

Subject: TELEVISION ENGINEERING

Time: 3 Hours

DECEMBER 2010

Max. Marks: 100

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.
- 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. Contrast of a picture is the

- (A) average luminance of picture
- (B) difference between maximum to minimum luminance
- (C) change in chrominance
- (D) rms value of brightness

b. The Bandwidth of video is decided by

- (A) Horizontal resolution
- (B) Brightness
- (C) Contrast
- (D) Number of horizontal lines

c. Differential Phase error is because of

- (A) Change in phase of chrominance signal.
- (B) Change in phase of Luminance signal.
- (C) Change in phase of Sub-carrier.
- (D) Change in amplitude of chrominance.

d. In CCIR-B the transmission channel bandwidth is

- (A) 4.5 MHz
- (B) 5.5 MHz
- (C) 6.0 MHz
- (D) 7.0 MHz

e. Quadrature Amplitude modulation of color difference signal is not used in

- (A) NTSC
- (B) PAL
- (C) SECAM
- (D) HDTV

f. Color Burst helps in

- (A) Chrominance demodulation
- (B) Chrominance Generation
- (C) Differential phase error correction
- (D) Separating luminance and chrominance

g. Ball chart is used to check

- (A) Resolution
- (B) Distribution of colors
- (C) Linearity
- (D) Contrast

h. CRT tubes in TV receivers use

- (A) Electrostatic deflection
- (B) Magnetic deflection
- (C) Electromagnetic deflection
- (D) Magnetstatic deflection

i. The Screen blanks due to loss of

- (A) Vertical Sync
- (B) Horizontal Sync
- (C) HT voltage
- (D) AGC

j. SSD stands for

- (A) Sensitive Semiconductor Diode
- (B) Static Sensitive device
- (C) Semiconductor Single Layer Device
- (D) Schottky Semiconductor Device

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

- Q.2** a. Draw the block diagram of a Television broad casting system and explain each block with its importance. (8)
- b. In a video system there are 517 scanning lines, calculate the Bandwidth requirement for standard aspect ratio and vertical frequency. (4)
- c. What are pickup devices and why are they needed? (4)
- Q.3** a. What are the major differences between color and monochrome picture tubes? Explain how a projection Television works. (8)
- b. Draw the basic structure of electronic gun used in picture tubes. What are the precautions required while handling picture tubes? (HV, X-RAY RADIATION) (8)
- Q.4** a. What is the need of synchronization during reproduction of picture? (4)
- b. What is the need of interlaced scanning? What are the various raster distortions that occur in a picture tube? (8)
- c. Draw a composite video signal as per CCIR-B standards for the last line, vertical blanking and first line of next field, if the pattern to be displayed is chess board. (4)

- Q.5** a. What are primary colors? How are they transmitted? Draw the scheme and explain. (8)
- b. Why luminance and chrominance should be transmitted separately? What are the amplitudes and phase of these signals if yellow color is transmitted? (8)
- Q.6** a. How colour sub-carrier is chosen in colour transmission, explain with example. (8)
- b. How does the colorplexed video signal indicate hue, saturation and luminance of the picture information? (6)
- c. What are standard color television systems? (2)
- Q.7** a. What are the various tests that can be performed using EIA test pattern? (8)
- b. What is a ball chart? How does it help in diagnosing raster faults? (8)
- Q.8** a. Draw the functional diagram of RF section of a T.V. receiver. Indicate waveforms at different block outputs and explain the importance of each of the block. (8)
- b. Draw the chrominance section of a color receiver and explain its working. (8)
- Q.9** a. Name four types of test equipment for servicing of TV and Video and list their uses. (8)
- b. What are the various interference patterns used to diagnose faults? Explain each of these indicating the fault detection and adjustment. (8)