13.

Exam.Code:0905
Sub. Code: 6656

1108
B.E. (Information Technology)
First Semester
IT-103: Basics of Electronics Communication

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

I. Attempt the following:-

a) How much power saving is obtained in the transmission o AM-SSB signals as compared to AM?

b) A single tone modulating signal $y = \cos(15\pi\ 10^3 t)$ modulates a carrier of 10MHz and produces a frequency deviation of 75 kHz. Find the modulation index.

c) How is Digital Modulation better than Analog Modulation?

d) Define Companding.

e) What is the difference between PSK and DPSK? (5x2)

UNIT – I

II. a) Define Amplitude Modulation. A 400 W carrier is modulated to a depth of 75%. Calculate the total power in the modulated wave.

b) Explain the principle and working of a Balanced Modulator. (5,5)

III. a) An FM wave is represented by the voltage equation:
$v = 10 \sin(16\pi \times 10^6 t + 20\sin 2\pi \times 10^3 t)$. Find:-

i) Carrier frequency
ii) Modulating frequency
iii) The modulation index
iv) Maximum deviation in the FM wave
v) Power dissipated of the FM signal

b) What is the relationship between the Frequency and Phase Modulation Systems? (5,5)

P.T.O.

IV. Write technical notes on:-
   a) Super heterodyne Receiver
   b) Comparison of Frequency and Phase Modulation

UNIT – II

V. a) How are PPM signals demodulated?

   b) For a PAM signal having maximum frequency 3kHz, sampling frequency 8kHz and pulse duration 0.1 Ts, calculate the transmission bandwidth. (5,5)

VI. a) Differentiate between coherent reception and non coherent detection of FSK signals.

   b) How is ADM better than DM? (5,5)

VII. Explain in detail the principle of transmission and reception of ASK signals. How is error calculated in ASK signals? (10)

x-x-x