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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (ECE/Electronics Engg) (2012 to 2017)
(Sem.-4)

ELECTROMAGNETICS AND ANTENNAS

Subject Code : BTEC-403

M.Code : 57595

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

SECTION-A

Answer briefly :

- 1) Calculate the radiation resistance of $\lambda/10$ wire dipole in free space?
- 2) Define Antenna beam width.
- 3) What are the disadvantages of ground wave propagation?
- 4) What is retarded potential?
- 5) State field equivalence principle.
- 6) Define Surface Impedance.
- 7) Differentiate between TE, TM and TEM mode.
- 8) What is Distortion Less line?
- 9) Define Polarization.
- 10) What are smith charts? Briefly explain.

SECTION-B

- 11) What is aperture antenna? Explain its different types.
- 12) Explain the working of parabolic reflector antenna.
- 13) Explain Duct Propagation in detail.
- 14) A rectangular waveguide with dimensions $4\text{cm} \times 2\text{cm}$ operates at 10 GHz. Find f_c and λ_c of TE_{10} mode.
- 15) Discuss the wave propagation characteristics in good dielectric.

SECTION-C

- 16) Explain the concept of radiation in single wire, two wire and dipole antenna.
- 17) For an array of n isotropic point sources radiating in end fire array, derive and obtain the maxima and minima direction for major and minor lobes. Sketch the pattern.
- 18) Give the transmission line analogy for waveguides. Also draw the equivalent transmission line circuit representation for TE and TM waves.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.