*Total No. of Questions :5]* *[Total No. of Printed Pages :2*

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# EC - 804

## B.E. VIII Semester

Examination, June 2016

## TV and Radar Engineering

***Time : Three Hours***

***Maximum Marks : 70***

*Note:* i) Answer five questions. In each question part A, B, C is compulsory and D part has internal choice.

ii) All parts of each question are to be attempted at one place.

iii) All questions carry equal marks, out of which part A and B (Max. 50 words) carry 2 marks, part C (Max. 100 words) carry 3 marks, part D (Max. 400 words) carry 7 marks.

iv) Except numericals, Derivation, Design and Drawing etc.

### Unit - I

1. a) Describe main characteristics of CCIR-B standard.
   b) Explain need for negative modulation in $T_0V_0$ transmission.
   c) Define Kell factor and explain its significance.
   d) Sketch complete pulse trains that follow at the end of both odd and even fields. Fully lable them and explain how the half line discrepancy is removed.

   OR

   Sketch cross section view of Vidicon camera tube and explain its working in detail.

### Unit - II

2. a) Name the primary and complementary colours used in colour television. What is Grass Man's law?
   b) Explain the function of LCD display in short.
   c) Explain how the luminance and colour difference signals are developed from a camera output.
   d) Draw the block diagram of TV transmitter and explain the working of each block in brief.

   OR

   Compare NTSC and PAL system.







### Unit - III

3. a) List advantages of digital TV Receivers.
   b) Explain 3D-TV Technology in brief.
   c) Explain how HDTV is different from the conventional TV system.
   d) Draw the block diagram of digital TV receiver and explain working of each block in brief.

   OR

   Describe working of cable television system in brief.

### Unit - IV

4. a) Define maximum unambiguous range of a Radar.
   b) Classify Radar frequency bands.
   c) Determine the average power required to detect a 10 $m^2$ Radar cross section vehicle at a range of 600 ft if the minimum detectable signal is $6\times10^{-13}$ W.
   d) Describe working principle of Moving Target Indicator radar in detail.

   OR

   Describe the characteristic of the Radar echo from a target when its Radar cross section is in the (i) Rayleigh region (ii) Resonance region (iii) Optical region.

### Unit - V

5. a) What effect does the local oscillator have on the receiver's dynamic range?
   b) What is the overall noise figure of a transmission line and duplexer which have a loss of 1.5 dB, connected to a receiver whose noise figure is 2.5 dB?
   c) Show that the noise figure of a mixer is approximately the product of its conversion loss and IF amplifier noise figure.
   d) Describe working principle and construction of Bistatic radar.

   OR

   Describe working principle and applications of synthetic aperture radar.



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