

3548

B.Tech. (ECE) 7th Semester (G-Scheme)

Examination, December-2022

ANTENNA AND WAVE PROPAGATION

Paper-PCC-ECE-402G

*Time allowed : 3 hours]*

*[Maximum marks : 75*

*Note: Attempt five questions in all including question no. 1 which is compulsory. Select one question from each unit. All questions carry equal marks.*

1. (a) Define radiation pattern.
  - (b) Define circular polarization.
  - (c) What is Huygens's principle?
  - (d) List out the characteristics of micro strip antenna.
  - (e) Differentiate between broad side array and end fire array.
  - (f) List out the properties of parabolic antenna.
- 6×2.5

**Unit-I**

2. (a) Discuss the gain and band width of an antenna. List out the various factors that effects them. 8
- (b) State and prove reciprocity theorem for antenna. 7
3. (a) Derive the expression for effective height of an antenna. 7
- (b) Explain in detail field and pattern of finite-length dipole. 8

3548-P-2-Q-9(22)

[P.T.O.]

**Unit-II**

4. (a) Differentiate between rectangular and circular aperture. 7  
(b) Write down salient feature of pyramidal horn antenna. 8
5. (a) Explain the design considerations of aperture antenna. 7  
(b) Explain the design procedure of sectoral horn antenna. 8

**Unit-III**

6. (a) Explain the operating principle of Yagi-Uda antenna. List out the equation used to design this antenna. 8  
(b) With neat and clean diagram, Explain the broadcast antennas. 7
7. (a) Explain the salient feature of micro-strip antennas. Also explain various feeding methods. 7  
(b) Explain the design procedure of rectangular patch antenna. 8

**Unit-IV**

8. Explain the various types of antenna array with its diagram, advantages and disadvantages. 15
9. Write a short note on (**any two**). 8, 7  
(a) Smart antennas  
(b) Schel kunoff polynomial synthesis method.  
(c) Adaptive beam farming