

DiplETE – ET (OLD SCHEME)

Code: DE18

Subject: TELEVISION ENGINEERING

Time: 3 Hours

JUNE 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. The channel bandwidth as per CCIR-B 625 line system used in India is _____.
- (A) 6.0 MHz (B) 7.0 MHz
(C) 5.0 MHz (D) 8.0 MHz
- b. The colour burst is placed at _____.
- (A) the back porch of the horizontal sync pulse
(B) the front porch of the horizontal sync pulse
(C) during the vertical blanking period
(D) during equalizing pulses
- c. The colour sub-carrier frequency used in the PAL – B colour TV system is _____.
- (A) 3.58 MHz (B) 33.4 MHz
(C) 4.43 MHz (D) 38.9 MHz
- d. The camera tube based on the photo-emission principle is _____.
- (A) Image Orthicon (B) Vidicon
(C) Plumbicon (D) CCD
- e. Interlacing is used in television to _____.
- (A) produce illusion of motion
(B) ensure that all the lines on the screen are scanned
(C) simplify the vertical sync pulse train
(D) avoid flicker
- 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 CCIR-B 625 line system used in India, the frequency range of Channel 4 is _____.
- (A) 61 - 68 MHz (B) 174-181 MHz
 (C) 54 - 61 MHz (D) 47 - 54 MHz
- i. The EHT voltage in a TV receiver is measured with _____.
- (A) multimeter (B) pattern Generator
 (C) HV Probe (D) sweep Generator
- j. Automatic Brightness 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 in brief “Interlaced scanning” used in television systems. (4)
- b. Derive an expression for the highest modulating frequency in a television system and show that it is nearly 5 MHz in the 625 line monochrome system. (6)
- c. What are post equalizing and pre-equalizing pulses? (6)
- Q.3** a. Explain with the help of suitable sketches, how video signal is developed in a Vidicon camera tube? (8)
- b. Describe the constructional details and working of a PIL colour picture tube. (8)
- Q.4** a. Explain with a block diagram how colour difference signals are generated? (8)
- b. What is vestigial sideband transmission and why it is used for transmission of TV picture signals? (8)
- Q.5** a. Explain the working of a monochrome TV receiver with a neat block diagram. (10)
- b. Explain the operation of RF Tuner with a neat block diagram. (6)
- Q.6** a. Describe with a block diagram, how various patterns are generated in a video patterns generator? Explain typical

applications of this instrument for testing and aligning a TV receiver. (11)

b. Draw a neat sketch of a composite video signal and explain various terms in it. (5)

Q.7 a. Sketch Turnstile Array antenna and explain the function of various elements in it. (6)

b. What are the advantages of AGC in a TV receiver? Explain with a neat circuit the working of keyed AGC using transistor. (10)

Q.8 a. Explain frequency interleaving technique used in colour television transmission system. (8)

b. Explain the block diagram of PAL - D Encoder. (8)

Q.9 a. Explain positive and negative modulation and compare them. (8)

b. Explain with a neat block diagram the function of monochrome TV transmitter. (8)