

Code: DE68

Subject: TELEVISION ENGINEERING

DiplETE - ET

Time: 3 Hours

JUNE 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. In a 625 line system, the number of active lines left after deducting lines lost in vertical blanking are \_\_\_\_\_

- (A) 600 (B) 585  
(C) 540 (D) 410

b. Monochrome CRT picture tubes employ \_\_\_\_\_

- (A) Electromagnetic deflection and Electromagnetic focusing  
(B) Electrostatic deflection and Electromagnetic focusing  
(C) Electrostatic focussing and Electromagnetic deflection  
(D) None of these

c. Blanking Pulses in Composite Video Signal are used \_\_\_\_\_

- (A) to make retrace lines invisible (B) to make trace lines invisible  
(C) to avoid flicker (D) to obtain correct scanning

d. The complementary colour yellow is produced by the combination of \_\_\_\_\_

- (A) Red and Blue (B) Red and Green  
(C) Green and Cyan (D) Green and Blue

e. Which of the following modulation is used to combine (R-Y) and (B-Y) signals into a single signal called chrominance signal

- (A) Amplitude Modulation (B) Frequency Modulation  
(C) Phase Modulation (D) Quadrature Modulation

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- f. The FM detector that is insensitive to amplitude variations of FM and eliminates the necessity of limiter stage is \_\_\_\_\_
- (A) Balanced Slope detector                      (B) Ratio Detector  
(C) Phase discriminator                          (D) PLL detector
- g. The Vertical Hold Control is located in \_\_\_\_\_
- (A) Video Amplifier                              (B) Picture Tube  
(C) Vertical Oscillator                          (D) Horizontal Oscillator
- h. Which of the following signals is useful for testing transient conditions such as overshoot, ringing, streaking and smear
- (A) Window Signal                              (B) Sine-Squared Signal  
(C) Stair-step Test Signal                      (D) Pattern Signal
- i. Which of the following signals bear the brightness variations of the picture information
- (A) Q Signal                                      (B) I Signal  
(C) Y Signal                                      (D) R-Y Signal
- j. When the brightness control is advanced, the picture grows in size while the focus becomes poorer is called \_\_\_\_\_
- (A) Overshoot                                    (B) Streaking  
(C) Ringing                                        (D) Blooming

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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 the following terms: (6)  
(i) Persistence of vision  
(ii) Flicker in motion pictures
- b. What is meant by blanking? What is the need of blanking pulses? Compare the differences between horizontal and vertical blanking. (7)
- c. List out the applications of Television. (3)
- Q.3** a. Draw the structure of a Tricolor Picture Tube and explain various components used in it. (8)
- b. Explain the various problems associated with Picture Tubes. (8)

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- Q.4** a. Explain the construction of Composite Video Signal for two horizontal lines with neat sketch. (8)
- b. Explain Interlaced Scanning Process with the help of a diagram. (8)
- Q.5** a. With the help of suitable diagrams, explain how the picture information is encoded. (8)
- b. Write short notes on the following color TV terms:  
(i) White  
(ii) Hue  
(iii) Compatibility (3+2+3)
- Q.6** a. Explain how color sync burst and H deflection sync differ in amplitude and frequency. Also explain the difference in timing between the 3.58 MHz color sync burst and 3.58 MHz chrominance signal. (5+5)
- b. Why is the chrominance signal transmitted with the subcarrier suppressed? (6)
- Q.7** a. Draw the block diagram of a monochrome TV receiver. (8)
- b. Explain the function of the following sections: (8)  
(i) Video Detector Section  
(ii) 4.5 MHz Sound IF Section
- Q.8** a. Explain the safety aspects while servicing a TV receiver. (8)
- b. Explain the interference patterns in the picture. (8)
- Q.9** Write short notes on any TWO of the following: (2×8)  
(i) EIA standard for Color-Bar Signals  
(ii) Sine-Squared Test Signals  
(iii) Stair-Step Test Signals