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Total Pages : 2

**8519**

**BT-5/D09**

**ANTENNA AND WAVE PROPAGATION**

Paper : ECE-301(E)

Time : Three Hours]

[Maximum Marks : 100

**Note :** Attempt five questions in all, selecting at least one question from each section.

**SECTION-I**

1. (a) Explain the following :
  - (i) Directivity.
  - (ii) Effective height.
  - (iii) Gain.
  - (iv) Radiation pattern.
  - (v) Radiation resistance. (2×5=10)
- (b) Derive and explain the radiation pattern from a Hertzian Dipole antenna. (10)
2. (a) Derive the relationship between Directivity and Maximum aperture. (10)
- (b) Elaborate the difference between Directional, Omni directional and Isotropic antenna. (10)

**SECTION-II**

3. (a) Explain and differentiate the working of Broadside and Endfire arrays. (10)
- (b) Define and explain the principle of Pattern multiplication. (10)

4. Define and explain the working of Chebyshev array. (20)

**SECTION-III**

5. (a) Explain the operation and principle of E-plane Horn antenna. (10)
- (b) Elaborate the working and significance of Reflector antennas. (10)
6. (a) What is the concept of Frequency independent antennas? Also explain the Rumsey's principle. (10)
- (b) Explain the working of a Broadband antenna. (10)

**SECTION-IV**

7. (a) What are the various factors to be considered for Radio wave propagation ? Explain all the factors. (10)
- (b) Explain the various Ionospheric abnormalities. (10)
8. (a) Explain the term Multipath fading of Radio waves. (10)
- (b) Write short notes on the following :
  - (i) Critical frequency.
  - (ii) Virtual height. (10)