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B.Tech. (ECE) (ETE) (Sem. - 4th)

ANALOG COMMUNICATION SYSTEMS

SUBJECT CODE : BTEC - 401 (2011 Batch)

Paper ID : [A1189]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory** consisting of Ten questions carrying Two marks each.
2) Section - B contains Five questions carrying Five marks each and students has to attempt any **Four** questions.
3) Section - C contains Three questions carrying Ten marks each and students has to attempt any **Two** questions.

Section - A

Q1)

a) What is Modulation and its need?

b) Compare narrow band FM and wide band FM.

c) A single side band signal contains 1 KW. How much power is contained in the side bands and how much in the carrier?

d) How power distribution is done in AM wave?

e) Briefly explain the Armstrong method of generating FM.

f) Draw a well labelled circuit diagram of slope detector for detecting FM.

g) What is the difference between SSB and conventional AM transmission?

h) Why we use concept of AGC in receivers?

i) What is Double spotting? How it can be minimised?

j) Justify square law equation.

Section - B

Q2) Draw and explain the block diagram of the Ring Modulator for AM transmission.

Q3) A transmitter with a 10KW carrier transmits 11.2 KW when modulated with a single sine wave. Calculate:

a) The modulation index, if the carrier is simultaneously modulated with another sine wave at 50% modulation,

b) The total transmitted power.

Q4) Explain the FM Quadrature Demodulator with the help of suitable block diagram.

Q5) A 107.6 MHz carrier is frequency modulated by a 7KHz sine wave. The resultant FM signal has frequency deviation of 50Hz.

a) Find the carrier swing of FM signal.

b) Determine the highest and lowest frequencies attained by the modulated signal.

c) What is the modulation index of FM wave?

Q6) Explain any Pulse Width Modulation and Demodulation technique.

Section - C

Q7) a) How phase modulation is derived from Frequency modulation? Explain with the help of derivation.

b) Briefly describe the following terms:

i) Selectivity.

ii) AGC.

iii) Multiplexing.

iv) Pre-emphasis and de-emphasis.

v) Modulation Index of AM.

Q8) With the help of block diagram explain characteristics of superhetrodyne AM receiver.

Q9) Explain the basic principle behind the generation of SSB-SC. With the help of derivation, explain the phase-shift method for SSB generation.

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