

**III B.Tech II Semester Regular Examinations, April/May 2005**  
**SATELLITE COMMUNICATION**  
**(Electronics & Communication Engineering)**

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions  
All Questions carry equal marks

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1. List the various advantages and disadvantages of satellite communication. Explain the various reason for preferring satellites than optical fibers which are providing very high bandwidth.
2. Discuss in detail the orbital effects in satellite communication system performance.
3. (a) What is spin stabilization? Why is it necessary? Explain various effects that is to be avoided and its remedial solution.  
(b) What is station keeping? Explain various methods of station keeping.
4. (a) Explain about redundancy configuration of power generation? How is it being implemented?  
(b) With neat block diagram explain the operation of communication subsystem.
5. (a) Explain the following terms:
  - i. Link reliability.
  - ii. CCIR model for rain alteration.
  - iii. Figure to merit.
  - iv. Noise temperature.  
(b) Discuss various parameters involved in link calculations and link budget.
6. FDMA is used for uplink access in a satellite digital network, with each earth station transmitting at the T1 bit rate of 1.544 Mb/s. Calculate
  - (a) the uplink C/N ratio required to provide a  $E/N = 14$  dB ratio at the satellite and
  - (b) the earth station EIRP needed to realize the C/N value. The satellite G/T value is 8 dB/K, and total uplink losses amount to 210 dB.
7. (a) Explain with the help of block diagram the working of transmitter part of an earth station.  
(b) Explain as to why it is necessary to have frequency coordination among earth stations themselves and earth station terrestrial microwave links? Discuss the technique to achieve them.
8. (a) Draw the block diagram of OUTDOOR unit for a DBS home receiver and explain the function of each block.

(b) Explain how beam steering can achieved in parabolic reflector antenna.

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