

Roll No:

Name :

Second Semester M.TechDegree Examination, November 2014

Branch: Electronics and Communication (2013 Scheme)

Stream: Microwave and TV Engineering

TME 2006:MICROWAVE IMAGING

Time: 3 Hours

Max. Marks:60

Instructions: Answer *anytwo* questions from *each* Module (*Each* question carries **10** marks)

Module I

- 1) Explain the fundamental steps and elements of digital image processing. (10)
- 2) a) Discuss mach band and simultaneous contrast effect (2)
b) Distinguish uniform and nonuniform image sampling and quantization (3)
- c) What is a Histogram? Discuss briefly about Histogram Equalization technique. (5)
- 3) a) Discuss various filters used for noise reduction in images. (4)
b) What is the need for image segmentation? Explain any one of the image segmentation techniques. (6)

Module II

- 4) Explain the principles of radiation and various radiation laws. (10)
- 5) a) Discuss about the wave nature and spectrum of electromagnetic radiation (6)
b) Briefly explain spectral signature and principles of remote sensing(4)
- 6) a) Describe the basic sources of thermal fluctuation in electromagnetic radiation and features of Earth's atmosphere. (6)
b) Explain the basic microwave radiometer with a suitable diagram. (4)

Module III

- 7) a) Discuss the working of Side-Looking Airborne radar. (4)
- b) Describe about the system parameters and target parameters of microwave radar. (6)
- 8) a) Explain Doppler and geometric explanation of aperture synthesis of SAR. (6)
- b) Define InSAR and also list the applications of SAR. (4)
- 9) a) Explain in detail the principle of thermal imaging. (5)
- b) What are the applications of microwave imaging in medicine. (5)