Total number of printed pages – 4 **B. Tech**

PEEC 5406

Eighth Semester Examination – 2008

RADAR AND TELEVISION ENGINEERING

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*
The figures in the right-hand margin indicate marks.

1. Answer the following in brief : 2 ×10

   (a) Name the various cameras used for TV transmission.

   (b) What is the separation in frequency between video and audio carriers in Indian standard of TV Broadcasting ? What are the modulations used for these carriers ?

   (c) Which stages in TV receiver are controlled by AGC ?

   (d) Name the three primary colours and their proportion for generation of luminance signal.

   (e) What do you understand by Aspect Ratio and why is it chosen as 4/3 ?

   (f) What is the full form of RADAR ?

   (g) What is clutter as referred to Radar system ?

   (h) Why MTI Radar fails to detect fixed target ?

   (i) What is a delay line canceller ? Where is it used ?

   (j) How do you differentiate Duplexer and Diplexer ?

2. (a) Why Vestigial Side Band (VSB) is preferred for TV broadcasting ? Sketch the frequency spectrum of complete TV Channel employing the vestigial side band system. 6

   (b) Calculate the band width required for the video signal formed by the scanning system with 625 lines per picture frame and 25 picture frames per second. Aspect ratio is 4/3. 4

3. (a) Name the three colour television systems of the world and state their main features. Which system is used in India ? 6

(b) What is the interlaced scanning in TV ? What are its advantages ? 4

4. (a) Give the block schematic representation of a complete monochrome TV receiver indicating the waveform of the signal at each stage. Divide the entire block schematic into four main sections and name them. 6

(b) What is compatibility ? State the conditions necessary for the colour TV systems to be compatible with the monochrome system. 4

5. (a) Derive the Radar Range Equation in terms of minimum detectable signal and other parameters. 6

(b) A 8.36 GHz police radar measures a Doppler frequency of 1932 Hz from a car approaching the stationary police vehicle. Calculate the speed of the car. 4

6. (a) With the help of block schematic representation explain the principle of operation of MTI radar. 6

(b) What is the blind speed and why is it so named ? 4

7. (a) Differentiate PPI and A-scope. 4

(b) Mention the advantages and disadvantages of CW Doppler radar. 4

(c) What do you understand by false alarming ? 2

8. (a) With a block diagram describing the production of R-Y and B-Y signals from a colour TV camera. 5

(b) What is Electronic Scanning ? Explain with respect to Phased Array Radar System. 5

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