Sc generation.
- 4 (a) What is the need for non linear processing circuits in FM?
(b) In an PM system, when an audio frequency is 500 Hz, and the AF voltage is 2.4 V, the frequency deviation is 4.8 kHz. If the AF voltage increased to 10 V while audio frequency dropped to 200 Hz, then what is the new deviation? Find the modulation index in each case.
- 5 (a) Discuss the concept of interfering sinusoids.
(b) What is the need for frequency multiplier in FM modulator circuit?
- 6 (a) Explain about Super Heterodyne tracking.
(b) In a broadcast super heterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 200. If the Intermediate frequency is 455 kHz, further in order to have same image frequency rejection at IF frequencies of 1 MHz and 20 MHz, calculate: (i) The loaded Q which an RF amplifier for this receiver would have to have. (ii) The new intermediate frequency that would be needed.
- 7 (a) Explain about threshold effect in FM.
(b) Two resistors of 20 k Ω and 50 k Ω are at room temperature. Calculate for a bandwidth of 100 kHz, the thermal noise voltage (i) For each resistor. (ii) When two resistors are in series. (iii) When two resistors are in parallel. Assume $kT = 4 \times 10^{-21}$ W/Hz at room temperature.
- 8 Write short notes on the following:
(a) Inter symbol interference.
(b) PTM.
(c) Aliasing.