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10EC662

Sixth Semester B.E. Degree Examination, Dec.2015/Jan.2016 Satellite Communication

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. List out any four advantages and four applications provided by satellites. (08 Marks)
 - b. List out the frequency band disignations in common use for satellite services. (06 Marks)
 - c. The apogee and perigee of an elliptical satellite orbits are 3000 km and 200 kms. Determine the eccentineity, semi-major axis and semi-minor axis. (06 Marks)
- 2 a. State Kepler's three laws of planetary motion, with suitable diagram and its relevant equations. (08 Marks)
 - b. With necessary diagram, define: i) Apogee ii) Prograde orbit
 - iii) Inclination iv) Retrograde orbit. (08 Marks)
 - c. What is meant by sidereal time? Explain.

(04 Marks)

- 3 a. Explain what is meant by rain rate and how this is related to specific attenuation. (05 Marks)
 - b. Derive the expression for $[C/N_0]$ for the uplink.

(10 Marks)

- c. An LNA is connected to a receiver to which has a noise figure of 12 dB, the cable loss is 5 dB, the LNA gain is 50 dB and its noise temperature is 150k. The antenna noise temperature is 35 K. Calculate the overall noise temperature referred to the input. (05 Marks)
- 4 a. What is meant by the term attitude control? Explain two forms of attitude control. (12 Marks)
 - b. With neat block diagram, describe the TT and C facilities of a satellite communication system. (08 Marks)

PART – B

- 5 a. With the suitable block diagram, explain the function of DBS TV receiving system intended for home application. (10 Marks)
 - b. Explain and compare master antenna TV and community antenna TV.

(10 Marks)

- 6 a. Describe briefly the modes of interference that can occur in a satellite communication system. Distinguish carefully between satellite and terrestrial modes of interference.
 - Explain what the abbreviation "SPADE" system stands for. Explain in detail the operation of spade system.

 (10 Marks)

 (10 Marks)
- a. What is meant by TDMA? Explain the need for a reference burst in a TDMA system.

(10 Marks)

- b. What are different multiple access methods used in satellite communication? Briefly explain.

 (06 Marks)
- c. Explain bit rate for digital television.

(04 Marks)

- Write short notes on:
 - a. Radar sat
 - b. Antenna look angle
 - c. GPS and its uses
 - d. VSat (VSAT).

(20 Marks)