Exam.Code:0935
Sub. Code: 6983

6982

1129

B.E. (Electrical and Electronics Engineering)
Fifth Semester
EE-507: Communication Engineering

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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

,3,4)

I. Attempt the following:-

a) Define heterodyning.

b) Draw power spectrum of a QPSK signal.

c) List disadvantages of a PSK system.

d) Define Quantization.

e) What is the relation between BER and SYMBOL error rate?

,3,3)

f) List properties of Matched filters.

g) What is Companding?

h) Define Nyquist rate.

i) Why carrier frequency is required in communication systems?

j) What is Modulation index? (10x1)

UNIT – I

II. a) In a given FM system a 7KHz modulating signal modulates 107.8MHz carrier wave with frequency deviation of 50KHz. Determine modulation index and carrier swing in FM signal. What are the highest and lowest frequencies attained by the FM signal?

b) List characteristics of RF amplifiers. Explain working principle of a super heterodyne receiver. (2x5)

III. a) Show that the figure-of-merit for DSB-SC system is unity.

b) Explain working principle of a phase-locked-loop Direct FM transmitter. (2x5)

IV. a) Discuss operation of a ratio detector.

b) Explain the function of pre-emphasis and de-emphasis circuits in FM system. (2x5)

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Sub. Code:

UNIT – II

V. a) Discuss Adaptive delta modulation scheme in detail.

b) Using signal space diagram, calculate the error probability for QPSK modula

(2x5

VI. a) Discuss FSK modulation scheme using relevant diagram and waveforms.

b) What is Band-width consideration? Discuss method of detecting PAM. PWM a PPM signals?

(2x5)

VII. a) Using binary PCM, a given signal of 4.2MHz (Band-width) is transmitted over communication channel with 512 quantization levels. Determine.

i) Code Word length

ii) Transmission band width

iii) Final bit rate

iv) Output signal to quantization noise ratio.

b) Prove that probability of error in a PSK system is $P_e = \frac{1}{2} ERFC \sqrt{\frac{E}{N_0}}$ (2x5)

x-x-x