Code No: 115AK

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year I Semester Examinations, February/March - 2016
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 and may have a, b, c as sub questions.

Part- A

(25 Marks)

1.a) As related to AM, what is over modulation, under modulation and 100% modulation. [2]

b) Determine the depth of the modulation for AM transmitter which radiates 9kW without modulation and 10.125kW after modulation. [3]

c) Give the advantages for Single sideband suppressed-carrier modulation. [2]

d) Give the methods of generating SSB-SC-AM. And mention some applications of SSBSC. [3]

e) Define the modulation indices of FM and PM. [2]

f) Give the comparisons between AM and FM. [3]

g) What is signal-to-noise ratio. [2]

h) How to achieve threshold reduction in FM receiver. [3]

i) Explain why some of the information signal is lost during pulse modulation. [2]

j) Write a note on amplitude limiting. [3]

Part-B

(50 Marks)

2. Explain the generation of AM signals using square law modulator. [10]

OR

3. Discus the coherent detection of DSB-SC modulated wave with a block diagram of detector and Explain. [10]

4. Draw the block diagram for the generation and demodulation of a VSB signal and explain the principle of operation. [10]

OR

5. In a coherent detection if carrier applied is $\cos(2\pi f_c t + \phi)$ prove that there is a phase error in the output and output consists not only the message signal but also its Hilbert transform. [10]

6. With a neat block diagram explain the generation of narrow band and wide band FM. [10]

OR

7. Derive the expression for the spectrum of a FM signal with single tone modulation. [10]

8. Draw the block diagram of FM demodulator and explain the effect of noise in detail and compare the performance of AM and FM in the presence of noise. [10]

OR

9. With a neat block diagram explain the pre-emphasis and de-emphasis in FM. [10]

10. Draw the block diagram of a super heterodyne receiver and explain its operation? What are the advantages of this receiver? [10]

OR

11. What is Automatic Gain Controlling radio receiver? What are the different types of AGC, explain in detail? [10]

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