Total No. of Questions—**8**] [Total No. of Printed Pages—**2**

Seat No.	

[4857]-1048

S.E. (Electronics/E&TC) (Second Semester) EXAMINATION, 2015
ANALOG COMMUNICATION
(2012 PATTERN)

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

N.B. **:—** (*i*) Neat diagrams must be drawn wherever necessary.
(*ii*) Figures to the right indicate full marks.
(*iii*) Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
(*iv*) Assume suitable data, if necessary.

1. (*a*) Explain phase shift method of generation of SSB-SC signals. [6]

(*b*) A frequency modulated signal is given by :

$$x_c(t) = 10 \cos [2\pi \times 10^8 t + 5 \sin 2\pi \times 200t]$$

Determine :

(*i*) The carrier frequency

(*ii*) Peak frequency deviation

(*iii*) The modulation index. [6]

Or

2. (*a*) Explain the ring modulator method to generate DSB-SC signal with waveform. [6]

(*b*) Give comparison between FM and PM. [6]

3. (*a*) Explain principle of operation of envelope detector. State the conditions to avoid distortion. [6]

(*b*) Derive Friss formula considering only three amplifiers in cascade. [6]

P.T.O.

Or

4. (*a*) Explain superheterodyne receiver characteristics : [6]

(*i*) Sensitivity

(*ii*) Selectivity

(*iii*) Fidelity.

(*b*) A low noise amplifier of 30 K equivalent noise temperature and 20dB available power gain precedes a microwave receiver which has a noise figure of 25 dB. What is the overall equivalent temperature, if the room temperature is 27°C. [6]

5. (*a*) Derive equation of figure of merit for noise contaminated DSB-SC system. [7]

(*b*) Critically compare the noise performance of AM, DSB-SC and SSB-SC system. [6]

Or

6. (*a*) Show that a SSB-SC system gives the same destination SNR as a base band system. [7]

(*b*) Explain the need of pre-emphasis and de-emphasis in the case of FM system. How is it implemented ? [6[

7. (*a*) Explain how a PAM signal may be generated. How can it be demodulated ? [7]

(*b*) State the low pass sampling theorem and briefly explain its significance. [6]

Or

8. (*a*) Describe with the help of neat sketches of waveforms methods of generation of PDM/PWM and PPM. [7]

(*b*) What is aliasing ? How can it be avoided ? [3]

(*c*) Draw and explain a circuit for flat top sampling. [3]