Roll No .....

EC-604

B.E. VI Semester

Examination, June 2016

Antenna and Wave Propagation

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) Define absolute potential of a point charge.
   b) Define:
      i) Electric dipole
      ii) Dipole moment
   c) Prove, radiation resistance of halfwave dipole is 197 Ω.
   d) Derive the expression of power radiated by a current element.

OR

Explain the Application to short antennas.

Unit - II

2. a) Define the power gain of an antenna.
   b) Define and give the formula of directivity.
   c) State and explain the Reciprocity Theorem.
   d) What is the multiplication of patterns?

OR

What are the travelling wave antennas? Compare resonant and non resonant antennas.

Unit - III

3. a) What do you understand by Dipole Antenna?
   b) Draw the helical antenna and its radiation pattern. Name the various part of antenna.
   c) Explain the NOTCH antenna.
   d) What is Babinet's principles? What do you understand by complimentary antenna?

OR

Explain microstrip antennas and write down limitations of this antennas.

Unit - IV

4. a) Define broadside and end fire arrays.
   b) What is sum and difference patterns?
   c) What do you mean by retarded potential explain in short?
   d) Explain Dolph-Chebyshev array design method.

OR

Design a four element broadside array of $\lambda/2$ spacing between elements. The pattern is to be optimum with a side lobe level 19.1 db down the main lobe maximum.

Unit - V

5. a) Draw the diagram of ionospheric layers above earth with their respective heights.
   b) What is critical frequency? Give formula.
   c) Write short note on MUF.
   d) Explain different mode of propagation of radio wave in short.

OR

What do you understand by duct propagation?

******