Subject: TELEVISION ENGINEERING

Time: 3 Hours **Max. Marks: 100**

JUNE 2011

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. The horizontal scanning frequency as per NTSC system is _____

(A) 625 Hz **(B)** 15625 Hz
(C) 15750 Hz **(D)** 1250 Hz

b. The value of heater voltage for picture tube is _____

(A) 6.3 V **(B)** 7.5 V
(C) 8.4 V **(D)** 9.6 V

c. The colour sub-carrier frequency used in the NTSC colour TV system is _____

(A) 4.58 MHz **(B)** 3.43 MHz
(C) 4.43 MHz **(D)** 3.58 MHz

d. The equalizing pulses are used to

(A) provide equal amplitude of horizontal pulses.
(B) provide identical wave shapes for vertical sync pulses for even and odd fields.
(C) provide synchronization of horizontal and vertical sync pulses.
(D) provide equal timings for horizontal and vertical pulses.

e. Which of the following represents the correct Luminance signal (Y-Signal) _____

(A) Y = 0.59R + 0.3G +0.11B **(B)** Y = 0.3R + 0.59G +0.11B
(C) Y = 0.3R + 0.11G +0.59B **(D)** Y = 0.11R + 0.59G +0.3B

f. In a TV receiver, the colour killer _____

(A) cuts off the chroma stage during monochrome reception.
(B) ensures that no colour is transmitted to monochrome TV receiver.
(C) prevents colour overloading.
(D) makes sure that the colour burst is mistaken for pulses, by cutting off reception during the back porch.

g. The video voltage applied to the picture tube of a TV receiver is fed _____

(A) between grid and ground. **(B)** to the yoke.
(C) to the anode. **(D)** between grid and cathode.

h. According to NTSC system, the frequency range of channel 7 is _____

(A) 60 – 66 MHz. **(B)** 174 – 180 MHz.
(C) 186 – 192 MHz. **(D)** 180– 186 MHz.

i. The EHT voltage in a TV receiver is measured with _____

(A) Multimeter. **(B)** Pattern Generator.
(C) H V Probe. **(D)** Sweep Generator.

j. Contrast control forms a part of which of the following circuit _____

(A) Video Amplifier. **(B)** Audio Amplifier.
(C) Vertical Oscillator. **(D)** Horizontal Oscillator.

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Explain "Horizontal and Vertical synchronization" and "Horizontal and Vertical blanking" used in television systems with suitable diagrams. **(8)**

b. Explain a 6 MHz television broadcast channel with all the details shown on a diagram. **(8)**

Q.3 a. Explain, with a neat diagram, basic structure of an electron gun. **(10)**

b. Explain the precautions to be taken in television picture tubes. **(6)**

Q.4 a. Explain with diagrams how flicker is eliminated in interlaced scanning**.** **(8)**

b. Explain various raster distortions**.** **(8)**

Q.5 a. Explain the following colour television terms; **(8)**

(i) Hue (ii) Saturation
(iii) Chrominance (iv) Luminance

b. Explain how the picture information is decoded in the colour TV receiver. (

Q.6 a. Explain in detail various types of colour video signals. **(9)**

b. Explain colourplexed composite video signal. **(7)**

Q.7 a. Explain (i) Tests for streaking or smear in the picture and
(ii) Tests for ringing in the picture **(8)**

b. Why is a sine-squared test signal better than square wave pulses? **(8)**

Q.8 a. Explain colour band pass amplifier and colour killer circuit functions. **(8)**

b. Explain I and Q demodulators with a neat block diagram. **(8)**

Q.9 a. Explain safety precautions while servicing TV receivers. **(8)**

b. Explain the use of oscilloscope in TV servicing. **(8)**