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E – 5558

Reg. No. : .....

Name : .....



**Eighth Semester B.Tech. Degree Examination, October 2018  
(2008 Scheme)**

**08.825 : MICROWAVE DEVICES AND CIRCUITS (T)**

Time : 3 Hours

Max. Marks : 100

**Instruction :** Provide Smith Chart to students on **request**.

**PART – A**

Answer **all** questions. **Each** question carries **4** marks.

1. Why are standing waves set up in transmission lines ?
2. What is the important property of Gunn diode ?
3. Give the properties of impedance matrix.
4. Define one port circuit. Give two examples.
5. What is Faraday rotation ? List two microwave devices using Faraday rotation principles.
6. What are the key phenomenon in the working of IMPATT diode ?
7. Give structure of microstrip lines and the mode of wave propagation in it.
8. A waveguide termination has a VSWR of 1.1. Find its reflection coefficient. If incident power is 100 mW. What is its reflected power.
9. What is MESFET ? What are its advantages ?
10. What are the various modes of transferred electron oscillators ?

P.T.O.



## PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

**Module – I**

11. Explain the principle of double stub matching. Find the lengths of short circuited stubs that match the load impedance of  $(50 + j50)$  ohms to a 50 ohm input impedance. Assume the line has a characteristic impedance of 50 ohms and operating frequency is 2 GHz.
12. Explain the use of quarter wave transmission line for impedance matching.
13. Describe the structure of microwave bipolar transistor, and circuit used for biasing it.

**Module – II**

14. Describe the construction and operation of TRAPATT diode. Compare output power and efficiency with the IMPATT diode.
15. Explain Gunn effect and RWH theory of operation of Gunn diode.
16. Describe the design of a one port negative resistance oscillator.

**Module – III**

17. With neat diagram, explain the working of attenuates and limiters.
18. Explain the functioning of a three port circulator. Mention some applications.
19. Explain the structure and principle of working of microstrip resonators.

