

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – II • EXAMINATION – WINTER 2012

Subject code: 1710411**Date: 07/01/2013****Subject Name: RF and Microwave Engineering****Time: 02.30 pm – 05.00 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) Write short notes on “Field analysis of terminated lossless transmission line”. **07**
(b) State the different types of ferrite isolators and explain in detail with analysis any one of them. **07**

- Q.2** (a) Explain in detail with analysis balance mixer used in microwave circuits. **07**
(b) Explain in detail operation of rectangular waveguide in TM modes by deriving different equations **07**

OR

- (b) Explain in detail operation of circular waveguide in TE modes by deriving different equations **07**

- Q.3** (a) Derive the following **07**
1) Y-parameters in terms of Z-parameters
2) Z-parameters in terms of ABCD parameters
(b) What is signal flow graph?. Explain in detail basic rules used for decomposition of signal flow graph to obtain any desired wave amplitude ratio. **07**

OR

- Q.3** (a) Show that scattering matrix for a reciprocal network is symmetric and for a lossless network is unitary. **07**
(b) State with diagrams some common transmission line discontinuities and their equivalent circuits for rectangular waveguide. Explain in detail model analysis of an H-plane step in rectangular waveguide. **07**

- Q.4** (a) Explain in detail with analysis coupling through an aperture in the broad wall of a waveguide. **07**
(b) Explain in detail with analysis binomial multi section matching transformer **07**

OR

- Q.4** (a) Explain in detail with analysis coupling through an aperture in a transverse waveguide wall. **07**

- Q.4** (b) Explain in detail with analysis chebyshev multi section matching transformer **07**

- Q.5** (a) Explain in detail with analysis cylindrical cavity resonator. **07**
(b) Explain in detail with analysis rat-race type directional coupler. **07**

OR

- Q.5** (a) Explain in detail with analysis rectangular cavity resonator. **07**
(b) Explain in detail with analysis Wilkinson power divider. **07**
