17439

21314

3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any <u>SIX</u> of the following:** **12**

i) Draw the block diagram of Electronic communication system.

ii) Define modulation index in FM ? Write it's equation.

iii) Why electromagnetic waves are said to be transverse waves.

iv) List different types of antennas (any four)

v) Define IF with respect to AM radio receiver. Give the value of Intermediate frequency.

vi) Why TV width is greater than height ? Define aspect ratio.

vii) What is the function of camera tube in TV.

viii) Compare NTSC and PAL system with respect to field frequency and line frequency.

Marks

b) **Attempt any <u>TWO</u> of the following:** **08**

i) Define modulation and explain need of modulation.

ii) Draw the frequency spectrum of A.M. (Amplitude modulation). List it's four features.

iii) Calculate the modulation index if modulating frequency in FM is 1 KHz and maximum deviation is 1.6 KHz and also calculate bandwidth.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Explain the effect of modulation index on AM wave with waveform.

b) Compare AM with FM (any four points).

c) Define pulse modulation. Give the types of pulse modulation.

d) State and explain the concept of transmission bandwidth.

e) What is electromagnetic polarization ? Explain types of polarization.

f) Explain with sketch - sky wave propagation.

3. Attempt any <u>FOUR</u> of the following: **16**

a) Compare PAM, PWM and PPM system. (any four)

b) Describe various layers of ionosphere.

c) List specifications of Yagi-Uda Antenna and draw proper diagram of Yagi-Uda antenna.

d) Draw folded dipole antenna and it's radiation pattern.

e) List the characteristics of non resonant antenna. Draw it's radiation pattern.

f) Write one application of following antennas:

i) Loop antenna

ii) Yagi-Uda antenna

iii) Dish antenna

iv) Horn antenna

Marks

4. Attempt any <u>FOUR</u> of the following: **16**

a) Draw and explain block diagram of AM Superheterodyne Receiver.

b) Define the following terms with respect to AM receiver.

i) Sensitivity

ii) Selectivity

iii) Fidelity

iv) Image frequency rejection.

c) Draw the block diagram of FM radio receiver and explain it's working.

d) State the use of limiter stage. Give reason why limiter stage is not used before ratio detector ?

e) Explain working of simple diode detector with diagram.

f) What is interlaced scanning in TV ? Explain in brief.

5. Attempt any <u>FOUR</u> of the following: **16**

a) Draw and explain AGC characteristics for delayed and simple AGC.

b) What are the advantages and disadvantages of balanced slope detector.

c) Define:

i) Hue

ii) Saturation

iii) Contrast

iv) Viewing distance with respect to TV.

d) Draw composite video signal and label it.

e) Describe additive colour mixing with circle diagram.

f) List any eight CCIRB TV standards.

Marks

6. Attempt any <u>FOUR</u> of the following: **16**

a) Draw a sketch of horizontal blanking pulse and state the function of horizontal sync pulse, front porch and back porch.

b) Compare vidicon and plumbicon camera tubes (any four points)

c) Draw and explain the block diagram of PAL-D decoder.

d) Write any four applications of CCTV system.

e) Explain working principle of PIL picture tube.

f) Explain MATV with block diagram.

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