

SEVENTH SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, JUNE 2010

EC 04 705 D—SATELLITE COMMUNICATION SYSTEMS

(2004 admissions)

Time : Three Hours

Maximum : 100 Marks

- I. (a) Write short note on period, velocity and position of a satellite.
(b) Write a brief note on Hohmann transfer.
(c) Explain the satellite tracking system.
(d) Briefly explain the various amplifiers used in Earth station.
(e) Write a note on footprint.
(f) For an earth station transmitter with an output power of 40 dBW (10,000W), a back-off loss of 3 dB, a total branching and feeder loss of 3dB, and a transmit antenna gain of 40 dB, determine the Effective Isotropic Radiated Power (EIRP).
(g) How to measure and calculate the effects of Intermodulation Noise ?
(h) What is the need for a Multiple access techniques ?
- (8 × 5 = 40 marks)
- II. (a) Discuss in detail about the geostationary satellites and their launching.
Or
(b) Explain in detail about the atmospheric drag and radiation pressure on the satellite's orbit.
(15 marks)
- III. (a) Discuss in detail about the Spacecraft Subsystems.
Or
(b) What are the four main types of antennas used in Spacecraft ? Explain each of them in detail.
(15 marks)
- IV. (a) (i) Derive the Friis transmission equation. (10 marks)
(ii) How Friis transmission equation is used to calculate the received power of an earth station ?
(5 marks)

Or

Turn over

(b) Explain in detail about Very Small Aperture Terminal (VSAT) and its design issues.

(15 marks)

V. (a) Explain in detail about :

(i) Spread Spectrum and

(8 marks)

(ii) Frequency Hopping techniques in detail.

(7 marks)

Or

(b) Explain the advantages and disadvantages of TDMA and FDMA.

(15 marks)

[4 × 15 = 60 marks]

Maximum : 100 Marks

(f) How to measure and calculate the effects of Intermodulation Noise?
(g) How to measure and calculate the effects of Intermodulation Noise?
(h) How to measure and calculate the effects of Intermodulation Noise?
(i) How to measure and calculate the effects of Intermodulation Noise?
(j) How to measure and calculate the effects of Intermodulation Noise?

(8 × 5 = 40 marks)

(k) Explain in detail about the atmospheric drag and radiation pressure on the satellite's orbit.
(l) Explain in detail about the atmospheric drag and radiation pressure on the satellite's orbit.
(m) Explain in detail about the atmospheric drag and radiation pressure on the satellite's orbit.

(15 marks)

(n) What are the four main types of antennas used in Spacecraft? Explain each of them in detail.
(o) What are the four main types of antennas used in Spacecraft? Explain each of them in detail.
(p) What are the four main types of antennas used in Spacecraft? Explain each of them in detail.

(15 marks)

(q) Derive the Friis transmission equation.
(r) Derive the Friis transmission equation.
(s) Derive the Friis transmission equation.

(10 marks)

(5 marks)

Or