SCHOOL OF ENGINEERING AND TECHNOLOGY

D.C. COURT JUNCTION, DIMAPUR

End term Examination, DECEMBER 2016

Course Code:	EC5T03	**Semester:**	V	**Total Marks**	60
Course Name:	**Analog Communication**			**Time:**	3 hrs

PART A

Answer the following questions (10×1=10)

1. The antenna height for a frequency of 25 KHz is _____.
2. The voltage of a noisy resistor is given by the relation _____.
3. The frequency instability in generation of FM with direct method is due to _____.
4. Frequency spectrum for MF is ____ and UHF is _____.
5. Which of the following modulation system is affected by QNE at the receiver: a) DSB-FC b) DSB-SC c) SSB-SC d) VSB
6. What is critical modulation?
7. Give four applications of communication system.
8. What is partition noise?
9. Define vestigial sideband (VSB).

10. What do you understand by threshold effect in envelope AM receivers.

PART B

Answer all the questions

1. A receiver connected to an antenna whose resistance is 45Ω has an equivalent noise resistance of 20Ω. Calculate the noise figure of the receiver in dB and its equivalent noise temperature. **(2)**
2. An angle modulated signal is given by:

   $S(t) = 10 \cos [2\pi 10^8 t + 16 \sin 2\pi 10^4 t]$. Find Δf and ΔΦ. **(3)**
3. A modulating signal $10\sin (2\pi 10^3 t)$ is used to modulate a carrier signal $20\sin (2\pi 10^5 t)$. Determine a) the modulation index

   b) Percentage modulation c) frequencies of sideband components and their amplitudes. What will be the amplitude of modulated signal? **(3)**

Answer any three (3×4 = 12)

4. What are pre-emphasis and de-emphasis? Explain.
5. Show that $P_t = 1.5P_c$.
6. Explain the working of super heterodyne receiver.
7. What are the types of FM? Determine its bandwidths using Carson's rule.

PART C

Answer any one (1×6 = 6)

1. Using phase shift method, explain the generation of SSB-SC.
2. Discuss the generation of DSB-SC with the help of balanced modulator.

Answer any three (3×8 = 24)

3. Explain the demodulation of FM using PLL method.
4. Analyze the noise performance in DSB-SC receiver.
5. Discuss the generation of low level AM using square law diode modulation.
6. Analyze the noise performance in FM receiver.

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