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Roll No. .....

National Institute of Delhi

B.Tech (ECE), 4th Semester

Subject: Analog Communication **Time:** 2 Hrs

Sub Code: ECB-203 **Max. Marks:** 25

Note: Attempt all the questions.

Q.1

(a) Define Modulation. Explain the need of Modulation.

(b) Calculate the thermal noise power available from any resistor at room temperature (290 K) for a bandwidth of 2 MHz. Also calculate the corresponding noise voltage given that R=100 Ω.

(c) SSB is not used for Broadcasting. Justify the statement.

(d) Discuss the practical disadvantages of TRF Receivers.

(e) An AM transmitter supplies 10 kW of carrier power to a 50 Ω load. It operates at a carrier frequency of 1.2 MHz and is 80 % modulated by a 3 kHz sine wave.

(i) Sketch the signal in frequency domain with frequency and power scales. Show the power in dBW.

(ii) Calculate the total average power in the signal in watts and dBW.

(iii) Calculate the RMS and peak voltage of signal.

(5*3=15)

Q.2 For a two-stage amplifier, derive the equivalent noise resistance of the cascaded amplifier as seen at the input of first stage. (5)

Q.3 Explain the working of Ring modulator for generation of DSB-SC signal. Draw all relevant diagrams and signals. (5)

**********BEST WISHES**********