

Code: DE-18

Subject: TELEVISION ENGINEERING

<b>JUNE 2007</b>
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Time: 3 Hours

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.
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**Q.1 Choose the correct or best alternative in the following: (2x10)**

- a. Horizontal resolution is directly proportional to
- |                      |                |
|----------------------|----------------|
| (A) Horizontal lines | (B) Contrast   |
| (C) Video Bandwidth  | (D) Brightness |
- b. The approximate voltage required in Trinitron at second anode is
- |            |            |
|------------|------------|
| (A) 1 KV.  | (B) 10 KV. |
| (C) 30 KV. | (D) 60 KV. |
- c. The sideband power in a VSB up to 1.25 MHz is proportional to
- |               |                |
|---------------|----------------|
| (A) $P_c$ .   | (B) $2P_c$ .   |
| (C) $P_c^2$ . | (D) $0.5P_c$ . |
- d. In a PAL system the Hue is represented by
- |                               |                               |
|-------------------------------|-------------------------------|
| (A) Amplitude of chrominance. | (B) Phase of chrominance.     |
| (C) Amplitude & Phase.        | (D) Differential chrominance. |
- e. An LPT T.V. station transmits about
- |              |             |
|--------------|-------------|
| (A) 1 KW.    | (B) 1 W.    |
| (C) 1 MegaW. | (D) 100 KW. |
- f. An electronic tuner selects a
- |                     |                       |
|---------------------|-----------------------|
| (A) fixed channel.  | (B) any program.      |
| (C) whole spectrum. | (D) only one station. |

- g. AGC helps in
- (A) Controlling signal amplitude.      (B) Tuning the channel.  
(C) Synchronization.                      (D) Controls deviation.
- h. VSB correction in colour IF amplifier is achieved by a dip at 33.4 MHz by
- (A) 10 dB.                                      (B) 20 dB.  
(C) 30 dB.                                      (D) 40 dB.
- i. DC component in a Video signal represents presence of:
- (A) Brightness.                              (B) Contrast.  
(C) Saturation.                              (D) Hue.
- j. The frequency of 33.4 MHz in the IF spectrum is:
- (A) Video IF.                                  (B) Audio IF.  
(C) sound carrier.                          (D) both, the Video and Audio IF.

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

- Q.2** a. Define Vertical and horizontal resolution, show how they are related and also explain dependence of Video bandwidth. (8)
- b. Calculate the Bandwidth of Video signal in a 625 line system that is operated by a 50 Hz line frequency. (8)
- Q.3** a. What does the following terms indicate: (4 x 2)
- (i) Equalizing pulses.  
(ii) Serrated pulses.
- Explain by using neat diagrams.
- b. Discuss the merits and demerits of positive and negative amplitude modulation and justify the choice of negative modulation in TV. (8)
- Q.4** a. Draw a typical Plumbicon pickup tube and explain its working. What are its salient features? (10)
- b. How the following is achieved in TV cameras:
- (i) Zooming.  
(ii) Primary color separation. (2 × 3)

- Q.5** a. What is the need of color difference signals in color video transmission, explain how compatibility is obtained. **(8)**
- b. How sub-carrier is chosen for chrominance transmission? **(8)**
- Q.6** a. Briefly explain with the help of diagram EHT build up in a TV receiver. **(8)**
- b. Give logical reasons for  
(i) No sound only picture  
(ii) Low Brightness **(8)**
- Q.7** a. Design a Yagi antenna consisting of five elements for receiving channel V, T.V. signals. **(8)**
- b. Draw the schematic of an electronic tuner and explain how these are used to select programs in VHF and UHF. **(8)**
- Q.8** a. How sound and video signal are separated and detected in inter-carrier T.V. receivers? **(8)**
- b. Explain encoding and decoding of chrominance signal, in a TV system. **(8)**
- Q.9** a. What is color burst, what is its function? **(4)**
- b. In a color receiver why color killer is required, draw a simple circuit and explain its working. **(6)**
- c. Draw the circuit of a sync separator with noise canceller and explain its working. **(6)**