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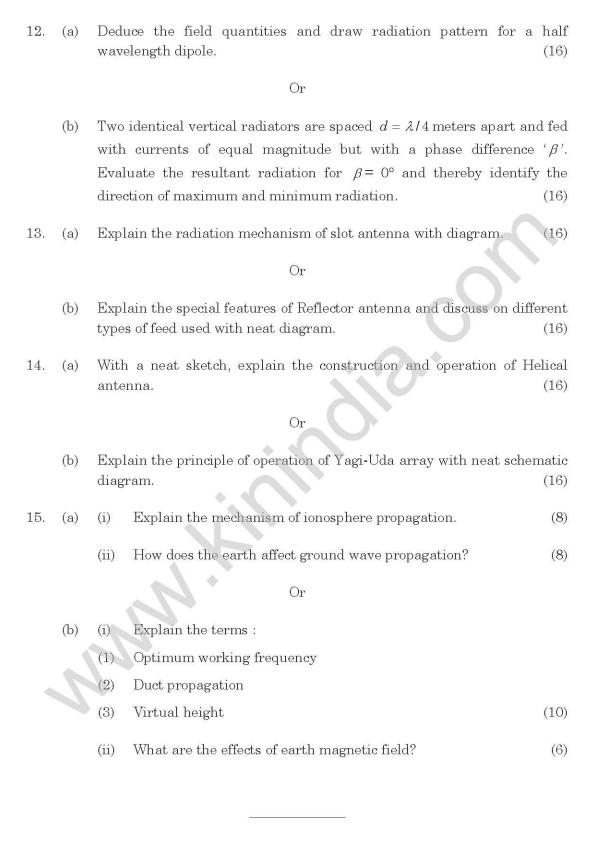
Question Paper Code : 11299

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2011

Sixth Semester

Electronics and Communication Engineering

EC 2353 — ANTENNA AND WAVE PROPAGATION

(Regulation 2008)

Time : Three hours   Maximum : 100 marks

Answer ALL questions

PART A — (10 × 2 = 20 marks)

1. Define gain and directivity of an antenna.

2. What is the significance of radiation resistance of an antenna?

3. What are the applications of loop antenna?

4. Define Pattern Multiplication.

5. State Huygens Principle.

6. What are the features of pyramidal horn antenna?

7. What are the applications of microstrip antenna?

8. What are near and far field measurements?

9. Define maximum usable frequency.

10. What is meant by Faraday rotation?

PART B — (5 × 16 = 80 marks)

11. (a) Derive the Electric and magnetic field quantities of Hertzian dipole. (16)

Or

    (b) Explain the following terms with respect to antenna:

         (i)   Polarization   (4)

         (ii)   Effective aperture   (3)

         (iii) Directivity   (3)

         (iv)   Antenna temperature   (3)

         (v)   Radiation pattern.   (3)

12. (a) Deduce the field quantities and draw radiation pattern for a half wavelength dipole. (16)

Or

(b) Two identical vertical radiators are spaced $d = \lambda/4$ meters apart and fed with currents of equal magnitude but with a phase difference 'β'. Evaluate the resultant radiation for $\beta = 0°$ and thereby identify the direction of maximum and minimum radiation. (16)

13. (a) Explain the radiation mechanism of slot antenna with diagram. (16)

Or

(b) Explain the special features of Reflector antenna and discuss on different types of feed used with neat diagram. (16)

14. (a) With a neat sketch, explain the construction and operation of Helical antenna. (16)

Or

(b) Explain the principle of operation of Yagi-Uda array with neat schematic diagram. (16)

15. (a) (i) Explain the mechanism of ionosphere propagation. (8)

(ii) How does the earth affect ground wave propagation? (8)

Or

(b) (i) Explain the terms :
(1) Optimum working frequency
(2) Duct propagation
(3) Virtual height (10)

(ii) What are the effects of earth magnetic field? (6)

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