

Time: 3 Hours

**DECEMBER 2013**

Max. Marks: 100

*PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.*

**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 deflection circuits for either the camera tube or the picture tube operate at the frequency of
- (A) 15,750 Hz (B) 60 Hz  
(C) 50 Hz (D) 100 Hz
- b. The camera signal with blanking and sync signal is called
- (A) Video Signal (B) Composite Video Signal  
(C) Blanking Signal (D) Sync Signal
- c. Which of the following distortions is corrected in monochrome receiver by means of small permanent magnets embedded in the front part of the housing of deflection yoke
- (A) Barrel distortion (B) Trapezoidal distortion  
(C) Pincushion distortion (D) Harmonic distortion
- d. One half line spacing between the start positions for scanning even and odd fields produces
- (A) Linear Scanning (B) Line Pairing  
(C) Fishtailing (D) Exact Interlacing
- e. The output of chroma bandpass amplifier is
- (A) C - Signal (B) Y- Signal  
(C) I - Signal (D) Q - Signal

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- f. Which of the following synchronizes the phase of the 3.58 MHz colour oscillator in the receiver
- (A) Sync Signal (B) Colour Burst Signal  
(C) Blanking Signal (D) Video Signal
- g. The Window Signal is useful in testing
- (A) Linearity (B) Vertical Resolution  
(C) Horizontal Resolution (D) Overshoot
- h. The AGC produces a fixed level of video signal at the output of
- (A) IF Amplifier (B) RF Amplifier  
(C) Video Amplifier (D) Audio Amplifier
- i. Contrast control is located in
- (A) Video Amplifier (B) Horizontal Amplifier  
(C) Picture Tube (D) Vertical Amplifier
- j. Which of the following bars are seen when the signal frequency is higher than, but not an exact multiple of the horizontal line scanning frequency
- (A) Vertical bars (B) Horizontal bars  
(C) Diagonal bars (D) Cross bars

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

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- Q.2** a. Explain with the block diagram, the working of TV broadcasting System. (8)
- b. Explain the horizontal and vertical synchronization. (8)
- Q.3** a. Explain the basic construction of electron gun. (8)
- b. Describe briefly an arrangement for projection television. Why is brightness the main problem? (8)
- Q.4** a. Define:
- (i) Scanning raster (ii) The pincushion effect  
(iii) Line pairing (iv) Interline flicker  
(v) The noise effect (10)
- b. Explain why the synchronizing pulses inserted during blanking time. (6)

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- Q.5** a. How does colorplexed video signal indicate hue, saturation and luminance of the picture information. (8)
- b. Show the calculation for Y luminance values of blue, red, green and white. (8)
- Q.6** a. Explain the following terms:
- |                  |                  |     |
|------------------|------------------|-----|
| (i) Luminance    | (ii) Hue         |     |
| (iii) Saturation | (iv) Chrominance | (8) |
- b. Explain the types of colour video signals. (8)
- Q.7** a. Explain the Ball Chart for checking camera linearity. (8)
- b. Define the following sine squared test signals: T, 2T, 12.5T and 20T (8)
- Q.8** a. With the help of a block diagram explain the working of a heterodyne T.V. receiver. (8)
- b. With the help of a diagram give details of color bandpass amplifier with Automatic Color Control (ACC). (8)
- Q.9** Write short notes on the following:-
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|--|-------|
| (i) Interference patterns in the picture |       |
| (ii) Safety during TV servicing          | (8+8) |