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Question Paper Code: 37403

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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. State the main advantages of TRAPATT over IMPATT.
4. What are the factors reducing efficiency of IMPATT diode?
5. Mention the performance specification of reflex Klystron.
6. Compare TWTA and klystron amplifier.
7. Outline the features of coplanar strip line and microstrip line?
8. Write about diffusion and ion implantation process in fabrication.
9. List the different types of impedance measurement methods.
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) Describe the scattering matrix of a directional coupler. (16)
12. (a) Explain the various modes of operation of Gunn oscillator with neat sketches. (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) Explain the velocity modulation process and derive the condition at which maximum bunching occurs in two cavity klystron. (16)

Or

- (b) 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)
14. (a) Discuss the various losses of microstrip line in detail and derive the q-factor of microstrip lines. (16)

Or

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

Or

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