

# 17441

**16172**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Illustrate your answers with neat sketches wherever necessary.  
(3) Figures to the right indicate full marks.  
(4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Attempt any SIX of the following:** **12**
- (i) Define aspect ratio and kell factor.
  - (ii) What is persistence of vision?
  - (iii) State which bond is not used for TV signal transmission. Why?
  - (iv) Define colour burst signal in colour TV signal.
  - (v) Draw visible light spectrum.
  - (vi) State the role of blanking pulses in CCV signal.
  - (vii) State Grassman's law of colour mixing.
  - (viii) Draw the waveform for positive and negative modulation.
- b) **Attempt any TWO of the following:** **8**
- (i) Draw the frequency response of VSB. Why it is used in TV transmission?
  - (ii) Give the function of back porch and draw the well labelled diagram of horizontal blanking details of one horizontal line.
  - (iii) Draw schematic diagram of CCD camera tube and state its working.

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**2. Attempt any FOUR of the following: 16**

- a) What is interlaced scanning? How hikers are eliminated using it.
- b) Draw pre and post equalizing pulses transmission during vertical blanking period and state their significance.
- c) Draw the neat diagram of vidicon camera tube and explain its working.
- d) Calculate phase and magnitude of weighted primary colours with neat phasor diagram.
- e) Describe concept of PAL-V switching and its purpose with the help of phasor diagram.
- f) Draw the block diagram of digital TV transmission and explain its working.

**3. Attempt any FOUR of the following: 16**

- a) Explain the term horizontal and vertical resolution.
- b) Define:
  - (i) Brightness
  - (ii) Contrast
  - (iii) Viewing distance
  - (iv) Luminance
- c) Why FM is used for sound signal and AM for picture signal.
- d) State two advantages and two disadvantages of digital TV transmission.
- e) Draw CCVS and label it.
- f) Give the characteristics of digital TV transmission (any four points).

- 4. Attempt any FOUR of the following:** **16**
- a) Describe the process used to create motion picture using principle of persistence of vision. Draw appropriate diagram for the same.
  - b) State the importance of DC level in composite video signal.
  - c) Draw the schematic diagram of silicon diode array camera tube and explain its working.
  - d) Draw block diagram of QAM for PAL system and explain its working.
  - e) State the advantages of PAL system (any four).
  - f) Draw the block diagram of PAL encoder and state the function of each block.
- 5. Attempt any FOUR of the following:** **16**
- a) Explain how U and V signals are obtained from colour difference signal.
  - b) List CCIR-B stands for PAL colour TV (any eight).
  - c) Draw block diagram of monochrome TV transmitter.
  - d) Describe T.V. channel allocation for band I and band III.
  - e) Define:
    - (i) Hue
    - (ii) Saturation
    - (iii) Chrominance
    - (iv) Additive mixing
  - f) Why vertical sync pulses are serrated during TV signal transmission.

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**Marks**

**6. Attempt any FOUR of the following:**

**16**

- a) Define compatibility and reverse compatibility of colour TV signal.
  - b) Colour signal is suppressed before transmission of TV signal.  
Give reason.
  - c) Differentiate between bandwidth of colour signal over luminance signal.
  - d) Draw block diagram of HDTV transmitter and state its working.
  - e) Draw block diagram of PAL transmitter and give the function of each block.
  - f) List features and characteristics of HDTV signal.
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