Reg. No. : | | | | | | | | | | |

Question Paper Code: 31473

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Seventh Semester

Electronics and Communication Engineering

01UEC703 - MICROWAVE ENGINEERING

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Why S-matrix is preferred in analysis of microwave circuits?
2. State the differences between isolator and circulator.
3. Define Gunn effect.
4. What are the factors reducing efficiency of IMPATT diode?
5. Mention the performance specification of reflex Klystron.
6. Why magnetron is called as cross filed device?
7. Find the characteristic impedance of a microstrip line with the following parameters $h = 7$ *mils*, $t = 2.8$ *mils*, $w = 10$ *mils*, $\varepsilon_r = 5.23$
8. Write about diffusion and ion implantation process in fabrication.
9. Define insertion loss.
10. How will you determine the VSWR and return loss in reflectometer method?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Write short notes on "properties of S - matrix". (6)

(ii) Explain different types of waveguide junction with neat diagram. (10)

Or

(b) Derive the S - matrix for 4 port directional coupler. (16)

12. (a) Explain Gunn diode with two valley model in detail and also explain various modes of operation. (16)

Or

(b) (i) Compare the characteristics of IMPATT, BARITT and TRAPATT diode. (6)

(ii) Derive the Manley Rowe power relations for the parametric amplifier. (10)

13. (a) Describe with a neat sketch, the constructional details and principle of operation of two cavity Klystron tube. Derive the expression for beam current and efficiency. (16)

Or

(b) Describe with a neat sketch, the constructional details and principle of operation of Magnetron. (16)

14. (a) (i) Write a note on different types of micro strip lines. (8)

(ii) Explain various losses that occur in micro strip lines. (8)

Or

(b) Explain in detail with suitable diagrams, the fabrication techniques of a monolithic microwave integrated circuit. (16)

15. (a) Describe in detail with block diagram, the measurement of VSWR. (16)

Or

(b) Explain in detail various power measurement techniques. (16)

———————