

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 197Ω .
- 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?

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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?
