Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

Roll No .....

EC-6003 (CBGS)

B.E. VI Semester

Examination, May 2018

Choice Based Grading System (CBGS)

Antenna and Wave Propagation

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. Define the following terms: 14
   a) Radiation Intensity
   b) Directivity
   c) Gain
   d) Effective Aperture

2. a) Derive the expression of radiation resistance of a short dipole. 7

   b) Calculate power radiated by $\frac{\lambda}{16}$ dipole in free space if it carries a uniform current I = 100 cos ωt Amp. What is radiation resistance? 7

3. a) State and prove reciprocity theorem for Antennas. 7

   b) Draw the radiation pattern of a linear array of the three isotropic sources spaced $\frac{\lambda}{2}$ apart. The excitation of the sources is in phase and has an amplitude ratio of 1:2:1. 7

4. a) Explain the principle of pattern multiplication in case of an antenna array. 7
   b) Explain working of parabolic reflector antenna with its application. 7

5. a) Write short notes on the following: 7
      i) Hern Antenna
      ii) Log periodic antenna
   b) A circular loop antenna has a diameter of 1.5λ. Find its directivity and radiation resistance. 7

6. Write short notes (any two): 14
   a) Taylor synthesis
   b) Fourier series method
   c) Dolph-chebyshev synthesis

7. a) What do you understand by Weighting functions? 7
   b) What do you understand by super refraction? Explain the critical frequency of an ionospheric layer. 7

8. a) Explain the influence of earth's magnetic field on radio propagation. 7
   b) Explain the following: 7
      i) Lowest and maximum usable frequency
      ii) Skip distance

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