

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code : 71428**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Eighth Semester

Electronics and Communication Engineering

EC 2045/EC 810/10144 ECE 52 – SATELLITE COMMUNICATION

(Regulation 2008/2010)

(Common to PTEC 2045 – Satellite Communication for B.E. (Part-time)

Seventh Semester – ECE – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State Kepler's Second Law.
2. Differentiate ascending node from descending node.
3. Why thermal control is necessary?
4. Which parameters decide the system reliability?
5. Define single access and multiple access.
6. What is the need of reference burst in TDMA?
7. What is the difference between DBS TV and conventional TV?
8. A satellite downlink at 12 GHz operates with a transmit power of 6 W and an antenna gain of 48.2 dB. Calculate the EIRP in dBW.
9. Name the services provided by GSM.
10. What are the features of LEO?

PART B — (5 × 16 = 80 marks)

11. (a) (i) A satellite is orbiting in the equatorial plane with a period from perigee to perigee of 12 h. Given that the eccentricity is 0.002. Calculate the semi major axis. The earth's equatorial radius is 6378.1414km. (4)

- (ii) Explain the orbital perturbations in detail. (12)

Or

- (b) (i) Determine the limits of visibility for an earth station situated at mean sea level, at latitude  $48.42^\circ$  north, and longitude  $89.26$  degrees west. Assume a minimum angle of elevation of  $5^\circ$ . (6)

- (ii) Discuss about launching procedures. (10)

12. (a) (i) Explain TT and C system in detail. (8)

- (ii) Derive the downlink C/N ratio for the satellite. (8)

Or

- (b) (i) Explain how intermodulation noise originates in a satellite link and describe how it is reduced? (8)

- (ii) Derive the link — power budget equation. (8)

13. (a) (i) Explain what is meant by FDMA, and show how this differs from FDM. (6)

- (ii) Briefly describe the ways in which demand assignment may be carried out in FDMA network. (10)

Or

- (b) Explain the principle behind spectrum spreading and despreading and how this is used to minimize interference in a CDMA system. (16)

14. (a) Describe and compare the MATV and the CATV systems. (16)

Or

- (b) (i) Explain any one test equipment for the measurement on C/No. (8)

- (ii) Draw the basic block of earth segment and explain. (8)

15. (a) (i) Explain the operation of VSAT system in detail. (8)  
(ii) Describe the GPS functioning with a block diagram. (8)

Or

- (b) (i) Explain how DTH operation is carried out with a neat diagram. (10)  
(ii) Write a brief note on video conferencing. (6)
-