Code No: 134AC **R16**

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 $m(t)= V_m \sin(300\times10^3 t)$, the carrier Signal $V_c(t)=8 \sin(6.5\times10^6 t)$ and the modulator index = 2. Find out the significant side band frequencies and their amplitudes. [10]

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]

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]

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