

**JAYA GROUP OF INSTITUTIONS**  
Thiruninravur-602024  
**6<sup>th</sup> Semester – B.E. / B.Tech.**

**Model Exam III**

Sub. Title : **ANTENNA AND WAVE PROPAGATION**  
Sub. Code : **EC2353**  
Duration : **3 Hours**

Date : **7.4.2015**  
Branch : **ECE**  
Max. Marks : **100**

Answer all questions

**Part A - (10 x 2 = 20)**

1. What is the radiation resistance of a half wave dipole of length 2m operating at 800 MHz?
2. Define radiation pattern:
3. What is pattern multiplication and draw the pattern of 2 point sources separated by  $\lambda/2$ ?
4. What are the advantages of antenna array?
5. What are the features of horn antenna?
6. What are the advantage and disadvantages of lens antenna?
7. What are the applications of helical antenna?
8. Draw the experimental set up to measure gain of an antenna:
9. What is duct propagation?
10. Define whistlers:

**Part B - (5 x 16 = 80)**

11 a) (i) Explain the principle of reciprocity as applied to an antenna. (6)

(ii) Derive the wave equation and obtain its solution. (10)

Or

11. (b) What are hertzian dipole? Derive the electric and magnetic field quantities of infinitesimal dipole and radiation pattern:

12.(a) Derive the expression for field pattern of broad side array of n point sources.

Or

12.(b) Derive the field quantities and radiation resistance of a halfwave dipole:

13.(a) Explain the special features of parabolic reflector antenna and discuss on different types of feed used with neat diagram:

Or

13. (b) Explain and derive the expression for input impedance of slot antenna and explain its feed:

14. (a) With neat sketch explain the construction and operation of multielement yagi uda antenna:

Or

14. (b) (i) Discuss briefly on construction and working principle of turnstile antenna:

(ii) With suitable geometry describe the design of a log periodic dipole array:

15. (a) Describe the structure of atmosphere and specify the factors affecting the radiowave propagation:

Or

15. (b) (i) Describe troposcatter propagation

(ii) Explain the terms

a) OWF

b) Skip distance

c) Virtual height