



B.Tech IV Semester Regular/Supplementary Examinations, September 2023

ANALOG COMMUNICATIONS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Maximum Marks: 70

Date:15.09.2023 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks

(10x2M=20 Marks)

- 1 Draw the wave form of AM signal.
- 2 What is modulation? Mention its need in communication.
- 3 Why SSB is preferred for transmission of good quality signal?
- 4 State the applications of VSB transmission.
- 5 Write about the types of FM.
- 6 Write the expression for the spectrum of a single tone FM signal.
- 7 Define thermal noise.
- 8 Write the need for pre-emphasis and de-emphasis in case of FM systems.
- 9 What are the advantages of super heterodyne receiver?
- 10 What is automatic gain control? Mention its functions.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 In an AM modulator, 500 KHz carrier of amplitude 20 V is modulated by 10 KHz modulating signal which causes a change in the output wave of ± 7.5 V. Determine:
- (1) Upper and lower side band frequencies.
 - (2) Modulation Index.
 - (3) Peak amplitude of upper and lower side frequency.
 - (4) Maximum and minimum amplitudes of envelope. (10M)

OR

- 12 A. With a neat sketch explain COSTAS Loop. (5M)
B. Briefly explain the quadrature null effect in DSB-SC Demodulation. (5M)
- 13 A. Explain the frequency discrimination method for generating SSB signal. (5M)
B. Compare different amplitude modulation techniques. (5M)

OR

- 14 Discuss the phase shift method of generating AM-SSB-SC signal, consisting of the lower side band, with a neat block diagram. (10M)

- 15 Describe the frequency analysis of Angle modulated waves. Explain their Bandwidth requirements. (10M)
- OR
- 16 Explain the principle of Angle Modulation. Derive and explain the phase deviation, Modulation index, frequency deviation and percent modulation. (10M)
- 17 Write classification of Noise Sources in detail. (10M)
- OR
- 18 Explain noise performance in DSBSC system using figure of merit. (10M)
- 19 With the aid of the block diagram, explain the TRF receiver. List out the advantages and disadvantages of TRF receiver. (10M)
- OR
- 20 A. Explain the AM receiver with neat sketch. (5M)
B. Define and distinguish between PWM and PAM schemes. Sketch and explain their waveform for a single tone sinusoidal input signal. (5M)