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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. **(10 Marks)**
b. Explain what the abbreviation "SPADE" system stands for. Explain in detail the operation of spade system. **(10 Marks)**

7 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)**

8 Write short notes on :
a. Radar sat
b. Antenna look angle
c. GPS and its uses
d. VSat (VSAT). **(20 Marks)**

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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