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[5352]-538

S.E. (Electronics/E & TC) (II Semester) EXAMINATION, 2018

ANALOG COMMUNICATION

(2015 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) Assume suitable data, if necessary.

1. (a) What are the different types of amplitude modulation ? Explain any *one* in detail. [6]
- (b) For receiver with IF and RF frequencies of 455 kHz and 900 kHz respectively. Determine : [6]
- (i) The local oscillator frequency
- (ii) Image frequency
- (iii) Image frequency rejection ratio for Q of 80.

Or

2. (a) Draw and explain phase shift method of SSB-SC modulator. [6]
- (b) AM transmitter has carrier of 550 Watt and modulated at depth of 65%, find the total power in transmitted wave and power saving in the following cases : [6]
- (i) DSBSC
- (ii) SSBSC.

P.T.O.

3. (a) Explain the performance characteristics of receiver with response curve : [6]
- (i) Sensitivity
  - (ii) Selectivity
  - (iii) Fidelity.
- (b) A carrier is frequency modulated with a sinusoidal signal of 2 kHz resulting in frequency deviation of 5 kHz :
- (i) Find bandwidth and modulation index of modulated wave.
  - (ii) If amplitude of modulating sinusoidal signal is increased by 3 and its frequency is halved. Find maximum frequency deviation and bandwidth of new modulated signal. [6]

Or

4. (a) What neat phasor diagram explain balanced slope detector in FM. [6]
- (b) FM wave is represented by the following equation,  
 $V = 10 \sin [5 \times 10^8 t + 4 \sin 1250 t]$ . Calculate :
- (i) Carrier and modulating frequency
  - (ii) Modulation index and maximum deviation
  - (iii) Power dissipated by FM wave in  $5\Omega$  resistor. [6]
5. (a) Derive the expression to calculate effective noise for series and parallel connection for resistors. [7]
- (b) Define the terms : [6]
- (i) Noise figure 1D Noise temperature
  - (ii) Noise bandwidth.

*Or*

6. (a) A mixer stage has a noise figure of 20 dB and this is preceded by amplifier that has a noise figure of 9 dB and an available power gain of 15 dB. Calculate the overall noise figure referred to input. [6]
- (b) Explain the performance of SSBSC in the presence of noise. [7]
7. (a) With suitable example, explain band limited and time limited signal. [6]
- (b) Discuss PWM generation and detection in detail. [7]

*Or*

8. (a) State sampling theorem and discuss its types. [6]
- (b) Differentiate between pulse analog modulation and pulse digital modulation. Discuss pulse code modulation. [7]