**Please read this book named Microwave Devices and Circuits by SAMUEL Y. LIAO**

**Unit-I [see chapter 4.1,4.2 and 4.3]**

***Microwave Resonators****:* Brief description of waveguides, coplanar waveguides,

cavity resonators: rectangular, cylindrical, spherical and coaxial, excitation and coupling of cavities, Q factor.

Microwave Measurements: Measurement of Frequency, Impedance (using slotted section) attenuation, power, dielectric constant, measurement of V.S. W. R., insertion loss and permeability

**Unit-II [see chapter 9]**

***Microwave Generators****:* Construction, characteristics, operating principle and typical applications of Klystron (two- cavity, multicavity), Reflex Klystron, magnetron (Cylindrical magnetron and description of Π mode applications) and Traveling Wave Tube (TWT).

**Unit-III[see chapter 4.4,4.5 and 4.6]**

***Matrix Description of Microwave Circuits****:* Scattering Matrix: properties, measurement of scattering coefficients, scattering matrices for common microwave systems. Microwave Components: Waveguide tees- E-plane, H-plane, magic tee, rat race, directional coupler, tuning screws and stubs, isolators and circulators-their constructional features and applications. Microwave filters, Phase shifters, attenuators, and frequency meter.

**Unit-IV [see chapter 7 and 8]**

***Solid State Microwave Devices:***  Transferred Electron Devices- Gunn Effect; negative differential resistance phenomenon, field domain formation, Gunn diode structure. Avalanche transit time devices: IMPATT, TRAPATT, BARITT diodes, Parametric amplifiers