

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VII • EXAMINATION – WINTER 2013

Subject Code: 171001**Date: 26-11-2013****Subject Name: Microwave Engineering****Time: 10:30 TO 01:00****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 magic tee as an isolating device and as an adjustable phase shifter. **07**
(b) Describe (i) Slow wave structure. **07**
(ii) Phase focusing effect.

- Q.2** (a) Explain how the klystron amplifier can act as a klystron oscillator. Discuss the performance specification of Reflex klystron. **07**
(b) What is avalanche transit time? Explain one of avalanche transit time Device. **07**

OR

- (b) Explain impedance matching and stub matching in transmission line. **07**

- Q.3** (a) Explain mathematical analysis of rectangular waveguide. **07**
(b) An air filled waveguide with a cross section 4×2 cm transports energy in the TE_{10} mode at the rate of 0.1 hp. The impressed frequency is 30 GHz. What is the peak value of the electric field accruing in the guide? **07**

OR

- Q.3** (a) Explain Radar display methods. **07**
(b) Derive transmission line equations and also derive solution of transmission line equations. **07**

- Q.4** (a) Explain limitation of conventional tubes at UHF and at Microwave. **07**
(b) Explain crossed filed device and also explain why strapping is needed? **07**

OR

- Q.4** (a) Derive radar range equation and discuss factors influencing maximum range. **07**
Q.4 (b) With neat circuit diagram explain the velocity modulation process with Applegate diagram in klystron amplifier. **07**

- Q.5** (a) Derive Distributed parameters, characteristic impedance and attenuation losses for parallel strip lines. **07**
(b) Explain search and tracking radar system. List the advantages and limitation of CW Doppler Radar. **07**

OR

- Q.5** (a) What is transferred electron effect? Explain one of transferred electron devices. **07**
(b) Explain two-Hole directional coupler and the S matrix of a directional coupler. **07**
