

Roll No. ....

Total No. of Questions : 09]

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## Paper ID [EC303]

(Please fill this Paper ID in OMR Sheet)

B.Tech. (Sem. - 5<sup>th</sup>)

ANTENNA AND WAVE PROPAGATION (EC - 303)

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section -B.
- 3) Attempt any **Two** questions from Section -C.

### Section -A

(10 × 2 = 20)

Q1)

- a) Discuss the antenna as an impedance matching device.
- b) What is the radiation resistance of antenna which radiates 5 kW when it draws 15A Current?
- c) Define the term Directivity?
- d) What do you mean by Infinitesimal Dipole?
- e) Define antenna Beamwidth?
- f) Distinguish between ordinary end fire array & Hansen-woodyard end fire array?
- g) Discuss field equivalence Principle.
- h) Why modified refractive index is so called?
- i) What is the effect of earth's magnetic field?
- j) Give the significance of skip distance?

## Section - B

(4 × 5 = 20)

- Q2) A short vertical grounded antenna is design to radiate at 10 MHz. Calculate the radiation resistance, if the effective height of antenna is 60 meters.
- Q3) Explain briefly linearly wire antennas.
- Q4) Discuss the rectangular and Circular aperture antennas.
- Q5) Discuss the range of space wave propagation.
- Q6) Explain the structure of atmosphere.

## Section - C

(2 × 10 = 20)

- Q7) What is an antenna array? What are the reasons using antenna arrays? Explain in detail the behaviour of Broad-side and End-Fire antenna arrays.
- Q8) Explain the terms MUF and Skip distance. Also derive the relationship between them.
- Q9) Write a short note on the followings.
- (a) Near and far Field.
  - (b) Duct propagation.