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**Question Paper Code : 51254**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Seventh Semester

Electronics and Communication Engineering

080290057 — TELEVISION AND VIDEO ENGINEERING

(Regulation 2008)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is scanning necessary in television systems?
2. What are rods and cones of human eye?
3. Define image signal rejection ratio.
4. List the major tasks to be done by a detector.
5. Mention the speciality of Diachroic Mirror.
6. What do you mean by reverse compatibility of a colour receiver?
7. State the relationship between  $f_{sc}$ ,  $f_h$  and  $f_v$  in PAL-D system.
8. What is Automatic Colour Control (ACC)?
9. Give the function of 6 bit serializer in teletext.
10. What do you mean by Interactive Television?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Give constructional details of the Vidicon target prepared from a thin n-type silicon wafer which operates as an array of photodiodes. Explain how the signal voltage is developed from such a target. (8)
- (ii) Explain with suitable sketches the basic principle of a solid state image scanner. Describe briefly the manner in which the CCD array is scanned to provide interlaced scanning. (8)

Or

- (b) (i) What do you understand by Image Storing Capability of a modern television pick-up tube? Explain why storage type have much higher sensitivity as compared to the earlier non-storage type. (6)
- (ii) Draw cross-sectional view of an Image Orthicon camera tube and explain how it develops video signal when light from any scene is focused on its face plate. (10)

12. (a) Show that in the 625-B system where the maximum allowed frequency deviation is plus or minus 50 KHz, a bandwidth of 150 KHz is necessary for almost distortion free transmission by frequency modulation, the highest modulation frequency being 15 KHz, Repeat this for the American system where the maximum allowed deviation is plus or minus 25 KHz. Verify the results for the determination of channel bandwidth.

Or

- (b) Sketch the Composite video signal waveform for at least three successive lines and indicate:
- (i) Extreme white level
  - (ii) Blanking level
  - (iii) Pedestal height and
  - (iv) Sync pulse level.

Justify the choice of P/S ratio=10/4 in the composite signal. Why is the combining of picture signal and sync pulses called a voltage division multiplex?

13. (a) Draw the detailed block diagram of TV transmitter and explain the functions of each block.

Or

- (b) (i) What do you understand by line-of-sight distance in space wave propagation. (4)
- (ii) What are the effects of atmospheric and obstacles on space waves? (4)
- (iii) Why is horizontal polarization preferred for television and FM broadcasts? (4)
- (iv) What are booster stations and under what conditions are they employed? (4)

14. (a) Sketch the sectional view of a picture tube that employs electrostatic focusing and electromagnetic deflection and label all the electrode and explain their functions.

Or

- (b) Examine the effectiveness of:
- (i) EHT generation and regulation. (6)
  - (ii) Colour killer circuits. (5)
  - (iii) Flat panel displays. (5)

15. (a) (i) List the merits of digital TV receivers that are not achievable in analog receivers. (4)
- (ii) What are the basic Building Blocks of a digital computer? Describe briefly the function of each block. (8)
- (iii) How is DTT different from satellite broadcast system? Explain why its expansion is not expected in the foreseeable future? (4)

Or

- (b) (i) What are the advantages of 3D pictures over the 2D reception we get on TV receiver screens? Describe how the associated signals can possibly be transmitted, received and viewed on present day receivers. Why it is not satisfactory? (8)
- (ii) Describe the TV standards adopted for HD TV service. (4)
- (iii) What comes in the way of adopting common TV standards all over the world? How do you visualize the TV receivers of new generation? (4)
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