

**R07****Code: R7211003**

B.Tech II Year I Semester (R07) Supplementary Examinations, May 2013

**ELECTRO MAGNETIC WAVES & TRANSMISSION LINES**

(Electronics &amp; Instrumentation Engineering)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions  
All questions carry equal marks

\*\*\*\*\*

- 1 (a) Define the following terms:  
(i) Coulomb's law. (ii) Electric field intensity.  
(iii) Electric flux density. (iv) Gauss law.  
(b) Give the relation between E and V. Derive the necessary expressions.
- 2 (a) Derive the Maxwell's two equations for magneto static fields.  
(b) Give the Ampere's circuital law and its applications.
- 3 (a) Derive the Maxwell's equations for time varying fields.  
(b) Discuss about dielectric-dielectric and dielectric-conductor interfaces.
- 4 (a) Discuss about wave propagation in lossless and conducting media with examples.  
(b) Give all relations between E and H and sinusoidal variations.
- 5 (a) Discuss about reflection and refraction of plane waves with necessary equations.  
(b) What is poyinting vector? State and prove the poyinting theorem.
- 6 (a) Give the analysis of parallel plane wave guides for TE and TM modes.  
(b) Describe the following terms related to wave guides.  
(i) Cut-off frequencies. (ii) Cut-off wave lengths.
- 7 (a) Give the transmission line parameters and transmission line equations.  
(b) Derive the expression for characteristic impedance and explain about its significance.
- 8 (a) Discuss about input impedance relations for SC and OC lines.  
(b) Discuss about single and double stub matching with necessary diagrams.

\*\*\*\*\*