ROLL NO. _____

Code: DE68 **Subject: TELEVISION ENGINEERING**

DipIETE – ET (Current Scheme)

Time: 3 Hours **June 2017** **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 525 line TV system, the frame frequency is
(A) 24 frames / second **(B)** 25 frames / second
(C) 30 frames / second **(D)** 33 frames / second

b. In a 525 line TV System, the horizontal Scanning frequency is
(A) 15,625 Hz **(B)** 15,750 Hz
(C) 31,250 Hz **(D)** 31,500 Hz

c. In a colour TV receiver, which of the following incorporates for color saturation control? _____
(A) synchronous demodulator **(B)** colour killer circuit
(C) SAW filter **(D)** colour Bandpass Amplifier

d. About I and Q terms used in NTSC, Q stands for
(A) Quality **(B)** Quadrature
(C) Quantum **(D)** Quantity

e. The colour subcarrier frequency in NTSC TV system is
(A) 4.43 MHz **(B)** 4.38 MHz
(C) 3.58 MHz **(D)** 3.43 MHz

f. In a 525 line TV system, frame and field frequencies are
(A) 30 frames/second, 30 fields/second
(B) 60 frames/second, 60 fields/second
(C) 30 frames/second, 60 fields/second
(D) 60 frames/second, 30 fields/second

g. The camera signal with blanking and sync signal is called
(A) Video Signal **(B)** Composite Video Signal
(C) Blanking Signal **(D)** Sync Signal

h. The output of chroma bandpass amplifier is
(A) C - Signal **(B)** Y- Signal
(C) I - Signal **(D)** Q - Signal

i. The pattern of scanning lines in a video system is called
(A) Retrace **(B)** Resolution
(C) Raster **(D)** Interface

j. The sound inter-carrier IF is generated in the
(A) Video IF amplifier **(B)** Video Detector
(C) Sync Separator **(D)** Mixer Stage

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 blanking? What is the need of blanking pulses? Compare the differences between horizontal and vertical blanking. **(8)**

Q.3 **a**. Describe briefly an arrangement for projection television. Why is brightness the main problem? **(8)**

b. List the important precautions required in picture-tube. **(8)**

Q.4 a. Explain interlaced scanning pattern used in TV systems. **(8)**

b. In picture tubes, why do we require synchronizing pulses during scanning? **(8)**

Q.5 a. Explain how the 'Y' and color difference signals are developed from the camera outputs? Why is the 'Y' signal is set to 0.3R + 0.59G – 0.11B? **(8)**

b. Explain the following colour television terms: **(2x4)**
(i) Hue (ii) Saturation
(iii) Chrominance (iv) Luminance

Q.6 a. 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)**

b. How is the 3.58 MHz modulated chrominance signal transmitted to the receiver? Why the 3.58 MHz signal is called a subcarrier? **(7)**

Q.7 a. Explain aspect Ratio with respect to EIA Test Pattern. **(2)**

b. Explain the tests for Ringing. **(6)**

c. Explain the Ball Chart for checking camera linearity. **(8)**

Q.8 a. Explain the need for luminance delay in video detectors. **(8)**

b. Draw the functional diagram of RF section of a T.V. receiver. Indicate waveforms at different block outputs and explain the importance of each block. **(8)**

Q.9 a. Explain stepwise procedure of TV receiver servicing. **(8)**

b. Explain the safety aspects while servicing a TV receiver. **(8)**