Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

Seat No.	

[5057]-248

S.E. (E&TC) (II Sem.) EXAMINATION, 2016

ANALOG COMMUNICATION

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. **:—** (*i*) Attempt Q. No. **1** *or* Q. No. **2**, Q. No. **3** *or* Q. No. **4**, Q. No. **5** *or* Q. No. **6**, Q. No. **7** *or* Q. No. **8**.

(*ii*) Neat diagrams must be drawn wherever necessary.

(*iii*) Figures to the right indicate full marks.

(*iv*) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) State and compare different SSB generation methods. [6]

(*b*) An angle modulated signal is described by the equation :

$$\psi_{EM}(t) = 10 \cos (2\pi f_c t + 4 \sin 2\pi f_m t)$$

where f_c = 10 MHz and f_m = 1000 Hz.

(*i*) Determine the Modulation Index. Estimate the transmitted signal bandwidth.

(*ii*) Repeat (*i*) f_m is doubled. [6]

P.T.O.

Or

2. (*a*) With the help of spectrum and block diagram explain VSB modulation. What is its application ? [6]

(*b*) Derive an expression for frequency and phase modulated wave. Sketch their waveforms for a sinusoidal input. [6]

3. (*a*) Explain distortions present in simple diode detector. [6]

(*b*) State various sources of noise with examples. Explain the following types of noise in detail (any *two*) : [6]

(*i*) Thermal noise

(*ii*) Low frequency noise

(*iii*) Shot noise.

Or

4. (*a*) Explain performance characteristics of radio receiver with suitable graphs. [6]

(*b*) Consider a receiving system consisting of an RF amplifier with a noise figure of F1 = 2 dB and a gain of 9 dB followed by a mixer with a noise figure of F2 = 9 dB and a conversion gain of 15 dB. Calculate overall noise figure and noise temperature. [6]

5. (*a*) Describe threshold in angle modulation. [7]

(*b*) Explain the performance of DSBSC in presence of noise. [6]

Or

6. (*a*) Explain the performance of AM in presence of noise. [7]

(*b*) Explain pre-emphasis and de-emphasis in FM. [6]

7. (*a*) Explain aliasing and different ways to avoid aliasing. [7]

(*b*) With the help of block diagram explain transmitter and receiver for Pulse code modulation. [6]

Or

8. (*a*) Explain types of sampling with waveform. Which type is used for practical application ? [7]

(*b*) With the help of neat diagram explain PWM. [6]