

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE - SEMESTER-VII (OLD) - EXAMINATION – SUMMER 2018**

**Subject Code:171001**

**Date:10/05/2018**

**Subject Name: Microwave Engineering**

**Time:02:30 PM to 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) Draw the approximate equivalent circuit of Transmission Line and obtain basic Transmission line Equations. **07**
- (b) Describe the “Reflex Klystron” with the aid of suitable schematic diagram. Why the Transit Time is so important in this device. **07**
- Q.2** (a) Define the Terms: (1) Guide Wavelength (2) Phase Velocity (3) Group Velocity (4) SWR (5) TEM Wave (6) Return Loss and (7) TM wave **07**
- (b) The Dimensions of Waveguide are 2.5 X 1 cms. The Frequency is 8.6GHz. Find the (I) Possible Modes (II) Cut off Frequency and (III) Guide Wavelength. **07**
- OR**
- (b) Compare: (I) Transmission Line and Wave Guide **07**  
(II) Rectangular Wave Guide and Circular Wave Guide
- Q.3** (a) With the aid of Diagram, explain the operation of “ Two Hole Directional Coupler” **07**
- (b) Explain the operation of “Varactor Diode”. Discuss its Constructional details and mention its applications **07**
- OR**
- Q.3** (a) What is “Parametric Amplifier”? Discuss its Fundamental and Operation with neat Sketch and necessary waveform. **07**
- (b) Explain “Farady Rotation Circulator” and “Y Circulator” with neat sketch. **07**
- Q.4** (a) With is GUNN Diode? Describe the construction details and operation of GUNN diode. **07**
- (b) With Suitable diagram, explain the operation of “Farady Rotation Ferrite Isolator”. **07**
- OR**
- Q.4** (a) Explain the operation of “Magic Tee” with necessary equations and sketch. Mention its applications. **07**
- (b) Discuss Volt-Amp characteristic of “Tunnel Diode” and explain how tunnel diode can be used as an Oscillator. **07**
- Q.5** (a) Explain Basic Principal of “RADAR” and Derive the basic RADAR Range Equations. **07**
- (b) With neat sketch, explain the operation of Magnetron. **07**
- OR**
- Q.5** (a) Explain “Basic Pulsed RADAR System” with necessary sketch. **07**
- (b) With neat sketch, explain the operation of “Traveling Wave Tube”. **07**

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