Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐☐   **Total No. of Pages : 02**

Total No. of Questions : 09

B.Tech.(ECE)/(ETE) (2011 Onwards)/
(Electronics Engg.) (2012 Onwards)
(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) Write the wave equation for free space propagation.

   b) What is waveguide? What is its importance and applications?

   c) Differentiate between ordinary end fire array and Hansen-wood yard end-fire antenna.

   d) Define Babinet's principle.

   e) What is the significance of Poynting theorem?

   f) What is propagation constant?

   g) Define Retarded Vector and scalar potential.

   h) Define Radiation Pattern of an antenna.

   i) Define Maximum Usable Frequency.

   j) Define Skip Distance.

SECTION-B

2. Explain and derive the general solution of transmission line terminated with any load impedance.

3. Derive the expression for direction of pattern maxima and minima for array n isotropic sources of equal amplitude and spacing (for broadside).

4. What is distortion less transmission line? Derive the expression for the distortion less condition.

5. Describe the mapping of constant resistance and constant reactance circle on reflection coefficient plane.

6. Derive relation between E and H in uniform plane wave propagation.

SECTION-C

7. Explain the concept of polarisation. What are the conditions for different types of polarisation?

8. Explain the structure of atmosphere. Discuss the range of space wave propagation.

9. Discuss the construction and operation of paraboloid reflector antenna.

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.