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EC–703

B. E. (Seventh Semester)
EXAMINATION, Dec., 2011

(Electronics & Communication Engg. Branch)

TV AND RADAR ENGINEERING

(EC – 703)

Time : Three Hours

Maximum Marks : 100

Minimum Pass Marks : 35

Note : Attempt any *five* questions. All questions carry equal marks. Assume suitable data if any missing.

1. Explain the working of video detector and video amplifier. Briefly explain the sync. separation and processing in monochrome TV receivers.

2. Compare the design features of television transmitters employing high level modulation and low level modulation.

3. Show that the highest modulating frequency that needs to be handled in 625 TV system is 5 MHz. Discuss the effect of number of lines, interlaced scanning and field frequency on bandwidth. Why is it necessary to separate the board vertical sync. pulse and why are they notched at 32 micro-seconds and not at 64 micro-seconds.

4. Describe the circuit of colour burst blanking and 1 stage of the chroma band pass amplifier. Explain the circuit of the saturation control in the chroma band pass amplifier.

5. What is Doppler Effect ? Explain the operation of FMCW radar when the modulation is triangular and object is not stationary with the help of necessary sketches.

6. (a) Why is care taken to design a television receiver for low noise figure, while this is not done in a standard broadcast receiver.

   (b) The antenna for a television transmitter consists of four horizontal loops stacked coaxially above each other in the vertical direction. Show a diplexer arrangement suitable for use with this antenna systems.

7. (a) Prove that the maximum range of a radar operating at a given frequency is proportional to the linear dimension of the antenna.

   (b) The difference in distance from a radar to two particular targets is 400 feet. Each target has a radial width of 100 feet. What is the longest pulse that will resolve these targets (i. e. the longest pulse that will not give overlapping echoes).

8. Write short notes on the following :

   (i) Merits of digital technology regarding TV transmission

   (ii) High definition television system