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16291(D) - 0 DEC 2016

B. Tech 8th Semester Examination

TV Engineering (NS)

EC-421(a)

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : (i) Attempt five questions, selecting one from each of the section A, B, C D and all the subparts of section E.

(ii) All parts of a question should be answered at one place.

(iii) Answers should be brief and to-the-point and be supplemented with neat sketches.

SECTION - A

1. (a) Explain how the inherent smear effect in Vidicon is overcome in Plumbicon. Draw the constructional detail and explain the operation of Plumbicon camera tube. (10)

   (b) Explain what is interlaced scanning? Explain how bandwidth is reduced by interlaced scanning. Give periods of normal, active & retrace intervals of horizontal & vertical scanning. (10)

2. (a) Write technical note on:

   (i) Kell factor

   (ii) Aspect ratio

   (iii) Field of vision

   (iv) Contrast and Resolution

   (v) Viewing distance (10)

   (b) Explain vestigial sideband transmission used in television. (10)

SECTION - B

3. (a) Explain how channel selection is done with electronic tuning using varacter diodes. Explain about VHF and UHF tuners. (10)

   (b) Draw and explain the circuit of IF amplifier & RF amplifier. Explain the procedure of RF & IF alignment. (10)

4. (a) How the noise cancellation is achieved? Describe in detail. (10)

   (b) What are the various functions performed by horizontal deflection stage in the working of the TV receiver? Explain the working of horizontal oscillator and horizontal output stage. (10)

SECTION - C

5. (a) Explain colour television camera system with block diagram. (10)

   (b) Explain how luminance & colour difference signals are developed from camera outputs. Why is the Y signal set equal to 0.3R+0.59G+0.11B? (10)

6. (a) How colours are represented in chromaticity diagram? Explain how synchronous demodulation is used to derive the chroma components from quadrature modulated colour subcarrier. (10)

   (b) Explain the working of Delta gun picture tube. (10)

SECTION - D

7. (a) Give block diagram of PAL-D encoder & decoder. Compare its performance with NTSC system. (10)

   (b) Explain the satellite TV technology. What are it's advantages over conventional technology? (10)

8. (a) Show the colour kill circuit and explain how the chrominance signal remains interrupted during monochrome trasmission and how Indent signal is generated? (10)

   (b) Explain the schematic diagram of a modern cable TV system. (10)

SECTION - E

9. Explain the following:

   (i) Brief the factors that decide choice of IF in TV systems

   (ii) Define subtractive mixing.

   (iii) What do you mean by static & dynamic convergence?

   (iv) What are the merits of using an RF amplifier before the frequency converter?

   (v) Why is the colour signal bandwidth requirement much less than that of Y signals?

   (vi) Why is the colour signal transmitted after each scanning line?

   (vii) What is the significance of choosing the number of lines as 625 and not 623 or 627 and the frame reception rate as 25 and not 24 as in pictures?

   (viii) Define compatibility and reverse compatibility.

   (ix) State any two advantages of IF modulation over direct modulation.

   (x) Explain functions of equalizing Pulses, front porch & back porch of horizontal sync pulses. (2×10=20)