

TE Sem VI Reg C'scheme Re2019 - May 25 14/5/2025

(3 Hours)

(Maximum Marks: 80)

- NB. 1. Que number one is compulsory**
2. Attempt any three out of remaining five questions
3. Assume suitable data
4. Figures to the right indicate the maximum marks.

- Q.1 Attempt any 4 questions: [20]**
 (a) State and explain Biot Savart law. Also express it in vector form.
 (b) Define the terms: Critical frequency, MUF, Virtual height, skip distance as measures of ionospheric propagation.
 (c) State the Poynting theorem and explain the various terms associated with it.
 (d) A 60m diameter parabolic reflector is fed by a nondirectional antenna at 1430 MHz. Calculate Beam width between Half power points and between Nulls.
 (e) Derive Laplace's and Poisson's equations.
- Q.2 (A) Derive Maxwells equations in integral form and point form. Give the word statements. [10]**
(B) State and derive FRII'S transmission equation. Explain its significance. [10]
- Q.3 (A) Describe the construction and radiation pattern of Log periodic antenna. Why is it called Log periodic? [10]**
(B) Derive the Helmholtz wave equations for free space in terms of electric and magnetic fields. [10]
- Q.4 (A) State and explain principle of pattern multiplication. Explain the concept of array factor. [10]**
(B) Compare Broadside and End-fire Array. [10]
- Q.5 (A) Explain skywave propagation with reference to D, E, and F regions and multiple reflections. [10]**
(B) Describe the structure of Microstrip antenna. Also discuss the feeding techniques for rectangular and Circular patch antenna. [10]
- Q.6 (A) What is near field and far field radiation for an antenna. Explain its importance in communication and its applications. [10]**
(B) Derive radiation resistance for an infinitesimal dipole. p[10]
