Code No: 134AC **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, May - 2019
ANALOG COMMUNICATIONS
(Common to ECE, ETM)

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 and may have a, b, c as sub questions.

PART- A

(25 Marks)

1.a) A modulating signal consists of a symmetrical triangular wave, which has zero dc component and peak-to-peak voltage 11v. It is used to amplitude modulate a carrier of peak voltage 10v. Find the modulation index? [2]

b) The antenna current of an AM transmitter is 8 Amps, when only the carrier is sent, but it increases to 8.93A, when the carrier is modulated by a single sine wave. Find percentage modulation. Determine the antenna current when the percent modulation changes to 0.8. [3]

c) List the properties of Hilbert Transform. [2]

d) Illustrate the block diagram for the detection of SSB-SC signal using phase discrimination method. [3]

e) Define modulation index and bandwidth of FM. [2]

f) Compare NBFM and WBFM. [3]

g) What is meant by Noise? State the different types of Noise. [2]

h) Explain how noise can be calculated in a communication system. [3]

i) Define sensitivity and selectivity. [2]

j) Explain the image frequency rejection of a radio receiver. [3]

PART-B

(50 Marks)

2. Develop the equation of a single tone modulation of AM system and Also power relations. [10]

OR

3. Explain the principle of operation of Envelope detector used for AM detection, with necessary equations. [10]

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

OR

5. Why VSB modulation is used in TV broad casting? Give the VSB filter characteristics with spectrum. [10]

6. What are the different demodulation techniques of FM? Explain the demodulation of F.M signal with the help of PLL. [10]

OR

7. Formulate the equation for FM wave. Define modulation index, maximum deviation and band width of a FM signal. [10]

8. Explain about the noise performance of an FM receiver. [10]

OR

9. Explain the noise performance of SSB-SC receiver and prove its S/N ratio is unity. [10]

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

OR

11.a) Explain, how a PPM signal can be generated from PWM signal?

b) Compare PAM, PWM and PPM pulse modulation techniques. [5+5]

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