UNIT WISE IMPORTANT TOPICS EMF II YEAR ECE

Note: These are only important topics useful to pass in exam.

**Unit 5**

1. What are waveguides? Derive Solution of Wave Equations in Rectangular Coordinates.
2. Define Phase and Group Velocities? Derive the relation between them.
3. Impossibility of TEM Mode
4. TE mode analysis-Characteristic Equation and Cut-off Frequencies, Dominant and Degenerate Modes
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6. Microstrip Lines – Zo Relations, Effective Dielectric Constant.

“problems on rectangular waveguide”.

**Unit 4**

1. Reflection and Refraction of Plane Waves – Normal and Oblique Incidences for both Perfect Conductor and Perfect Dielectrics.

2. Poynting Vector and Poynting Theorem

3. Relation between E & H, Sinusoidal Variations

4. Wave Equations for Conducting and Perfect Dielectric Media

5. Write a short note on the following

1. Brewster Angle
2. Critical Angle
3. Total Internal Reflection
4. Surface Impedance

**UNIT 3**

1. Conditions at a Boundary Surface - Dielectric-Dielectric and

Dielectric Conductor Interfaces

1. Inconsistency of Ampere’s Law
2. Maxwell’s Equations in Different Forms
3. Faraday’s Law and applications
4. Displacement Current Density

**Unit 2**

1. Biot-Savart’s Law, Ampere’s Circuital Law and Applications and problems
2. Ampere’s Force Law.
3. Forces due to Magnetic Fields,
4. Magnetic Flux Density,
5. Maxwell’s Two Equations for Magnetostatic Fields

**Unit 1**

1. Define and derive the following
   * 1. Continuity Equation
     2. Relaxation Time
     3. Poisson’s and Laplace’s Equations.
2. Capacitance – Parallel Plate, Coaxial, Spherical Capacitors.(derivations)
3. Maxwell’s Two Equations for Electrostatic Fields
4. Coulomb’s Law, Electric Field Intensity – Fields due to Different Charge Distributions, problems
5. Electric Flux Density, problems
6. Gauss Law and Applications, problems
7. Relations Between E and V