53 (EC 710) AAWP

2017

ANTENNA AND WAVE PROPAGATION

Paper : EC 710

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer ***any five*** *questions out of* ***seven.***

1. *(a)* Define Characteristic impedance. Explain how characteristic impedance function in a transmission line terminated by a load. 3+7=10

   (b) Explain different regions and shape of an antenna which results in proper working of an antenna. 7

   (c) Define Dipole of an Antenna. 3

2. (a) Describe Antenna size depending upon antenna size with respect to its wavelength. 6

(b) Point out the difference between Antenna Conductors and Antenna Insulators. 4

(c) Define Principle pattern. Also point out the difference between Radiation pattern and Radiation Intensity. 10

3. (a) Describe the comparison between Directive gain and Directivity of an Antenna. 6

(b) Explain Single wire transmission line depending upon its frequency range. 4

(c) Define Front to back ratio of an antenna. Also give the difference between Effective Area and Effective length of an Antenna. 10

4. Explain and find out the power in a uniform plane wave which is necessary to develop a power theorem or Poynting theorem for an electromagnetic wave. 20

5. *(a)* Explain the radiation process from a small current element dipole possessing electromagnetic field. 5

(b) Define Array of an Antenna. Point out the difference between Broadside Array and End fire Arrays of an Antenna. 3+5=8

(c) Describe radiation process from a dipole antenna. 7

6. *(a)* Explain pattern multiplication of array of an antenna. Also point out the multiplication of field pattern and addition of phase pattern. 7

(b) Explain YAGI-UDA antenna by showing its radiation pattern, optical equivalent. 7

(c) Point out the difference between Biconical Antenna and Helical Antenna. 6

7. *(a)* Find out the fundamental equation for free space propagation. 10

(b) Explain the structure of Atmosphere and point out the different functions of layers present in the atmosphere. 10
