QUESTION BANK

UNIT 1  Overview of Satellite Systems

1. Explain briefly various services provided by a satellite [06, May/June 2010]
2. What are the frequency bands allocated to various satellite services? [04, Dec 2010]

UNIT 2  Orbits

1. State Keplers laws of elementary motion, with the help of a neat diagram and give necessary equations. [08, May/June 2010 and Dec 2010]
2. Define keplarian elemental set. [06, May/June 2010]
3. Define the terms (a) Prograde orbit (b) Apogee (c) Argument of perigege )d) Ascending node. [08, Dec 2010]
3. An earth station is located at latitude 30 degree S and longitude 65degree E. Calculate the antenna look qngles for satellite at 156 degree E. [08, May/June 2010]
4. Explain briefly launching orbit, close to the geosynchronous attitude. Its orbital period is exactly 24 hours one solar day. Calculate
   (a) The radius of the earth.
   (b) The rate of drift around the equator of the subsatellite point in degree/solar day. An observer on the earth sees that the satellite is drifting across the sky.
   (c) Is the satellite moving towards east or west [06, May/June 2010]

UNIT 3  Propagation impairments and space link

1. Explain atmospheric losses and ionospheric losses for satellites. [08, Dec 2010]
2. The noised figure for a system is 12dB, the cable loss is 5dB, the LNA gain is 50d and its noise temperature is 150 K. The antenna noise temperature is 35 K. calculate the noise temperature referred to the input. [05, Dec 2010]
3. Explain combined uplink and downlink C/N ratio. [07, Dec 2010]
4. Explain the different transmission losses in a satellite link [07, May/June 2010]
5. Define saturation flux density. Obtain the equation for saturation EIRP for uplink [06, May/June 2010]

UNIT 4  Space Segment

1. Explain (a) the power supply subsystem (b) thermal control subsystem [08, Dec 2010]
2. With the help of a neat diagram explain the operation of a power amplifier of a transponder along with its transfer characteristics. [12, Dec 2010]
3. With a neat diagram explain satellite altitude. Explain 3 axis methods of satellite stabilization. [07, May/June 2010]
4. What is meant by satellite reuse? Briefly describe the working of a wide band receiver. [06, May/June 2010]

UNIT 5 and 6 Earth Segment

1. Explain the ‘receive only’ home TV system. [13, Dec 2010]
2. Explain a MATV system, with a neat diagram [07, Dec 2010]
3. With a neat block diagram explain the outdoor and indoor unit for a analog FM TV [12, May/June 2010]
4. Explain spade system with a neat diagram [08, May/June 2010]
5. A FM/TV carrier is specified as having a modulation index of 2.571 and top modulating frequency of 4.2MHz. Calculate the protection ratio required to give a quality impairment factor of (a) 4.2 (b) 4.5 [06, Dec 2010]
6. Explain possible interference nodes between satellite circuits and a terrestrial station. [07, Dec 2010]
7. Explain spade system [07, Dec 2010]
8. With a neat block diagram explain frame and burst formats for a TDMA system [07, May/June 2010]
9. Explain carrier recovery circuit with single tuned circuit having AFC. [07, May/June 2010]

UNIT 7 and 8 DBS, Satellite mobile and specialized services

1. Explain the following (a) Transponder capacity (b) Frequencies and polarization [08, Dec 2010]
2. Explain in detail satellite mobile services. [12, Dec 2010]
3. Give the applications of Radarsat Explain Dawn to dusk orbit. [07, May/June 2010]
4. Explain the very small aperture terminal system [08, May/June 2010]
5. Write short notes on (a) INTELSAT (b) Radarsat (c) Polar mount antenna (d) Iridium. [20, Dec 2010]
6. Explain global positioning system in detail [08, May/June 2010]
7. Write short notes on (a) system noise temperature (b) Preassigned FDMA [12, May/June 2010]