

Code No: **R32042****R10****Set No. 1****III B.Tech II Semester Supplementary Examinations, April - 2017****MICROWAVE ENGINEERING****(Electronics and Communication Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions****All Questions carry equal marks**

- 1 a) List out the characteristics of a microwave signal? Explain how these characteristics are useful in industrial and medical applications? [7M]
b) An air filled rectangular wave guide ($a=5\text{cm}$, $b=2.5\text{cm}$) at 5.0GHz . Derive all the possible modes propagate in the waveguide. Also find cutoff frequency and wavelength. [8M]
- 2 a) Define cavity resonator? Name a few microwave cavity resonators? [8M]
b) Write a short notes on circular waveguide? [7M]
- 3 Write short notes on (i) wave guide Irises (ii) H- plane Tee [15M]
- 4 a) Explain the function of a Faraday rotation? How it is useful in ferrite components? [8M]
b) Prove that E-plane Tee junction acts as a 3-dB power divider? [7M]
- 5 a) Classify the microwave tube devices and micro wave solid state devices? [7M]
b) Explain the working principle of a 2-cavity klystron amplifier? [8M]
- 6 a) List out the types of slow-wave structures used in HWT? [8M]
b) Explain the working principle of a Magnetron? [7M]
- 7 a) Explain the working principle of a Gunn Diode? [7M]
b) List out the differences between TED's and Avalanche transit – time (ATT) Devices? [8M]
- 8 a) Draw and explain each component used in Micro wave bench Setup? [8M]
b) Explain the microwave power measurement Technique? [7M]
