

**NR**

**Code No: B6503**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**M.Tech II Semester Examinations, October/November 2011**

**MICROWAVE COMMUNICATIONS**

**(WIRELESS AND MOBILE COMMUNICATIONS)**

**Time: 3hours**

**Max. Marks: 60**

**Answer any five questions  
All questions carry equal marks**

- - -

- 1.a) Describe a Radio Microwave Communication system with AM.  
b) What are the path characteristics for an FM system? Explain in terms Gain & Noise. [12]
- 2.a) Explain the term “LOS” with respect to Microwave communication giving details system path gain and losses.  
b) Explain the terms “Diversity reception” “Gain & Fade” Margins. [12]
- 3.a) Define “Fading and Fadont” in Digital Data communication at Microwaves and Explain its effects.  
b) Explain a typical Digital LOS Mw Link and its specifications. [12]
- 4.a) Name the types “Tropospheric” propagation paths and techniques.  
b) What is “Traposcatter propagation”? Discuss its uses in typical Terrams. [12]
- 5.a) Describe the working of a “Satellite” at Microwave frequencies for communication in terms of power, freq Transponder.  
b) Compare the working conditions of Earth station w.r.t “Satellite” at Microwave Frequencies giving details. [12]
- 6.a) Distinguish clearly the propagation of “FDMA”, “TDMA” and “CDMA” techniques.  
b) Describe a typical ‘CDMA’ system including “Encoder” and “Decoder” with data in “Chip code” and “Orthogonal Code”. [12]
- 7.a) Explain the working & design of Antennas for Transmission and Reaction of Microwave signals.  
b) How are antennas designed for “Satellite communication” at Microwaves using LOS? [12]
8. Write short notes on  
a) Millimeter wave sources and systems.  
b) Effect of “Rain” & “Space” on millimeter wave propagation. [12]

\*\*\*\*\*