

**ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE**  
**B. E. / B.TECH. DEGREE EXAMINATIONS : NOV / DEC 2010**  
**REGULATIONS : 2007**  
**SEVENTH SEMESTER - ECE**  
**070290089 - MICROWAVE ENGINEERING**

**TIME: 3 Hours**

**Max.Marks:100**

**PART - A**

**(20 x 2 = 40 MARKS)**

**ANSWER ALL QUESTIONS**

1. Why S-Parameters are used in microwave?
2. What are the basic parameters to measure the performance of directional coupler?
3. List the applications of wave guide twist?
4. What is meant by waveguide Tee and mention the types of waveguide Tee?
5. What do you mean by Klystron?
6. Distinguish between O-type and M-type tubes
7. What is velocity modulation?
8. Comparison between TWT & Klystron
9. Name the methods to measure impedance
10. Define VSWR
11. Define Insertion loss
12. Define Reflection co-efficient
13. What are the modes available in negative resistance device?
14. What do the acronyms IMPATT, TRAPATT&BARITT stand for?
15. What is parametric device?
16. Write down the applications of TRAPATT diodes
17. Mention the types of losses in Micro strip line?
18. Distinguish strip line & micro strip line
19. What is coplanar strip line?
20. What are the characteristics of ideal substrate materials?

## PART- B

(5 x 12 = 60 MARKS)

### ANSWER ANY FIVE QUESTIONS

21. State and prove the properties of scattering matrix
22. a) Derive the S-matrix of a Directional coupler (8)  
b) Write short notes on E-plane Tee (4)
23. Describe with neat sketch constructional details and operation of Reflex klystron.  
With help of apple gate diagram explain the phenomenon of bunching
24. Draw a neat sketch showing a helix type travelling wave tube and describe mechanism of electronic bunching
25. Draw a block diagram for slotted line method of VSWR measurement and Explain
26. Describe various modes of operation of Gunn diode
27. Derive Manley-Rowe Power relations
28. Derive the characteristic impedance of micro strip line using quasi static analysis

\*\*\*\*\*THE END\*\*\*\*\*