

DiplETE – ET (Current Scheme)

Time: 3 Hours

JUNE 2015

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. A camera tube converts _____
- (A) video signal input to light output
(B) sound input to audio signal output
(C) light input to video signal output
(D) audio signal input to sound output
- b. In a TV system, if the aspect ratio is $\frac{4}{3}$ and the number of lines in each frame is 625. Then the number of picture elements in one frame is _____
- (A) $\frac{4}{3} \times 625$ (B) $\frac{4}{3}(625)^2$
(C) $(625)^2$ (D) $\frac{3}{4}(625)^2$
- c. The video voltage applied to the picture tube of a television receiver is fed _____
- (A) in between grid and ground (B) to the anode
(C) to the yoke (D) in between grid and cathode
- d. In the television system in India, the odd and even fields are scanned _____
- (A) 25 times each (B) 25 times each but alternately
(C) 50 times each (D) 50 times each but alternately

- e. The complete video signal in a TV system consists of _____
 (A) video signal and synchronizing pulses
 (B) video signal, synchronizing pulses and blanking pulses
 (C) video signal corresponding to picture information only
 (D) video signal and blanking pulses
- f. The color subcarrier and sidebands produced by its modulation with the chrominance signals are accommodated in the standard channel width by the process of _____
 (A) frequency adjustment (B) frequency amalgamation
 (C) frequency changing (D) frequency interleaving
- g. An odd number of lines per frame forms part of every one of the world's TV system. This is _____
 (A) done to assist interlace
 (B) purely an accident
 (C) to ensure that line and frame frequencies can be obtained from the same original source
 (D) done to minimize interference with the chroma subcarrier
- h. In a color TV receiver, which of the following incorporates for color saturation control? _____
 (A) chroma detector (B) color killer circuit
 (C) SAW filter (D) chroma amplifier
- i. If luminance signal $Y = 0.3 R + 0.59 G + 0.11 B$, then the hue of $R - Y$ color is _____
 (A) $0.7 R - 0.59 G - 0.11 B$ (B) $-0.7 R + 0.59 G + 0.11 B$
 (C) $1.3 R - 0.59 G - 0.11 B$ (D) none of these
- j. In a TV receiver the raster is normal but there is no sound and quality of picture is poor. The defective part is _____
 (A) power supply
 (B) loudspeaker
 (C) AGC, video IF amplifier, RF amplifier
 (D) horizontal oscillator

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

- Q.2** a. Explain with the block diagram, the working of Cable TV distribution system. (8)
 b. What is meant by picture element? Explain horizontal and vertical scanning with neat diagrams. (8)

Code: DE68

Subject: TELEVISION ENGINEERING

- Q.3** a. What are the main functions of Phosphor Screens? Explain briefly the two types of Phosphor Screens used for color picture tubes. (8)
- b. Explain briefly various picture tube precautions while installing or removing the picture tube. (8)
- Q.4** a. Name the three components of composite video signal and explain the construction of the Composite video signal with neat diagram. (8)
- b. Explain any **TWO** of the following raster distortions with suitable diagrams:-
- (i) Incorrect Aspect Ratio
 - (ii) Pincushion and Barrel distortion
 - (iii) Trapezoidal distortion (4+4 = 8)
- Q.5** a. What is meant by color addition? Draw the color wheel diagram? Explain the importance of Primary and Complementary colors in color TV. (8)
- b. With the help of a block diagram, explain the method of decoding the picture information in color TV. (8)
- Q.6** a. Describe the color sync burst with neat diagram. (7)
- b. Explain the following concepts with reference to color subcarrier frequencies in color TV:-
- (i) Horizontal Scanning Frequency
 - (ii) Vertical Scanning Frequency
 - (iii) Color Frequency (3×3 = 9)
- Q.7** a. Write short notes on any **TWO** of the following:-
- (i) Vector Display
 - (ii) Vectorscope
 - (iii) Monoscope signals (5+5=10)
- b. Compare the causes and effects for streaking and ringing in the picture. (6)
- Q.8** a. With the help of a block diagram, explain the working of chroma section used in color TV receiver. (8)
- b. Explain the significance of color killer circuit in color TV receivers. (8)
- Q.9** Write short notes on the following:-
- (i) TV receiver servicing
 - (ii) Servicing of Video Cameras (2×8 = 16)