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Code No: 156AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, February/March - 2022

ANTENNAS AND PROPAGATION

(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any five questions
All questions carry equal marks**

- 1.a) What is beam area? Define and derive the beam efficiency of antenna.
- b) Explain about Effective area and effective height of liner wire antennas. [7+8]
- 2.a) Derive the radiating resistance and radiated power of Quarter-wave monopole.
- b) Write the equations for fields from oscillating dipole in detail. [7+8]
- 3.a) Write the Expression of principle of pattern multiplication and considering an array of four elements.
- b) Derive the equation for field strength of a uniform linear array. [7+8]
- 4.a) Write the differences between Near and Far field measurements of an antenna.
- b) Discuss about the Measurement of antenna patterns in detail. [7+8]
- 5.a) Explain design and the operation principle of helical antenna with neat diagram.
- b) Explain the operation of Yagi-uda antenna and write its applications. [8+7]
- 6.a) The aperture dimensions of a pyramidal horn are 12×6 cm. It is operating at a frequency of 6GHz. Find the power gain and directivity.
- b) Explain about corner reflector and parabolic reflector with neat diagrams. [6+9]
- 7.a) Explain the principle and operation of microstrip antenna and write its applications.
- b) Discuss the Mechanism of reflection and refraction of sky waves by ionosphere. [7+8]
8. Write a short note on:
 - a) Virtual height
 - b) Critical frequency
 - c) MUF[5+5+5]

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