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

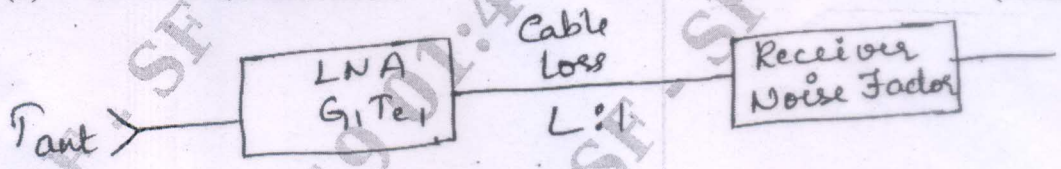


Fig. Q3 (b)

- 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)

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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- 7 a. With respect to DBS, explain (i) Orbital spacing transponders (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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