

Roll No.

Total No. of Pages : 02

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B.Tech. (ECE) (2012 to 2017)/(Electronics & Telecom Engg.)  
(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**

1) Answer briefly :

- a. What is the intrinsic impedance of free space?
- b. Differentiate between TE and TM mode.
- c. Define Directive Gain and directivity with respective antenna. An antenna has a directivity of 20 and radiation efficiency of 90%. Compute the gain in dBs.
- d. Define Surface Impedance.
- e. What is distortionless condition?
- f. Define Array Factor.
- g. What are scanning arrays?
- h. Define Critical Frequency.
- i. What is the equation of continuity for steady currents?
- j. Define Far Field.

## SECTION-B

- 2) Explain ground wave and space wave propagation.
- 3) State and prove Poynting Vector Theorem. Also explain the significance of each term.
- 4) Discuss the use of low loss RF and UHF transmission lines.
- 5) Explain Babinet's principle in detail.
- 6) Derive an expression for the current distribution of half wave dipole.

## SECTION-C

- 7) Describe the salient features of horn antenna. Why it is called Super gain antenna? Explain its construction and working in brief.
- 8) Show that a 2GHz signal cannot propagate in the TM<sub>1</sub> mode in a parallel conducting plates having a plate separation of 5 cm.
- 9) What are the different types of antenna parameters? Explain any four in brief.

**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.**