8E8022

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B.Tech. VIII Semester (Main/Back) Examination, April/May - 2017
Electronics and Communication Engg.
8EC2A Radar and TV Engineering

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 26

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal** marks. .(Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Unit-I

1. a) What is Radar? Draw the neat and clean block diagram of Radar. **(4)**

b) Write Radar frequency bands and application of Radar. Explain with example. **(4)**

c) Explain the working of LORAN system. **(6)**

d) When a CW transmitter has 10 GHz frequency, calculate the Doppler frequency, seen by the stationary Radar. Target radial velocity is 250 km/h? **(2)**

(OR)

1. a) A radar operating at 12GHz, has a maximum range of 45km with an antenna gain of 5dB. If the transmitter has a power of 300kw and minimum detectable signal is 2×10^{-13} watt. Calculate Radar cross section of target. **(4)**

b) Explain microwave landing system using neat and clean diagram. **(8)**

c) Write short note on Radar display. **(4)**

Unit-II

2. a) Draw the block diagram of Monochrom TV transmitter and explain each block. **(8)**

b) What is the limitation of NTSC system and how it is overcomes in PAL system? Explain the PAL system. **(8)**

(OR)

2. a) Explain plumbicon camera tube with its constructional diagram. **(6)**

   b) Draw the waveform of composite video signal and write the significance of **(6)**

      i) Pedestal height

      ii) Horizontal sync. pulse

   c) What is Flicker problem and how is it overcome? **(4)**

Unit-III

3. a) What is vestigial sideband transmission and why it is used for transmission of TV picture signals? **(8)**

   b) What do you understand by compatibility in TV transmission? **(5)**

   c) Define Luminance, Hue and saturation. **(3)**

(OR)

3. a) Explain how the 'y' and colour difference signals are developed from camera outputs? Why is the 'y' signal set **(5+3=8)**

   "y = 0.3 R + 0.59G + 0.11B"?

   b) Describe briefly the different type of TV transmission and reception antennas, with constructional diagram. **(8)**

Unit-IV

4. a) Draw the circuit diagram of direct coupled video amplifier and explain its main features. **(4+4=8)**

   b) What are the advantages of using AGC in television receivers? **(8)**

(OR)

4. a) Explain the use of **(3×4=12)**

      i) R.F Tuner,

      ii) Video detector,

      iii) Deflection oscillator and

      iv) EHT generation in TV receiver.

   b) Compare HDTV with normal TV receiver in terms of complexity and picture quality. **(4)**

Unit-V

5. a) Compare the analog TV and digital TV. **(8)**

   b) Explain the transmission of TV signal through satellite and transponders. **(8)**

(OR)

5. Write short note on : **(8+8=16)**

   a) DTH and cable TV

   b) IPTV and DBS-TV