USN | | | | | | | | | | |

10EC662

Sixth Semester B.E. Degree Examination, Dec.2016/Jan.2017
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 following: i) Geosynchronous orbit ii) Geostationary orbit **(04 Marks)**
b. Explain the following: i) Earth eclipse of satellite ii) Sun transit outage. **(06 Marks)**
c. With the help of relevant diagram and equations explain the Kepler's three laws of planetary motion. **(10 Marks)**

2 a. What are the different losses occurs during the radio propagation in a satellite link? **(10 Marks)**
b. Derive the system noise temperature (T_S) expression for amplifiers connected in series. **(06 Marks)**
c. An LNA is connected to a receiver which has noise figure 12 dB. The gain of the LNA is 40 dB and its noise temperature is 120 K. Calculate the overall noise temperature referred to the LNA input. **(04 Marks)**

3 a. Explain what is meant by antenna noise temperature and amplifier noise temperature. **(06 Marks)**
b. Derive an expression for the carrier to noise in satellite link. **(07 Marks)**
c. Explain what is meant by input and output backoff. **(07 Marks)**

4 a. What is meant by satellite altitude control and briefly describe two forms of altitude controls? **(07 Marks)**
b. Explain what is meant by thermal control and why this is necessary in a satellite. **(06 Marks)**
c. Explain what is meant by frequency reuse, and describe briefly two methods by which this can be achieved. **(07 Marks)**

PART – B

5 a. With neat diagram, explain the master antenna TV system. **(10 Marks)**
b. With suitable diagram, explain the possible interference modes between satellite circuits and terrestrial station. **(10 Marks)**

6 a. With appropriate diagram, explain the operation of the spade system of channel assignment. **(10 Marks)**
b. Describe the general operating principles of TDMA system and also explain the different components of reference burst in a TDMA system. **(10 Marks)**

7 a. Explain the following: i) Power rating of transponders.
ii) Frequency and polarization.
iii) Transponder capacity. **(10 Marks)**
b. With neat diagram, explain MPEG-2 encoder used in digital video transmission. **(10 Marks)**

8 a. Explain the following satellite mobile services :
i) Asian cellular system ii) Globalstar iii) Thuraya **(10 Marks)**
b. Explain the following: i) VSAT ii) GPS **(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.