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**Question Paper Code : X 67571**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Sixth Semester

Electronics and Communication Engineering

EC 1352A – ANTENNAS AND WAVE PROPAGATION

(Regulations 2008)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. Define power gain of an antenna. Mention the relation between power gain and directive gain.
2. What is Binomial array ? Why is it called so ?
3. Define magnetic vector potential.
4. Write the relation between dipole antenna and assumed current distribution.
5. List the merits and demerits of wideband antennas.
6. What are the two modes of operation in a Helical antenna ?
7. What is a complementary dipole Antenna ?
8. Define Effective Area.
9. What is skip distance ?
10. What is line of sight propagation ?

PART – B

(5×16=80 Marks)

11. a) i) Obtain the power received by the receiver based on the concept of effective aperture. (8)
- ii) Explain loop antenna of different shapes. (8)

(OR)



- b) i) Obtain the maxima, minima and half power points of two radiating point sources fed with equal in magnitude and phase current. (8)
- ii) Explain different properties of broadside and end fire arrays. (8)
12. a) Explain in detail how the current distribution varies with respect to length ( $\lambda$ ) of thin wire antennas. (16)
- (OR)
- b) Obtain an expression of an antenna for average power in terms of r.m.s current and obtain the radiation resistance of a quarter wave monopole. (16)
13. a) Explain the need for three elements in Yagi array and the relation between apex angle, scale constant and spacing in log periodic array. (16)
- (OR)
- b) Compare resonant and non-resonant antennas and explain the constructional details of Rhombic antenna. (16)
14. a) i) State and explain Huygen's principle for aperture antennas. (8)
- ii) Discuss the methods of feeding slot antennas with neat diagrams. (8)
- (OR)
- b) i) Explain the principle of radiation of offset feed reflector antenna with a neat diagram. (8)
- ii) Write a technical note on "Luxemburg lens". (8)
15. a) i) Obtain the effective dielectric constant of Ionized region of sky wave propagation. (8)
- ii) Discuss on reflection from ground for vertically and horizontally polarised waves for space wave propagation. (8)
- (OR)
- b) Bring out important features of ground wave propagation. Discuss on attenuation characteristics for ground wave propagation. Calculate the field strength at a distance. (16)
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