

Reg. No. :

Name :

Sixth Semester B.Tech. Degree Examination, March 2015**(2008 Scheme)****08.605 : ANTENNA AND WAVE PROPAGATION (T)****(Special Supplementary)**

Time : 3 Hours

Max. Marks : 100

PART – AAnswer **all** questions. **Each** question carries **4** marks.

1. Explain the difference between gain and directivity of an antennae.
2. Derive expression for effective Aperture of an antennae in terms of radiation resistance.
3. An antennae has a loss resistance of 10 ohms, power gain of 20 and directivity of 22. Calculate its radiation resistance.
4. Discuss the importance of retarded potentials in antennae analysis.
5. Explain the principle of Pattern Multiplication.
6. Explain the basic principle of antennae beam steering.
7. What do you mean by Binomial Arrays ?
8. Discuss the structure of the ionosphere.
9. Find the range of a LOS system when the receive and transmit antennae heights are 10m and 100 m respectively. Take the effective earth's radius into consideration.
10. Write short notes on duct propagation. **(10×4=40 Marks)**



PART – B

Answer **any two** questions from **each** module. **Each** question carries **10** marks.

Module – I

11. Define and prove Reciprocity Theorem. Discuss the applications of reciprocity theorem.
12. Write brief notes on the following :
 - a) Beam solid angle
 - b) Radiation Resistance
 - c) Measurement of Antennae Gain.
13. Derive expressions for the directivity and radiation resistance of a half wave dipole.

Module – II

14. Derive expression for the resultant field of a linear array of 'n' isotropic point sources. Under what conditions does the array act as an end fire array and a broadside array ?
15. Write short notes on the following :
 - a) Construction and working of Rhombic Antennae
 - b) Principle of operation of parabolic dish antennae.
16. Design a 5 element Dolph Chebyshev array with a spacing of $d = \lambda/2$. The pattern is to be optimum with a side lobe level of 21.5 db down the main lobe maximum.

Module – III

17. Explain the practical significance of ionospheric propagation. Derive expressions for the effective refractive index of the ionosphere.
18. a) Explain the difference between maximum usable frequency and critical frequency.
b) What do you mean by skip distance ? Derive expressions for skip distance in terms of maximum usable frequency.
19. Explain the salient features of space wave propagation. Derive expressions for field strength of space wave propagation.

(6×10=60 Marks)