53 (EC 710) AAWP

2013

(December)

ANTENNA AND WAVE PROPAGATION

Paper : EC-710

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Define the terms HPBW and BWFN. 4

(b) An antenna with a circular aperture of diameter $3m$ has radiation and loss resistances of 72Ω and 8Ω respectively. If the operating frequency is $5GHz$ then find the directivity and gain of the antenna. 6

(c) State and prove antenna reciprocity theorem. 10

2. *(a)* Find the far field component of a short magnetic dipole. 10

(b) Derive the expression for total electric field of a linear array with n isotropic point sources of equal amplitude and spacing. 10

3. *(a)* Explain the end fire array with increased directivity. 8

(b) How a helical antenna can be designed in normal mode and axial mode of radiation ? 12

4. *(a)* Explain the designing of a Rhombic antenna. 12

(b) State the characteristics of an Yagi-Uda antenna. 8

5. *(a)* Explain the geometry of different types of horn antenna. 10

(b) Explain the geometry of lens antenna. 10

6. *(a)* Define the terms — Optimum frequency, LUHF, virtual height, skip distance and MUF. 10

(b) Explain the concept of duct propagation. 10

7. Write short notes on — 10×2=20

(a) Paraboloidal reflector

(b) LOS propagation.

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