R09

Code No: 09A50405

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B. Tech III Year I Semester Examinations, May/June – 2013
Antennas and Wave Propagation
(Common to ECE, ETM)

Time: 3 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) Explain effective aperture and directivity of a short dipole antenna and linear λ/2 dipole.
b) Explain in detail about antenna field zones.
c) A radio link has a 15W transmitter connected to an antenna of $2.5m^2$ effective aperture at 5GHz. The receiving antenna has an effective aperture of 0.5 m^2 located at a 15Km LOS distance from the transmitting antenna. Assuming lossless, matched antennas, find the power delivered to the receiver. [8+3+4]

2.a) Determine field at any distance from center-fed dipole.
b) Explain the radiation resistance of loops. [7+8]

3. Determine the field due to
a) array of two point sources of same amplitude and in-phase at a distance 'R'.
b) array of two point sources of same amplitude and opposite phase at a distance 'R'. [15]

4.a) Explain in detail about helical geometry of Helical Antenna.
b) How to construct a pyramidal horn and draw its radiation pattern. [8+7]

5.a) Explain in detail about corner reflector design.
b) What are the different methods to feed parabolic reflector? Explain them in brief. [7+8]

6.a) Explain nonmetallic dielectric antennas.
b) How to measure gain of Antenna using three Antennas? [7+8]

7.a) Explain reduction factor and numerical distance in ground wave propagation.
b) Explain about super refraction. [8+7]

8.a) Explain refraction and reflection of sky waves by ionosphere.
b) What is duct propagation? Give some examples. [8+7]

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