

Scheme G
Sample Test Paper – I

Course Name : Diploma in Digital Electronics

Course Code : DE

Semester : Fourth

Subject Title : Principles of Analog communication

Marks : 25

17439

Time: 1 hour

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. Attempt any THREE of the following.

(9 Marks)

- i) Draw basic block diagram of electronic communication system & state function of each block.
- ii) Describe AM signal generation using BJT modulator.
- iii) Define power density. Give its mathematical expression.
- iv) Define antenna radiation resistance and write the equation of antenna efficiency.

Q2. Attempt any TWO of the following.

(8 Marks)

- i) If standard AM signal is modulated to a depth of 50%.
The unmodulated carrier power is 70kw. Calculate a) Total transmitted power
b) Power in each side band.
- ii) Describe FM signal generation using IC566.
- iii) Explain the ground wave propagation with concept diagram.

Q 3. Attempt any TWO of the following.

(8 Marks)

- i) Compare PAM & PWM with respect to definition & Waveforms
- ii) Explain Tropospheric scatter propagation with the help of diagram.
- iii) Define bandwidth & beamwidth of an antenna with neat sketch

Scheme G
Sample Test Paper – II

Course Name : Diploma in Digital Electronics

Course Code : DE

Semester : Fourth

Subject Title : Principles of Analog communication

Marks : 25

17439

Time: 1 hour

Instructions:

- 1 All questions are compulsory
1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

Q1. Attempt any THREE of the following.

(9 Marks)

- i) Draw structural diagram of following horn antenna.
a) Pyramidal b) Circular
- ii) State the values of IF for – a) AM radio receiver. b) FM radio receiver.
- iii) State the principle of automatic gain control.
- iv) What is colour burst? Why it is transmitted along with composite video signal?

Q 2. Attempt any THREE of the following.

(8 Marks)

- i) Draw the diagram of folded dipole antenna & describe its radiation pattern.
- ii) Describe the application of PLL as FM demodulator with the help of diagram.
- iii) Explain with sketch photoemission technique to generate video signal.

Q.3 Attempt any TWO of the following.

(8 Marks)

- i) Draw the AGC characteristic curves & differentiate between simple AGC & delayed AGC.
- ii) What is picture resolution? Explain horizontal resolution.
- iii) Draw block diagram of signal distribution in a cable TV system.
Explain its operation.

Scheme G
Sample Question Paper

Course Name : Diploma in Digital Electronics

Course Code : DE

Semester : Fourth

Subject Title : Principles of Analog communication

Marks : 100

17439

Time: 3 hour

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. A) Attempt any SIX of the following. (12 Marks)

- i) Compare analog signal with digital signal with respect to a) Definition b) Advantages.
- ii) Draw the waveforms for modulating signal, carrier and corresponding FM signal.
- iii) Explain the effect of fading on transmission of signals.
- iv) Draw the radiation pattern for resonant antenna having length $\lambda/2$ and $L = \lambda$
- v) Calculate image frequency if the signal frequency is 1000kHz and intermediate frequency is 455kHz.
- vi) State Grassman's Law and its significance.
- vii) Compare vidicon and plumbicon camera tubes, with respect to principle and advantage.
- viii) State applications of MATV.

B) Attempt any TWO of the following. (08 Marks)

- i) Define modulation. Explain need of modulation.
- ii) Define pre emphasis and De-emphasis with typical circuit diagram.
- iii) Draw typical amplitude modulated waveform for lower & higher modulation index.

Q 2. Attempt any FOUR of the following. (16 Marks)

- i) For AM transmission having carrier power 50 kw, modulated to a depth of 60%, Calculate-

- a) Total transmitted power b) power in each side band.
- ii) Draw block diagram of Armstrong modulation system. Explain the function of balanced modulator.
- iii) a) Calculate modulation index in FM if modulating frequency is 1KHz and a frequency deviation is 2.25KHz.
b) Draw the circuit diagram of PWM generator using IC555.
- iv) Define NOISE. State various types of internal & external noise. Give causes & effects of thermal noise.
- v) Explain with diagram effect of ionosphere on sky waves of varying incident angle.
- vi) Define skip distance and maximum usable frequency with suitable sketch.

Q 3. Attempt any FOUR of the following.

(16 Marks)

- i) Compare pulse amplitude modulation with pulse width modulation with respect to definition, waveforms, and applications.
- ii) Describe the ground wave propagation with diagram.
- iii) Write one application of following antennas.
a) Loop antenna b) Yagi-uda antenna
ii) Dish antenna d) Horn antenna
- iv) Distinguish between folded dipole & straight dipole antenna with respect to construction, input Impedance, radiation pattern & application.
- v) Define Polarization & Beamwidth of an antenna with neat sketch.
- vi) Draw a sketch of half wave dipole. Show current and voltage distribution in it.

Q 4. Attempt any FOUR of the following.

(16 Marks)

- i) Draw a block diagram of AM super heterodyne radio receiver. Draw waveforms at the output of each block.
- ii) Define following characteristics of AM radio receiver a) Sensitivity b) Selectivity
c) fidelity d) Noise figure.
- iii) Differentiate between balanced slope detector and slope detector on the following points.
a) Characteristics b) Advantages & disadvantages
- iv) Explain the application of PLL as FM demodulator with block diagram.
- v) Describe three point tracking with diagram.
- vi) Describe additive colour mixing. Draw additive colour circle diagram.

Q 5. Attempt any FOUR of the following.

(16 Marks)

- i) Draw the circuit diagram of self excited BJT mixer. State its operating principle.
- ii) Draw the block diagram of FM receiver. State the function of following blocks.
 - a) IF amplifier
 - b) Limiter
- iii) Define Luminance, Hue, Saturation and compatibility as applied to colour TV system.
- iv) Draw a sketch of horizontal blanking pulse. State the purpose of horizontal sync.pulse front porch and back porch.
- v) Explain interlaced scanning with neat sketch.
- vi) List any eight CCIRB TV standards.

Q 6. Attempt any FOUR of the following.

(16 Marks)

- i) Describe equalizing pulses & post equalizing pulses.
- ii) Explain with sketch photo emission technique to generate video signal.
- iii) Draw block diagram of PAL-D decoder. State function of H & V Demodulator.
- iv) Explain home security application of CCTV system.
- v) Explain working principle vidicon camera tube with neat sketch.
- vi) Draw block diagram of PAL colour encoder. Explain how composite colour signal is formed.

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