**Electromagnetic Wave and Transmission Lines**
**Code: EC491**
Contacts: 3P
**Credits: 2**

**Minimum 3 experiments from each Group.**

**Group-A**

1. Measurement of free space wavelengthλ, guide wavelength λg and frequency f using X- band waveguide test bench. Plot λ vs. f & λg vs. f curves.
2. Obtain the dispersion curve (ω-β plot) for X- band waveguide and study the phase velocity and groupvelocity within waveguide.
3. Measurement of unknown impedance using shift in minima technique.
4. Measurement of reflection co-efficient and transmission co-efficient due to a discontinuity within a waveguide.
5. Determination of Dielectric constant of a
(i) Solid material
(ii) Liquid material
In an X-band test bench.

**Group-B**

6. Study of the filter characteristics using spectrum analyzer with tracking generator.
7. Simulate Smith Chart on MATLAB platform. Measure VSWR for various values of ZL (load impedance). Find the position of VMAX and VMIN from the chart.
8. Study of Spectrum Analyzer. Measure frequency response of a filter using Spectrum Analyzer with tracking generator.
9. Measure ZO and γ of an X-band waveguide by measuring Z SC and ZOC.

Study the matching techniques (single -stub, double- stub and quarter wave techniques).