

B.TECH. DEGREE EXAMINATION, MAY 2014**Seventh Semester**

Branch : Electronics and Communication Engineering

EC 010 703 – MICROWAVE ENGINEERING (EC)

(2010 Admissions)

[Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 3 marks.*

1. Write down any four applications of microwaves.
2. Write down the significance of inter electrode capacitances in conventional vacuum tubes at microwave frequencies.
3. What is Avalanche multiplication effect?
4. Why is it not possible to measure power at microwave frequencies using wattmeters?
5. Write down the important Microwave Integrated Circuit fabrication technologies.

(5 × 3 = 15 marks)

Part B*Answer all questions.**Each question carries 5 marks.*

6. Explain the division of power among various arms of a shunt Tee Junction.
7. Draw the Applegate diagram of a reflex klystron.
8. Comment on the uses of transistors at microwave frequencies.
9. Define Insertion loss with mathematical expressions.
10. Write down the advantages and disadvantages of Planar transmission lines.

(5 × 5 = 25 marks)

Turn over

Part C

Answer all questions.

Each question carries 12 marks.

11. Derive the relation between ABCD and Y parameters and express ABCD parameters in terms of Y parameters.

Or

12. Explain a four port circulator in detail and write down its S matrix.
13. Explain the constructional details of a TWT amplifier and also explain the formation of electron bunches in it.

Or

14. Explain the constructional details of a reflex klystron and also explain about different modes of oscillations in it.
15. Describe in detail about any form of IMPATT diode and draw its typical doping profile.

Or

16. What are parametric amplifiers? What are their advantages and limitations?
17. Explain the set up used for measuring the S parameters of a magic Tee.

Or

18. Draw and explain the experimental set up used for measuring return loss.
19. Describe the various steps involved in the fabrication of monolithic MIC's.

Or

20. Comment on and compare the losses occurring in conventional transmission lines and microstrip lines.

(5 × 12 = 60 marks)