

GUJARAT TECHNOLOGICAL UNIVERSITY**PDDC - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: X 71101****Date: 28-11-2014****Subject Name: Microwave Engineering****Time: 10:30 am - 01:00 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) Explain advantages of microwave in detail. **07**
(b) List out the characteristics of the smith chart. **07**
- Q.2** (a) List the similarities and dissimilarities of waveguides with 2-wire transmission lines. **07**
(b) Explain losses due to mismatch in transmission lines in detail. **07**
- OR**
- (b) A transmission line has the following parameters: **07**
 $R = 2\Omega/m$ $G = 0.5 \text{ mmho/m}$ $f = 1\text{GHz}$ $L = 8\text{nH/m}$ $C = 0.23 \text{ pF}$
Calculate: (a) the characteristics impedance (b) the propagation constant
- Q.3** (a) List out the advantage, disadvantage and applications of circular waveguide. **07**
(b) Determine the cut-off wavelength for the dominant mode in a rectangular waveguide of breadth 10 cms. For a 2.5 GHz signal propagated in this waveguide in the dominant mode; calculate the guide wavelength, the group and the phase velocities. **07**
- OR**
- Q.3** (a) Explain applications of Magic Tee. **07**
(b) Explain directional coupler in detail. **07**
- Q.4** (a) List the limitations of conventional tube at higher frequency and explain each in brief. **07**
(b) Explain two cavity klystron amplifier in detail. **07**
- OR**
- Q.4** (a) Explain construction, operation and application of TWT. **07**
(b) Explain Tunnel diode in detail. **07**
- Q.5** (a) Explain PIN diode in detail. **07**
(b) Derive the equation of maximum range of radar. **07**
- OR**
- Q.5** (a) Explain Pulse radar in detail. **07**
(b) List the types of display for radar and explain each in detail. **07**
