

R16

Code No: 134AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, April - 2018

ANALOG COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit.

Each question carries 10 marks.

PART-A

(25 Marks)

- 1.a) A Radio transmitter radiates 10 KW and carrier power is 8.5 KW. Calculate modulation index. [2]
- b) A carrier wave of frequency 10 MHz and peak value 10V is amplitude modulated by a 5 KHz sine wave of amplitude 6V. Determine the modulation index and amplitude of the side frequencies. [3]
- c) Write the time domain representation of SSB signal. [2]
- d) Differentiate A.M, DSB-SC and SSB-SC. [3]
- e) Define Carrier swing and Frequency deviation. [2]
- f) Draw the Phasor diagram of narrow band FM. [3]
- g) Explain the properties of Narrow band noise. [2]
- h) What is threshold effect in Angle modulation? [3]
- i) Define the term fidelity. [2]
- j) Distinguish between PAM and PWM. [3]

PART-B

(50 Marks)

2. How AM is generated using square law modulator? Derive relevant expressions. [10]

OR

3. Explain the generation of double sideband suppressed carrier (DSB-SC) modulation. Write the necessary equations. [10]

4. Explain the Frequency discrimination method for generating SSB signal. [10]

OR

5. With neat diagrams, explain about the VSB modulation system and also explain its Applications. [10]

6. Explain the detection of FM wave using balanced frequency discrimination. [10]

OR

7. For an FM modulator with a modulating signal $m(t) = V_m \sin(300 \times 10^3 t)$, the carrier signal $V_c(t) = 8 \sin(6.5 \times 10^6 t)$ and the modulator index = 2. Find out the significant side band frequencies and their amplitudes. [10]

AG AG AG AG AG AG AG A

8. Derive the expression for the figure of merit of an SSB-SC System. [10]

OR

9. Prove that narrowband FM offers no improvement in SNR over AM. [10]

AG AG AG AG AG AG AG A

10. Draw the block diagram of TRF receiver and the function of each block. [10]

OR

11. Draw the circuit of PPM demodulator and explain the operation. [10]

AG AG AG AG AG AG AG A

ooOoo

AG AG AG AG AG AG AG A

AG AG AG AG AG AG AG A

AG AG AG AG AG AG AG A

AG AG AG AG AG AG AG A

AG AG AG AG AG AG AG A