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10EC662

Sixth Semester B.E. Degree Examination, June/July 2019
Satellite Communication

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Explain the various frequency bands used and various services provided by a satellite. **(08 Marks)**

b. State and explain Kepler's three laws of planetary motion with the help of neat diagram and necessary equations. **(08 Marks)**

c. A satellite in an elliptical orbit has a perigee of 1000 km and apogee of 4000 km. If mean earth radius is 6371 km, find the period of the orbit in minutes. **(04 Marks)**

2 a. Define Keplerian elemental set. **(06 Marks)**

b. An earth station is located at latitude 30°S and longitude 65°E. Calculate the antenna look angles for the satellite at 156°E. **(08 Marks)**

c. Explain the phenomena of earth eclipse and sun transit outage. **(06 Marks)**

3 a. Explain different types of transmission losses in a satellite link. **(10 Marks)**

b. The noise figure for the system shown is 12 dB, cable loss is 5 dB, LNA gain is 50 dB and its noise temperature is 150°K. The antenna noise temperature is 35°K, calculate the noise temperature.

(i) for cable loss before LNA.
(ii) for cable loss after LNA. **(06 Marks)**

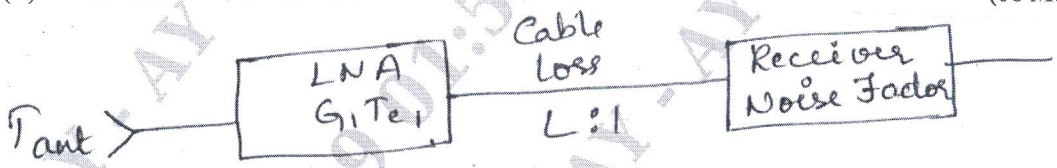

Fig. Q3 (b)

c. What is meant by EIRP and obtain an expression for it in dbW. **(04 Marks)**

4 a. What is meant by satellite altitude? Explain three axis method of satellite stabilization. **(08 Marks)**

b. With the help of neat diagram, explain TTC and M subsystem. **(08 Marks)**

c. Explain thermal control subsystem in satellite and the methods to control it. **(04 Marks)**

PART – B

5 a. Explain the indoor and outdoor units of DBS TV receiver. **(08 Marks)**

b. Explain MATV with diagram. **(06 Marks)**

c. Explain SPADE system with a neat diagram. **(06 Marks)**

6 a. Explain preassigned FDMA with a neat diagram for SCPC in Intelsat for 36 MHz Transponder. **(10 Marks)**

b. Explain the Frame and Burst formats for a TDMA system. **(10 Marks)**

7 a. With respect to DBS, explain (i) Orbital spacing (ii) Power rating and number of transponders (iii) Frequency (iv) Polarization (v) Transponder capacity. **(10 Marks)**

b. Explain in detail the satellite mobile services. **(10 Marks)**

8 a. Explain the operation of VSAT system. **(07 Marks)**

b. Explain the Global positioning system in detail. **(07 Marks)**

c. Give the application of Radasat. Explain a down to dusk orbit. **(06 Marks)**

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