Code: DE18 **Subject: TELEVISION ENGINEERING**
Time: 3 Hours **Max. Marks: 100**

NOTE: There are 9 Questions in all.

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- **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 best alternative in the following: (2x10)

a. Even though all circuits are working, the picture tube blanks:

(A) if EHT fails. **(B)** if AGC fails.
(C) if Horizontal scan fails. **(D)** if Vertical scan fails.

b. In order to take scanning beam from bottom of the screen to top, the requirement is:

(A) Horizontal scanning. **(B)** Equalizing.
(C) Horizontal retrace. **(D)** Vertical retrace.

c. The Video carrier and audio carrier frequencies for channel V of CCIR-B in MHz are:

(A) 175.25 & 180.75 **(B)** 175.25 & 179.75
(C) 175.5 & 180.5 **(D)** 175.5 & 181.25

d. The primary colours in a trichromatic video are:

(A) Red, Green, Yellow **(B)** Red, Blue, Yellow
(C) Green, Red, Blue **(D)** Green, Blue, Yellow

e. PAL-D delay line is:

(A) Cable **(B)** Flip-Flop
(C) Filter **(D)** Acoustic media

f. AGC helps in

(A) controlling signal amplitude. **(B)** tuning the carrier frequency.
(C) control deviation. **(D)** control synch.

g. Composite Video signal in monochrome represents:

(A) Video & sound information **(B)** Video & Synch information
(C) Video & Blanking **(D)** Video, sound and Synch

h. During TV receiver installation, Balun is generally used between

(A) Dipole antenna and co-axial cable.
(B) Folded dipole antenna and coaxial cable.
(C) Folded dipole antenna and flat twin cable.
(D) Dipole antenna and twisted pair.

i. The brightness control is a:

(A) a.c. control. **(B)** AGC control.
(C) AFC control. **(D)** d.c. control.

j. Gamma correction helps in:

(A) linearising. **(B)** creating sharp picture.
(C) differential phase error. **(D)** improving colour.

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

Q.2 a. What are the components of a composite video signal. Draw a waveform for the last line of a field of interlaced scanning giving the details of normalized amplitude and timing of each of the component if the image has 7 scale grey scale. **(10)**

b. Why the number of scanning lines are always odd numbered in interlaced scanning? Give examples. **(6)**

Q.3 a. How do you decide the bandwidth of a video signal and explain what are the factors on which it depends? **(8)**

b. When AM SSB can save 50% of the r.f. video spectrum, why AM VSB is preferred? What is the effect when FM is used instead of AM for video information? **(8)**

Q.4 a. In a PAL system U and V are transmitted on a single resultant sub-carrier, how is this achieved? Also explain the need of phase alternation during every alternate line. **(10)**

b. Explain briefly how chrominance is transmitted with in the monochrome spectrum? **(6)**

Q.5 a. Bring out the major differences between PAL and SECAM TV system. **(8)**

b. Draw the block diagram of a PAL encoder and explain its working. **(8)**

Q.6 a. What is a pickup tube? What are the different methods used in such tubes? Explain the construction and working of Vidicon Camera. **(10)**

b. What is the need of second anode in a picture tube? Give examples. **(6)**

Q.7 a. Draw an electronic tuner and explain how tuning is achieved? **(8)**

b. If an micro controller based tuner is used how does search operation is executed. Explain the principle. **(8)**

Q.8 a. Draw the block diagram of a colour TV receiver and explain the importance of each stage. Also draw the spectrum or waveforms at each output. **(10)**

b. What is de-gaussing? How does it work? **(6)**

Q.9 Write short notes on:

(i) Pincushion distortion.
(ii) Automatic brightness control.
(iii) TV test charts.
(iv) Booster amplifier. **(4 x 4)**