

Exam.Code:0905

Sub. Code: 6656

1129

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. 1 which is compulsory and selecting two questions from each Unit. Assume missing data, if any.

X-X-X

- I. Attempt the following:-
- Where do we use AM?
 - What is attenuation?
 - What is sampling?
 - An FM signal with a deviation δ is passed through a mixer, and has its frequency reduced fivefold. What will be the deviation in the output of the mixer?
 - Draw constellation diagram of QPSK.
 - What is Companding?
 - What is quantization?
 - Define the term signal to noise ratio.
 - What is demodulation?
 - Define amplitude modulation index. (10x1)

UNIT - I

- II. a) Discuss principle and generation of DSB/SC modulation? What are its advantages and disadvantages over A3E modulation?
- b) What is super heterodyne receiver? Explain in detail. (2x5)
- III. a) What is the frequency deviation of an FM transmitter, when its modulation index is 7 in a practical bandwidth of 160 kHz?
- b) How a balanced modulator is able to demodulate SSB signals?
- c) What is frequency modulation? Of the various advantages of FM over AM, identify & discuss those due to the intrinsic qualities of frequency modulation. (3,4,3)

P.T.O.

(2)

- IV. a) A modulating signal $m(t) = 10 \cos(2\pi \times 10^4 t)$ is amplitude modulated with a carrier signal $c(t) = 50 \cos(2\pi \times 10^5 t)$. Find the modulation index, the carrier power, and the power required for transmitting AM wave.
- b) An FM wave is given by $s(t) = 20 \cos(8\pi \times 10^6 t + 9 \sin(2\pi \times 10^4 t))$. Calculate the frequency deviation, bandwidth and power of FM wave. (2x5)

UNIT - II

- V. a) What is Pulse Width Modulation? How is it generated? What other names does it have? How is it demodulated?
- b) What is PPM? Discuss its applications. (6,4)
- VI. a) Explain adaptive delta modulation & demodulation in detail?
- b) Define and describe PAM, and explain with waveforms.
- c) What is fundamental difference between the pulse modulation, on the one hand, and frequency and phase modulation on the other? (5,1,2)
- VII. a) What is FSK? Draw the block diagram of FSK modulator and demodulator and explain their working.
- b) How do we calculate error probability of BPSK? (5,5)