

MICROWAVE ENGINEERING
(Electronics and Communication Engineering)

Time: 3 Hours

Max. Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

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1. What are the different power losses in rectangular waveguide? Derive expressions for them.
2. Discuss the different losses in micro strip lines and state the reasons for losses.
3. With the help of diagrams, clearly explain the principle and operation of precision variable attenuator.
4. (a) Explain the operation of circulator.
(b) What is Faraday rotation?
5. (a) Describe with the neat sketch the constructional details and principle of operation of a reflex klystron tube. With the help of Applegate diagram illustrate the phenomenon of bunching.
(b) Derive the expressions for bunched beam current and efficiency.
6. (a) Why at microwave frequency we talk of traveling waves with associated powers instead of voltages and currents?
(b) What are slow wave structures? Explain how a helical TWT achieve amplification.
7. (a) Explain the properties of high field domain for microwave generation and amplification.
(b) Explain the rate of growth of space charge layers with the help of necessary expressions.
8. (a) Distinguish between low frequency measurement and microwave measurements.
(b) What are the precautions to be taken while setting up microwave bench for measurement of various parameters? Explain.