

Code: 19EC3404

II B.Tech - II Semester – Regular Examinations – AUGUST 2021

**ANALOG COMMUNICATIONS
(ELECTRONICS & COMMUNICATION ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

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- Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place
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PART – A

1. a) Draw the Spectrum of AM wave.
- b) Outline the canonical representation of SSB-SC wave.
- c) Illustrate the relationship between Frequency modulation and Phase modulation.
- d) Write the expression of Figure of merit for Communication system and explain in brief.
- e) List the drawbacks of PAM.

PART – B

UNIT – I

2. a) Illustrate the Frequency domain representation of AM Wave and calculate the transmission bandwidth. 6 M
- b) The antenna current of an AM broadcast transmitter modulated to a depth of 40% by an audio sine wave is 11A. It increases to 12A as a result of simultaneous 6 M

modulation by another audio sine wave. What is the modulation index due to this second sine wave?

OR

3. a) Illustrate the generation of AM wave using Square law modulator. 6 M
- b) An AM transmitter radiates 50W power when carrier is modulated with modulation index=0.707. Determine the carrier power. 6 M

UNIT – II

4. a) With neat diagram explain the Phase Shift method of generating SSB - SC Wave. 6 M
- b) Explain the generation of VSB-SC wave. 6 M

OR

5. a) With neat diagram explain the generation of DSBSC wave using ring modulator. 6 M
- b) 4 signals each band limited to 5kHz, 10 kHz, 15 kHz, 25 kHz, are transmitted through a channel after double side band modulation using FDM. The guard band is 2kHz, Determine the BW of the multiplexed signal. 6 M

UNIT-III

6. a) Compare the direct and indirect methods of generating FM signals. Explain Armstrong method of generating FM signals with neat diagram. 8 M
- b) Draw and explain the operation of the super heterodyne receiver. 4 M

OR

7. a) An FM radio link has a frequency deviation of 30 kHz. 6 M
The modulating frequency is 3kHz. Calculate the
bandwidth needed for the link. What will be the
bandwidth if the deviation is reduced to 15 kHz?
- b) Explain how a PLL can be used as an FM demodulator? 6 M

UNIT – IV

8. a) Derive the equation for noise figure of FM receiver. 6 M
b) Derive an expression for SNR at the output of envelope 6 M
detector of standard AM systems.

OR

9. a) Derive the expression of figure of merit for SSBSC 6 M
system.
- b) Compare noise performance in AM and FM systems. 6 M

UNIT – V

10. a) Explain the Different PAM systems with neat sketches. 6 M
b) What is pulse width modulation? What other names 6 M
does it have? How is it demodulated?

OR

11. a) What is the fundamental difference between pulse 6 M
modulation, on the one hand, and frequency and
amplitude modulation on the other?
- b) Explain Time division multiplexing with a neat block 6 M
diagram.