Code No. 3135 / O

FACULTY OF ENGINEERING

B.E. 3/4 (ECE) I - Semester (Old) Examination, November / December 2016

Subject : Analog Communication

Time : 3 Hours   Max. Marks: 75

Note: Answer all questions from Part-A and answer any five questions from Part-B.

PART – A (25 Marks)

1 Define the term modulation index for AM.   (2)

2 Write the methods of generation for SSB-SC signal.   (2)

3 Derive an expression for single tone FM wave   (3)

4 In an FM system if modulation index is doubled and modulating frequency is reduced
four times, what is the effect on the frequency deviation?   (2)

5 Write the advantage of super heterodyning.   (3)

6 Explain the operation of a noise limiter in FM receivers?   (3)

7 State central limiting theorem.   (2)

8 Explain noise equivalent bandwidth.   (3)

9 Explain in brief about Bit interleaving in TDM.   (3)

10 What is need of Pulse modulation?   (2)

PART – B (50 Marks)

11 (a) Explain the operation of a balanced slope detector, giving circuit diagram
       and response characteristic. What are its draw backs?   (5)
   (b) Derive an expression for the total transmitter power in the AM wave. Also
       obtain its efficiency.   (5)

12 (a) Explain the Armstrong method of FM generation.   (6)
   (b) An FM wave is represented by $V = 12 \sin (6 \times 10^8 t + 5 \sin 1250t)$. Find
       the carrier and modulating frequencies, the modulation index and
       maximum deviation of FM wave. Is it narrow band or wideband FM? What
       power this FM will dissipate in a 10 ohm resistor?   (4)

13 (a) Draw the block diagram of Super heterodyne receiver designed to receive
       FM signals and explain its working.   (5)
   (b) Explain about choice of intermediate frequency in AM receiver.   (5)

14 (a) Find the power spectral density of Noise in case of SSB-SC and also calculate
        Figure of merit.   (6)
   (b) Calculate the system noise of a receiver that has a bandwidth of 6 MHz and
       an input noise temperature of $25°$ K to the antenna. The equivalent noise
       resistance of receiver is 75 ohms. The antenna has a resistance of
       72 ohms. Assume $T_o=290°$K.   (4)

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