Total No. of Questions :10] *[Total No. of Printed Pages :2*

Roll No .....

EC - 604

B.E. VI Semester

Examination, June 2014

Antenna & Wave Propagation

Time : Three Hours

Maximum Marks : 70

Note: All questions carry equal marks.
Assume data wherever necessary.

Unit - I

1. a) What is meant by retarded potentials? Determine the directivity and gain of a short dipole.
   b) Derive an expression for the power radiated by a current element. 14

OR

2. For a small current element radiator derive the relation for the magnetic and electric field components. Also derive the relation for the radiation resistance. 14

Unit - II

3. What is broad side array? Find the width of principle lobe for *n* element uniform broad side array. Explain the importance of binomial array. How can this produce pattern without lobes? 14

OR

4. a) Explain the principle of pattern multiplication.
   b) A uniform linear array is required to produce an end fire beam when it is operated at a frequency of 10 GHz. It contains 50 radiators and are spaced at 0.5λ. Find the progressive phase shift required to produce the end fire beam. Also find the array length. 14

Unit - III

5. a) State Babinet's principle and explain how it gives rise to the concept of complementary antenna.
   b) Explain in detail the log periodic antenna and what are their advantages? 14

OR

6. Write short note on any two : 14
   a) Pyramidal Horn b) Turnstile antenna
   c) Micro strip antenna

Unit - IV

7. Explain schelkunoff Polynomial method of designing an antenna array. 14

OR

8. a) What do you understand by weighting functions?
   b) Write a detailed note on different forms of linear array? 14

Unit - V

9. a) Define : 14
   i) Skip distance ii) MUF
   iii) Virtual height iv) Critical frequency
   b) Explain the importance of ground wave propagation for communication processes. Why ground waves are not received beyond certain range. Explain the phenomenon. 14

OR

10. Explain the mechanism of duct propagation. Distinguish between "Surface Duct" and "Elevation Duct". What is super refraction? Explain its use in long range operation. 14

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