

BT-7 / M-19

MICROWAVE ENGINEERING**Paper-ECE-407 E**

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt five questions in all, selecting at least one question from each unit. All questions carry equal marks.

Unit-I

1. (a) Explain TE modes in Rectangular wave guides. 10
(b) What are Microwave cavities ? Explain Rectangular cavity resonator with expressions. 10
2. (a) Explain Insertion Loss and permeability. 10
(b) Explain Microwave measurement of impedance (using slotted section). 10

Unit-II

3. (a) Explain with diagram the characteristics and operating principle of Reflex Klystron. 10
(b) Derive the output current and output power of two cavity klystron. 10
4. (a) Explain and derive for a cylindrical magnetron the equations of electron motion. 10
(b) Explain the amplification process in Helix Travelling wave tube. 10

Unit-III

5. (a) What is scattering matrix ? Explain its properties. 10
(b) Explain the S Matrix of a directional coupler. 10

(2)

6. (a) Explain Isolators and circulators. 10
(b) Explain phase shifters and wavemeter. 10

Unit-IV

7. (a) What is Gunn diode ? Explain Gunn Effect and differential negative resistance. 10
(b) Explain parametric amplifiers. 10
8. (a) Explain the physical structure of Impatt diodes with diagrams. 10
(b) Explain the principle of operation of trapatt diodes. 10

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