



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Eighth Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; May / June - 2019

Satellite Communications

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Explain the following terms with neat sketch: 8
 - i) Argument of perigee ii) Right ascension of ascending node
- b. What are the orbit perturbations that take place because of non-spherical nature of earth? 6
- c. Calculate the apogee and perigee heights for the following orbital parameters : 6
 $e = 0.0011501$, $a = 7192.335$ km. Assume a mean earth radius of 6371 km.
- 2 a. State and explain Kepler's law of planetary motion with neat diagram and necessary equations. 8
- b. Explain in detail the earth eclipse of satellite and sun transit outage. 6
- c. Illustrate and explain sidereal time. 6

UNIT - II

- 3 a. Explain what is meant by satellite attitude, and briefly describe two forms of attitude control. 8
- b. Define the term roll, pitch and yaw and illustrate their functionality. 6
- c. Briefly describe the three-axis method of satellite stabilization. 6
- 4 a. What is master antenna TV system? With the help of a diagram, describe an arrangement for MATV system. 10
- b. With a neat block diagram, explain outdoor and the indoor unit for analog FM TV. 10

UNIT - III

- 5 a. What is meant by pre-assigned FDMA? Draw the channeling arrangements for Intelsat SCPC system. 10
- b. Explain the various types of satellite access. 10
- 6 a. Explain the frame and burst formats for a TDMA system. 10
- b. Explain in detail the working of a CDMA system with suitable example. 10

UNIT - IV

- 7 a. Explain the following transmission losses : 10
 - i) Feeder losses
 - ii) Antenna misalignment losses
- b. Derive an expression for the carrier-to-noise ratio of a satellite link. 10
- 8 a. With a neat diagram, explain the bent pipe relay architecture. 10
- b. With a neat diagram, explain the TCP / IP satellite link spoofing configuration. 10

UNIT - V

- 9 a. Explain in detail the working of MPEG-2 encoder paths. 10
- b. With a block schematic, explain the home receiver indoor unit. 10
- 10 a. Describe the main features of the Iridium sysytem. What are its advantages? 10
- b. Give the applications of Radarsat. Explain a “Dawn to Dusk” orbit. 10

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