

Code :RR320404

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III B.Tech II Semester(RR) Supplementary Examinations, April/May 2011
MICRO WAVE ENGINEERING
(Electronics & Communication Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1. (a) List out the various advantages of using microwave frequencies for various applications.
 (b) With the help of velocity diagram explain principle of two cavity Klystron Amplifier.
2. (a) Explain how feed back occurs in Backward wave oscillator. How is wide tuning range possible in this device?
 (b) Briefly state the reasons for why helix is preferred as a slow wave structure in TWT.
3. (a) What is a cylindrical Multicavity Travelling wave magnetron oscillator? Explain.
 (b) Write short notes on "Hartree resonance condition".
4. (a) With the help of a schematic diagram of an IMPATT diode, explain the two effects that combine to produce a 180° phase difference between the applied voltage and the resulting current pulse.
 (b) Describe the advantages and disadvantages of a parametric amplifier? What are its applications?
5. (a) What is a cavity resonator? Derive an expression for the resonant frequency and quality factor of a rectangular cavity resonator.
 (b) Give the characteristics of the propagating modes in a wave guide.
6. (a) Explain
 - i. Coupling Probes
 - ii. Coupling loops.
 (b) What is a phase shifter? Explain its principle of operation with a neat sketch. Give its applications.
7. (a) What are ferrite devices? Explain how Faraday rotation is utilized in the construction of a 4 port circulator.
 (b) What are the advantages of scattering matrix representation over impedance and admittance matrix representations?
8. (a) Define VSWR. Describe the methods of measuring high and low VSWRs.
 (b) Write short notes on "Reflection co-efficient and Insertion loss measurement at microwave frequencies".

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