

8E408**8E4089**

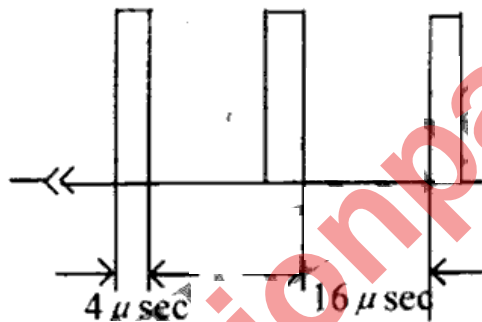
B. Tech. VIII Semester (Main/Back) Examination-2014
Electronics & Communication
8EC2 Radar & TV Engineering

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



- i) Calculate its first four blind frequencies
ii) Find the maximum range for it in noise free environment. $(6 \times 2 = 12)$
- 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
- Pulse shape
 - Pulse repetition rate
 - Antenna gain and
 - Presence of clutter, on radar range. Also state the optimum condition for each. $(4 \times 2 = 8)$

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 :
- Eye persistence
 - Interlace Scanning
 - Contrast
 - Flicker
 - Aspect ratio
 - 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
- 625 line system with 25 frames/second and 1:2 interlace ratio.
 - 525 line system with 30 frames/second and 1:2 interlace ratio
 - 625 line system with 25 frames/second and 1:3 interlace ratio. (3×3=9)
- b) Explain the provision for
- Pre and post Blanking pulse
 - Pedestal Height in composite video signal
 - 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
- AM for video signal in TV
 - Exact difference of 4.433 MHz between picture carrier and colour sub carrier frequency
 - FM for sound signal in TV
 - Negative modulation scheme in TV. (4×3=12)
- b) Explain the reason for appear
- Ghost image
 - Horizontal white bar and
 - 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
- H/v sync separator
 - AGC
 - Video detector
 - AFC
 - EHT generator
 - 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
- Delayed AGC
 - Simple diode detector
 - Pilot carrier scheme for colour sub-carrier signals
 - Quardture modulation in chrominance signal. (3×4=12)
- b) What is circuit diagram for
- Generate luminance signal
 - Automatic degaussing
 - Generation of colour - difference signal
 - Reproduction of V_G, V_R and V_B at receiver (4)