Roll No. | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (Electronics Engg.) (2012 Onwards)
B.Tech. (ECE/ETE) (2011 Onwards) (Sem.–4)

ELECTROMAGNETICS AND ANTENNAS

Subject Code : BTEC-403
Paper ID : [A1191]

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION 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. **Write briefly :**

a) What is meant by virtual height in radio wave propagation?

b) What is need for an antenna array? Distinguish : Broadside and End fire array.

c) Define phase centre of a horn antenna.

d) Outline the principle of working of a phased array.

e) Outline the properties of a uniform plane wave.

f) State Babinet's principle and specify where it is applied.

g) Under what circumstances duct propagation will be effective? Give reasons for your answer.

h) What is distortion less condition?

i) Write Maxwell's Equation in integral form.

j) Define Polarization.

SECTION-B

2 Derive the Maxwell's equations from Faraday's law of Electromagnetic induction.

3 Discuss in detail the effects of earth's magnetic field on ionospheric radio waves.

4 Show that the directivity of a half wave dipole is 1.644.

5 Write short note on Smith Charts.

6 Discuss the different types of feed systems used in conjunction with parabolic reflectors.

SECTION-C

7 State Poynting's Theorem and derive the expression for Poynting vector.

8 Describe the following with respect to the propagation of radio waves :

a) Skip Distance

b) Critical Frequency

9 Obtain the excitation coefficients of a nine element binomial array.