

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No. 1 is **compulsory**.  
(2) Attempt any **four** out of remaining **six** questions.  
(3) **Figures** to the **right** indicate **full** marks.

1. Answer any **five** from following :—
- |   |    |
|---|----|
| (a) Define the ghost image in TV picture.   | 4  |
| (b) Give the three functions of composite video signal ?  | 4  |
| (c) Why are primary colour video voltages converted to Y and C signal for broadcasting ?  | 4  |
| (d) Why is chroma amplifier on during horizontal trace time ?   | 4  |
| (e) What causes after glow or a continuing spot on the screen of picture tube ?   | 4  |
| (f) Give the two reasons for vertical rolling in the picture ?  | 4  |
| 2. (a) State the ways in which colour and monochrome television broadcasting are compatible ?   | 6  |
| (b) Sketch the complete pulse trains that follow at the end of both odd and even field. Fully label them and explain how the half line discrepancy is removed by insertion of pre-equalizing pulser ?   | 6  |
| (c) Show that the total channel band width of 11.25 MHz would be necessary if both side band's of modulated picture signal are fully transmitted. Explain how channel width is reduced to 7 MHz ?   | 8  |
| 3. (a) What are the different types of image plates for light image in Image Orthicon, Vidicon and Plumbicon camera tubes ? Hence make a drawing to illustrate construction and operation of an Image Orthicon and explain how camera output signal is produced ? | 10 |
| (b) Describe briefly the basic troubleshooting procedure a technician must employ to quickly localize a fault in a TV receiver ? Explain how a fault can be localized by observing the picture and listening sound ?  | 10 |
| 4. (a) Draw a basic AFC circuit and explain how the control voltage is developed ? Explain fully, how the effect of noise pulses is eliminated ? Why AFC is not necessary for vertical sync processing ?  | 10 |
| (b) Explain how R, G and B video signal's can be directly obtained from Y and demodulated V and U signals. Why is it necessary to obtain negative going colour signals for cathode drive at the picture tube ?  | 10 |
| 5. (a) Draw the functional block diagram of Digital colour TV receiver ? and hence state the merits of digital TV receiver ?  | 10 |
| (b) Describe constructional, focusing and beam landing technique employed in a PIL colour picture tube. Explain the need for pincusion distortion correction and the method employed to obtain distortion free raster ?   | 10 |
| 6. (a) Explain in detail the scanning of CCD camera image ?   | 10 |
| (b) Draw the block diagram of sound carrier in TV receiver. Explain briefly how the intercarrier sound signals as obtained at video detector is processed to produce sound output ? Why is a de-emphasis circuit is provided after FM detector ?                  | 10 |
| 7. (a) Draw the typical block diagram of cable TV signal distribution system ? List the different devices used in cable signal distribution system, hence describe their functions ?  | 10 |
| (b) Draw and explain the encoding scheme in SECAM system ?  | 10 |