

GUJARAT TECHNOLOGICAL UNIVERSITY**ME - SEMESTER– II(New course) • EXAMINATION (Remedial) – WINTER- 2015****Subject Code: 2724404****Date: 09/12/2015****Subject Name: RF and Microwave Engineering****Time: 2:30 pm to 5:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Derive the equation of input impedance if transmission line is short-circuited with necessary waveforms. **07**
(b) Explain conjugate matching and power delivered to load if the generator and load impedance are mismatches with the characteristic impedance of the line. **07**
- Q.2** (a) Why TEM wave is not propagate in a rectangular waveguide? Explain with derivation. **07**
(b) Derive the general solutions of TE wave. **07**
- OR**
- (b) Derive the necessary equations for TE mode in a circular waveguide. **07**
- Q.3** (a) Define: Impedance matrix, admittance matrix, scattering matrix with their significance. **07**
Why S matrix is suitable for microwave circuits?
(b) Explain single stub tuning: Shunt and Series stub **07**
- OR**
- Q.3** (a) Explain signal flow graph with four basic decomposition rules. **07**
(b) Explain theory of small reflections with reference to single-section transformer. **07**
- Q.4** (a) Derive the Q-factor for a short-circuited $\lambda/4$ lossy transmission line. **07**
(b) Explain resonant frequency and Q-factor of rectangular waveguide cavity **07**
- OR**
- Q.4** (a) Explain basic properties of divider. **07**
(b) Explain Ferrite Isolator **07**
- Q.5** (a) Explain filter design by insertion loss method **07**
(b) Explain Kuroda's Identities with reference to filter implementations. **07**
- OR**
- Q.5** (a) Explain Ferrite circulator. **07**
(b) Explain RADAR system in details. **07**
