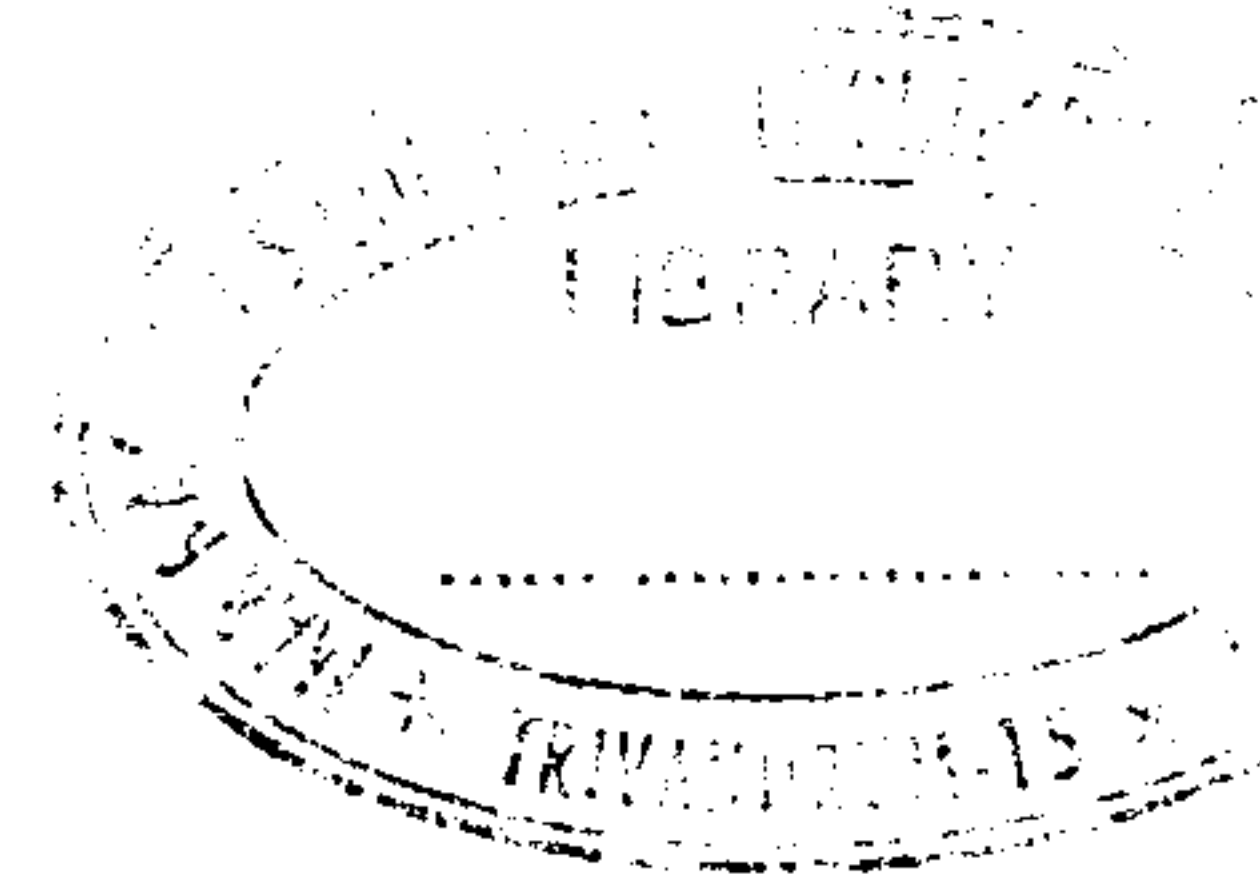




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B – 2646

Reg. No. :

Name :

**Eighth Semester B.Tech. Degree Examination, December 2016
(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. What is Gunn effect ?
2. Define VSWR.
3. What are the properties of S-matrix ?
4. Briefly explain the function of a phase shifter.
5. Mention the merits of MMICs ?
6. Mention the considerations for stability of a microwave amplifier.
7. What are the advantages of MESFET ?
8. Define return loss in a transmission line.
9. Give the characteristic features of striplines.
10. What is the use of quarter wave transformers ?

PART – B

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

Module – I

11. Explain the function of matching networks. Using Smith chart, design a single stub match to match the source impedance $(50 + j25)$ ohms to a load $Z_L = (25 - j50)$. Assume the characteristic impedance is Z_0 is 50 ohms and operating frequency is 2 GHz.
12. Derive the impedance and admittance matrix for a two port network.
13. Describe with neat diagram, the construction of a microwave bipolar transistor and biasing circuits used.

P.T.O.

**Module – II**

14. What is avalanche transit time effect ? Explain the operation and construction of IMPATT diode.
15. Explain the working principle of Gunn diode using the two valley model.
16. Describe the design of a single stage transistor amplifier.

Module – III

17. Explain the principle and construction of coupled striplines.
18. With neat diagrams, explain the operation of isolator and circulator. Mention their applications.
19. Design a maximally flat low pass 50 ohm microstrip filter having cut off frequency of 2GHz and insertion loss of 30 dB at 4 GHz. Use the lossless dielectric substrate of $\epsilon_r = 9.6$ and thickness 0.635 mm.

