

(DEC 414)

**B.Tech. DEGREE EXAMINATION, MAY - 2015**

**(Examination at the end of Final Year)**

**ELECTRONICS AND COMMUNICATION ENGG.**

**Paper - IV : Antennas and Propagation**

**Time : 3 Hours**

**Maximum Marks : 75**

*Answer question No.1 compulsory*

*(15)*

*Answer ONE question from each unit*

*(4 × 15 = 60)*

- 1) a) Write the basic sources of Radiation.
- b) What is the Maxwell's importance in antennas?
- c) Explain about radiation from quarter wave.
- d) Write briefly Isotropic, Directional, Omini directional patterns.
- e) Write about power loss factor and polarization.
- f) Give short notes on parabolic reflector antennas.
- g) What is Helical Antenna importance?
- h) How many layers in the ionosphere and give brief on layers.
- i) Explain Maximum usable frequency.

**UNIT - I**

- 2) a) Draw the Travelling wave Antennas and explain clearly each antenna.
- b) Explain the effect of the point of feed on standing wave antennas.

OR

- 3) a) Explain about Maxwell's equations.

- b) Derive the expression for Radiation resistance  $R_{\text{rad}} = 80\pi^2 \left( \frac{dl}{\lambda} \right)^2$ .

## UNIT - II

- 4) a) Explain about Isotropic, Directional omni directional patterns.  
b) Write short note on radiation density and Radiation Intensity.

OR

- 5) a) Explain about Antenna polarisation and radiation efficiency.  
b) Write about effective aperture of antenna.

## UNIT - III

- 6) a) When antenna arrays are used and sketch the radiation patterns of two non directional radiations.  
b) Extract the expressions for magnitude of total fields strength.

OR

- 7) a) Sketch and explain about multiplication of patterns.  
b) Explain about Binomial array.

## UNIT - IV

- 8) a) Classify the all types of propagation and explain about them.  
b) Discuss about Radio Horizon and Duct propagation.

OR

- 9) a) Discuss about Ionosphere.  
b) Derive the expression for critical frequency.

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