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Reg. No. : .....

Name : .....

Eighth Semester B.Tech. Degree Examination, October 2014

(2008 Scheme)

08.825 : MICROWAVE DEVICES AND CIRCUITS (T) (Elective – V)

Time : 3 Hours Max. Marks : 100

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

PART – A

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

1. Explain the need for S parameters in the analysis of microwave networks.
2. Prove that S matrix of a reciprocal network is symmetric.
3. Explain how impedance matching is done using quarter wave transformer.
4. Explain how microwave BJT and FET are biased.
5. Why is the TRAPATT diode so called ?
6. Explain the LSA mode of operation of a GUNN diode.
7. Differentiate between Available Power gain and Transducer Power gain.
8. What are the different types of losses occurring in a microstrip line ? Explain.
9. Discuss about any two types of discontinuities in microwave integrated circuits.
10. Write short notes on switched channel attenuator. **(4×10=40 Marks)**

P.T.O.

PART – B

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

MODULE – I

11. A certain two port network is measured and the following scattering parameters are obtained :

    $S_{11} = 0.1 \angle 0°$, $S_{12} = 0.8 \angle 90°$, $S_{21} = 0.8 \angle 90°$, $S_{22} = 0.2 \angle 0°$

    Determine whether the network is reciprocal or lossless. If a short circuit is placed on port 2, what will be the resulting return loss at port 1 ?

12. Compute the ABCD matrix of a transmission line section with characteristic impedance Z_o, propagation constant β and length 'l'.

13. Explain the structure and working of MESFET. Draw its high frequency equivalent circuit and explain.

MODULE – II

14. Explain the RWH Theory for GUNN diode. What are the various Gunn Oscillation modes ?

15. With the help of neat diagrams explain the structure and working of IMPATT diode. What is the maximum possible efficiency of an IMPATT diode ?

16. Explain the steps involved in the design of single stage transistor amplifier.

MODULE – III

17. Explain the even and odd mode of operation of a coupled stripline. Draw its equivalent circuit and obtain expression for mutual capacitance.

18. Explain the implementation of capacitors in MICs.

19. Explain the implementation of Low Pass Filters in microwave integrated circuits.

(6×10=60 Marks)