8E4089

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B. Tech. VIII Semester (Main/Back) Examination-2014

Electronics & Communication

8EC2 Radar & TV Engineering

**Time : 3 Hours**

Maximum Marks : 80

Min. Passing Marks : 24

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 suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)*

Unit - I

1. a) A pulse radar sends following pulse streams with 2 MWatt Power

4μ sec 16μ sec
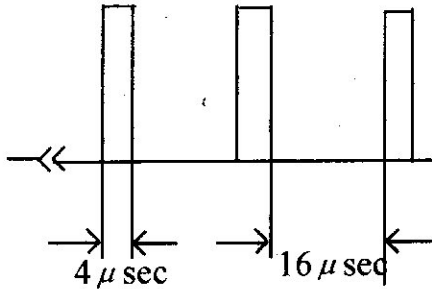
   i)   Calculate its first four blind frequencies
   ii) Find the maximum range for it in noise free environment.   **(6×2=12)**

   b)   Draw the Block diagram of FMCW radar and enlist radar parameters Measured by it.   **(4)**

OR

1. a) Explain the working of N-pulse delay line canceler and draw the frequency response of different pulse delay line cancelers for comparison.   **(8)**

   b) Explain the effects of
   i)   Pulse shape
   ii) Pulse repeation rate
   iii) Antenna gain and
   iv) Presence of clutter, on radar range. Also state the optimum condition for each.   **(4×2=8)**

Unit - II

2. a) Find the time delay condition for LORAN to avoid ambiguity. What is the order or frequencies used in LORAN system? Justify the use of kilo Hz sample in long range radar system.

(8+2+2=12)

b) Write the name of all equipments used in DME.

(4)

OR

2. a) Draw the Blockdiagram of an interrogator used in Air borne DME. Explain the role of distance circuits, ranging circuits and bearing circuits used in DME.

(6+2+2+2=12)

b) Explain the working of different Marker beacons used in radar Navigational aids.

(4)

Unit - III

3. a) Define the following :
i) Eye persistance
ii) Interlace Scanning
iii) Contrast
iv) Flicker
v) Aspect ratio
vi) Kell factor.

(6×1=6)

b) Calculate the vertical and Horizontal resolution for Indian TV system (625 line) If the beam diameter increase by 30% due to defocussing then calculate the degradation in resolution?

(4+6=10)

OR

3. a) Calculate the frequency of Horizontal and vertical Saw tooth wave generator for
i) 625 line system with 25 frames/second and 1 : 2 interlace ratio.
ii) 525 line system with 30 frames/second and 1 : 2 interlace ratio
iii) 625 line system with 25 frames/second and 1 : 3 interlace ratio.(3×3=9)

b) Explain the provision for
i) Pre and post Blanking pulse
ii) Pedestal Height in composite video signal
iii) Serrection of vertical sync pulse.

(3×2=6)

c) Draw the schematic of a CCD Camera.

(1)

Unit - IV

4. a) Draw the vestigial side band transmission of first two channel in Band - III. Show the corresponding picture carrier, sound carrier and colour sub carrier frequencies.

(3×2=6)

b) Draw the frequency response of a TV receiver for receive vestigial side band transmission and explain how it resets the amplitude of low frequency video signals?

(6)

c) Explain the modulation scheme used for chrominance signal in 625-B system. **(4)**

OR

4. a) Justify the use of
   i) AM for video signal in TV
   ii) Exact difference of 4.433 MHz between picture carrier and colour sub carrier frequency
   iii) FM for sound signal in TV
   iv) Negative modulation scheme in TV. **(4×3=12)**

b) Explain the reason for appear
   i) Ghost image
   ii) Horizontal white bar and
   iii) White spot or show on TV receiver. **(3)**

c) Explain the compatibility of colour and b/w TV system. **(1)**

Unit - V

5. a) Draw the circuit diagram for
   i) H/v sync separator
   ii) AGC
   iii) Video detector
   iv) AFC
   v) EHT generator
   vi) RF Tuner. **(6×2=12)**

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

OR

5. a) Explain the use of
   i) Delayed AGC
   ii) Simple diode detector
   iii) Pilot carrier scheme for colour sub-carrier signals
   iv) Quardture modulation in chrominance signal. **(3×4=12)**

b) What is circuit diagram for
   i) Generate luminance signal
   ii) Automatic degaussing
   iii) Generation of colour - difference signal
   iv) Reproduction of V_G, V_R and V_B at receiver **(4)**