

**Semester-II**  
**Course: B.Sc. (Hons) IT**  
**Paper Code: BSIT-203**  
**Nomenclature: – Applications of EM wave**

**Max. Marks: 40+10**  
**Time: 3hrs.**

**Unit-I**

**Propagation of EM Waves:-** Ground wave propagation, sky wave propagation and space wave propagation, multipath propagation, Troposphere scattering, Fading, Free space path loss.

**Unit-II**

**Antenna:** Basic antenna operation, Radiation mechanism, Elementary doublet, Current and voltage distribution, radiation pattern, antenna gain, antenna resistance, bandwidth, beamwidth, polarisation, resonant antenna, non resonant antenna, effect of ground on antenna.

**Unit-III**

**Antenna Techniques:-** Coupling at medium frequency, General consideration, selection of feed point, antenna coupler, Directional high frequency antenna: Dipole arrays; folded antenna and its application.

**Unit-IV**

**Satellite Communication:-** History, Orbital mechanics, Kepler's three laws of planetary motion, satellite orbit, satellite elevation categories, Elevation angle, Azimuth angle, Orbital Perturbations, Longitudinal changes, Inclination changes, Remote sensing (Basic idea) and its application.

**Reference Books:**

1. Electronic Communication Systems by George Kennedy
2. Electronic Communication systems by Wayne Tomasi

**Note:**

1. Syllabus in each Theory Paper is divided in 4 units.
  - I. A Student is required to attempt 5 questions in all.
  - II. Question No 1 is compulsory, consisting of short answer type questions based on all the 4 units.
  - III. Two questions will be set from each unit. A student is required to attempt one question from each unit.
  - IV. All questions carry equal marks.
2. Use of simple calculator is permissible.
3. Instructions should be imparted using SI system of units. Familiarity with CGS system of units should also be ensured.
4. Distribution of Marks: 40+10\*= 50.  
\* Each question paper will be of 40 marks and 10 marks in each theory paper are awarded through internal assessment in each semester.
5. Work load – 3 periods per week per theory paper.