



Reg. No. : .....

Name : .....

**First Semester M.Tech. Degree Examination, March 2013**  
**(2008 Scheme)**  
**(Electronics & Communication Engineering)**  
**TTC 1006 : WIRELESS COMMUNICATION**

Time : 3 Hours

Max. Marks : 100

Answer any five questions. All questions carry equal marks.

1. a) What do you mean by slant range ? Explain how slant range is computed.  
b) An earth station is located at  $30^\circ$  W longitude and  $60^\circ$  N latitude. Determine the earth stations Azimuth and elevation angles with respect to a geostationary satellite located at  $50^\circ$  W longitude. The orbital radius is 42164 km (Assume the radius of the earth to be 6378 km).
  2. a) With the help of a block diagram explain the working of a transmit-Receive earth station.  
b) Explain the importance of tracking, telemetry and command subsystem in satellite communication.
  3. a) What do you mean by satellite link budget analysis ? Derive expressions for link budget design.  
b) Write short notes on :
    - i) Rain induced attenuation
    - ii) Cross Polarisation Interference.
  4. a) What do you mean by handoff ? Explain the various handoff strategies.  
b) If a total of 33 MHz bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 KHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses (a) Four cell reuse (b) Seven – cell reuse and (c) 12-cell reuse. If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channel and voice channels in each cell for each of the three systems.
  5. a) Explain the architecture of bluetooth technology.  
b) Discuss the important aspects of Wi – Fi Technology.
  6. a) Discuss the importance of MIMO systems. Obtain a narrowband MIMO model.  
b) Derive expressions for the capacity of MIMO channels. (5×20= 100 Marks)
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