Total No. of printed pages = 6

**Et-501/CE-II/5th Sem/2018/M**

# COMMUNICATION ENGINEERING – II

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

## PART – A

Marks – 25

Answer *all* the questions.

1. State true or false : 1×10=10

   (i) The amplifiers which are inserted at intervals to amplify the signal and compensate for transmission loss on the cable are called repeaters.

   (ii) According to Shanon's sampling theorem, the lowest sampling frequency is double the bandwidth.

   (iii) Modulation is primarily accomplished to produce side bands.

   (iv) Frequency modulation gives more noise in comparison to amplitude modulation.

[Turn over

(v) Diode demodulator will ignore the frequency modulation.

(vi) In FM, the amplitude of the carrier remains constant.

(vii) Superheterodyne receivers are widely used as they are cheaper and provide higher amplification and improved selectivity.

(viii) Superheterodyne principles provides selectivity at IF stages.

(ix) PCM needs small bandwidth.

(x) In a PCM system of telemetry the quantization noise depends on the sampling rate only.

2. Match the following : 1×5=5

| List-I | List-II |
|---|---|
| (i) TV | (a) 535 kHz–1600 kHz |
| (ii) Radio | (b) Both AM and FM are used |
| (iii) Radar | (c) Digital system |
| (iv) Data communication | (d) PCM is used |
| (v) AM broadcast | (e) Either AM or FM is used. |

3. Select the correct option : $1 \times 10 = 10$

(i) In a communication system, noise is most likely to affect the signal

(a) at the transmitter

(b) in the channel

(c) at the destination.

(ii) Indicate the false statement.

Modulation is used to

(a) reduce bandwidth used

(b) separating differing transmissions

(c) ensure that intelligence may be transmitted over long distances.

(iii) The value of a reistor creating thermal noise is doubled. The noise power generation is therefore

(a) halved (b) quadrupled

(c) doubled (d) unchanged.

(iv) The following is not a useful quantity for comparing the noise performance of receivers.

(a) Input noise voltage

(b) Equivalent noise resistance

(c) Noise figure.

(v) Indicate the noise whose source is in a category different from the other.

(a) Solar noise

(b) Cosmic noise

(c) Atmospheric noise.

(vi) Demodulation

(a) is performed at the transmitting station

(b) removes side bands

(c) is opposite of modulation.

(vii) A CE amplifier is characterized by

(a) low voltage gain

(b) signal phase reversal

(c) very high output impedance.

(viii) If the intermediate frequency is very high (indicate false statement).

(a) image frequency rejection is very good

(b) the slectivity will be poor

(c) tracking will be improved.

(ix) One of the following can not be used to demonstrate SSB

(a) Product detector

(b) Double balanced moderator

(c) Bipolar transistor balanced moderator

(d) Complete phase-shift generator.

(x) In order to separate channels in a TFDM receiver, it is necessary to use

(a) AND gates

(b) Band pass filters

(c) Integrator.

## PART – B

Marks – 45

Answer *all* the questions.

4. Discuss the construction and working of an envelope detector. 4+4=8

5. What is multiplexing ? State its types. Explain each type. 1+1+3+3=8

6. What is noise ? Explain the different types of noise found in communication receivers. 2+6=8

7. Explain PAM and PWM with suitable diagrams. 4+4=8

8. Draw the block diagram of an AM super heterodyne receiver and explain its working. 4+4=8

9. Differentiate between AM and FM systems. 5