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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 ?

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- (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