Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 51246

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Sixth Semester

Electronics and Communication Engineering

080290041 — ANTENNA AND WAVE PROPAGATION

(Regulation 2008)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the features of Hertzian dipole?

2. Define Directivity of an antenna.

3. Define Pattern Multiplication.

4. What do you mean by tapering of arrays?

5. Why loop antenna is called as magnetic dipole?

6. What are the applications of microstrip antenna?

7. What is meant by skip distance?

8. What is meant by Faraday rotation?

9. Compare near and far field.

10. Define group velocity.

PART B — ($5 \times 16 = 80$ marks)

11. (a) What are Hertizian dipoles? Derive the Electric and magnctic field quantities of Infinitesimal dipole and radiation pattern. (16)

Or

(b) Derive the field quantities and Radiation resistance of a half wavelength dipole. (16)

12. (a) An antenna array consists of two identical isotropic radiators spaced by a distance of $d = \lambda/4$ meters 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 radiation. (16)

Or

(b) (i) Derive the expression for N element array. (8)

(ii) Explain how pattern multiplication is applied for arriving the field due to 8 element array. (8)

13. (a) Explain the normal and axial mode of operation of helical antenna with neat diagram. (16)

Or

(b) With neat sketch, Explain the construction and operation of Multielement Yagi-Uda antenna. (16)

14. (a) (i) Explain important features and attenuation characteristics of ground wave propagation. (10)

(ii) Explain the mechanism of diversity reception. (6)

Or

(b) (i) Explain the mechanism of ionospheric propagation with neat diagram. (8)

(ii) Discuss the effects of earths magnetic field on ionosphere radio wave propagation. (8)

15. (a) Explain with neat block diagram the measurement of an antenna polarization. (16)

Or

(b) Discuss the methodology and steps involved in the measurement of vertical incidence of wave propagates in ionosphere. (16)

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