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Question Paper Code: 56402

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Sixth Semester

Electronics and Communication Engineering

15UEC602–ANTENNA AND WAVE PROPAGATION

(Regulation 2015)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

- Directivity from pattern is CO1- R
(a) WA (b) $4\pi/WA$ (c) $P(q,f)_{\max}/P(q,f)_{av}$ (d) None of above
- The line – of – sight communication requires the transmit and receive antennas to face each other. If the transmit antenna is vertically polarized for best reception the receiver antenna should be _____ polarized. CO1- R
(a) Vertically
(b) Horizontally
(c) At 45 degree inclined with either horizontally or vertically
(d) None of above
- The radiation resistance of a circular loop of one turn is 0.01Ω . The radiation resistance of five turns of such a loop will be CO2- R
(a) 0.002Ω (b) 0.05Ω (c) 0.01Ω (d) 0.25Ω
- In an electrically small loops, the overall length of the loop is _____ one-tenth of a wavelength. CO2 -R
(a) Less than (b) Equal to (c) Greater than (d) None
- Which antenna is the complementary to the slot antenna? CO3- R
(a) biconical (b) helical (c) dipole (d) Lens
- Which conversion mechanism is performed by parabolic reflector antenna? CO3- R
(a) Spherical to plane (b) Spherical to Polar (c) Plane to Polar (d) None

7. How do the elements of an active region behave in log periodic antenna CO4- R
 (a) Capacitive (b) Inductive (c) Resistive (d) Reflective
8. Which mode of radiation occurs in a helical antenna due to smaller dimensions of helix as compared to a wavelength? CO4 -R
 (a) Normal (b) Axial
 (c) Both a and b (d) None of the above
9. The signal propagates above 30MHZ is named as CO5- R
 (a) Sky wave propagation (b) Space wave propagation
 (c) Ground wave propagation (d) None
10. Which ionization layer exists during day time & usually vanishes at night due to highest recombination rate? CO5- R
 (a) D-region (b) Normal E-region
 (c) Sporadic E-region (d) Appleton region

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. An antenna has a radiation resistance of 72Ω loss resistance of $8f\Omega$ power gain of 12dB. Determine the antenna efficiency and directivity. CO1- App (8)
12. Derive the expression for field components and radiation resistance of Hertzian dipole CO2- App (8)
13. Explain the types of reflector antenna and working principle of parabolic reflector antenna in detail CO3- U (8)
14. Describe the modes of operation of helical antenna with design equations. CO4- U (8)
15. Derive an expression for refractive index of ionosphere. CO5- U (8)

