17439

15116

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) Assume suitable data, if necessary.

(6) Use of Non-programmable Electronic Pocket Calculator is permissible.

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

Marks

1. a) **Attempt any SIX of the following:** **12**

(i) Define:

1) Analog signal

2) Digital signal

(ii) Compare amplitude and frequency modulation (any two points).

(iii) Explain the effect of fading on transmission of signals.

(iv) Calculate image frequency if the signal frequency is 2000 kHz and intermediate frequency is 650 kHz.

(v) Draw the radiation pattern of loop antenna.

(vi) State Grassman's law and its significance.

(vii) Compare vidicon and plumbicon camera tubes w.r.t. principle and advantage.

(viii) State the application of HDTV.

Marks

b) **Attempt any TWO of the following:** **8**

(i) Explain need of modulation. Give different types of modulation.

(ii) Derive the power relations for AM wave.

(iii) Define pre-emphasis and de-emphasis with typical circuit diagram.

2. Attempt any FOUR of the following: **16**

a) For AM transmission having carrier power 20 kW modulated to a depth of 50%. Calculate:

(i) total transmitted power

(ii) power in each side band

b) Explain generation of FM using reactance modulator.

c) Define noise. Give the causes and effect of thermal noise.

d) Explain generation of FM using IC-566.

e) Discuss about the propagation of electromagnetic waves. Give different types of it.

f) Explain working principle of troposphere scatter propagation.

3. Attempt any FOUR of the following: **16**

a) Compare PAM and PWM (any four points).

b) Describe the concept of actual height and virtual height.

c) Give two applications of horn antenna and dish antenna.

d) Distinguish between folded dipole and straight dipole antenna w.r.t. construction I/P impedance, radiation pattern and application.

e) Define polarization and bandwidth of antenna with neat sketch.

f) Define microstrip antenna. Give different types of it.

Marks

4. Attempt any FOUR of the following: **16**

a) Draw the block diagram of AM super-heterodyne radio receiver. Draw W/F of output of each block.

b) Define following characteristics of AM radio receiver:

(i) fidelity

(ii) selectivity

(iii) sensitivity

(iv) noise figure

c) Draw and explain PLL as FM demodulator.

d) Compare balanced slope detector and slope detector (any four points).

e) Describe the working of delayed AGC circuit.

f) Describe additive colour mixing. Draw additive colour circuit diagram.

5. Attempt any FOUR of the following: **16**

a) Explain working of practical diode detector circuit.

b)

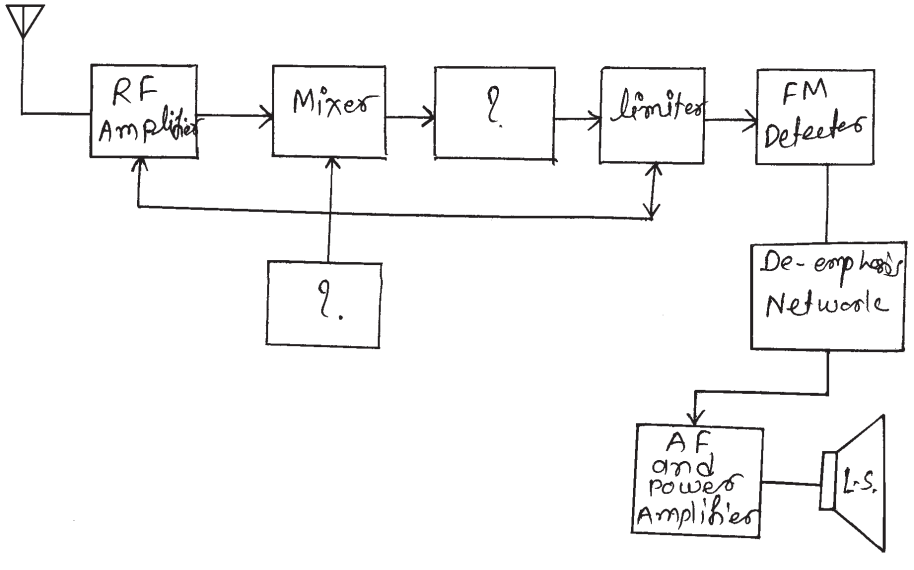

Fig. No. 1

Identify the blocks in above block diagram and state the function of missing blocks.

Marks

c) Define luminance, hue, saturation and compatibility as applied to colour T.V. system.

d) Draw composite video signal and state use of the blanking pulse and colour burst.

e) Explain interlaced scanning with neat sketch.

f) State CCIR-B standards for colour signal transmission and reception.

6. Attempt any FOUR of the following: **16**

a) Describe the working principle of colour picture tube.

b) Describe use of equalizing pulses.

c) Draw block diagram of MATV. Give any two application of it.

d) Explain home security application of CCTV system.

e) Explain working principle of plumbicon camera tube with neat sketch.

f) Draw and explain colour T.V. transmitter.

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