

**B.TECH SEM - V (2007 COURSE) (E & TC ENGG.) : WINTER -
2017**

SUBJECT : ELECTROMAGNETIC ENGINEERING

Day **Saturday**
Date **20/01/2018**

Time : **02.30 PM TO 05.30 PM**
Max. Marks : **80**

W-2017-2493

N.B.:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Draw neat and labeled diagrams **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data if necessary.

SECTION – I

- Q.1** a) State and explain Divergence theorem. **[05]**
b) Define and explain Lenz's Law. **[05]**
c) Discuss the propagation of uniform plane waves in a good conductive medium. **[04]**
- Q.2** a) Define electric flux density \bar{D} . State and prove the differential form of Gauss's Law. **[07]**
b) Derive boundary conditions for electrostatic field. **[06]**
- Q.3** a) Derive Maxwell's equation for free space in point form as well as integral form. **[07]**
b) State and explain Faraday's law. **[06]**
- Q.4** a) Derive wave equation in conducting medium which is homogeneous, isotropic and source free. **[07]**
b) Derive equation for skin depth. **[06]**

SECTION – II

- Q.5** a) Explain the concept of Reflection coefficient and standing wave ratio in transmission lines. **[05]**
b) Write a note on : Endfire array. **[05]**
c) Define the terms: **i) Directivity** **ii) Radiation intensity.** **[04]**
- Q.6** a) Explain the necessity of a smith chart. What are the various applications of a Smith chart? **[07]**
b) State and explain primary constants of a transmission line. **[06]**
- Q.7** a) What are retarded potentials? Derive the expression for the same. **[07]**
b) With proper schematic, explain linear and circular polarization. **[06]**
- Q.8** a) Explain how microwave dish antenna can be used for microwave transmission and reception. Give its merits and demerits. **[07]**
b) For Broadside array explain: **[06]**
i) Structure of array **ii) Radiation pattern**

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