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**Question Paper Code : 91387**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

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. Find the viewing angle of a geostationary satellite orbiting at 42200 km from an earth station making an elevation angle of 25°.
2. What is ascending node and descending node?
3. What is split body stabilization?
4. What is frequency planning?
5. What are the advantages of TDMA over FDMA?
6. Define multiplexing.
7. Define antenna gain.
8. A satellite downlink at 10GHz operates with a transmit power of 5w and an antenna gain of 48.2dB. Calculate the EIRP in dBw.
9. List the differences between LEO and MEO satellites.
10. What is GRAMSAT?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the steps involved in launching a satellite. (8)  
(ii) What are the different types of satellite orbits? Discuss their merits and demerits. (8)

Or

- (b) (i) Define look angle and explain look angle determination in detail. (8)  
(ii) If a satellite is at a height of 36000 km and orbiting in equatorial plane, comment whether the satellite will be under eclipse on equinox days and find the duration of the eclipse. (8)

12. (a) (i) Explain how altitude and orbit control is achieved from an earth station. (8)
- (ii) Derive the satellite link design equation. (8)

Or

- (b) (i) Why T, T and C are necessary for a satellite system? Explain in detail. (8)
- (ii) Briefly explain the sources of noise in satellite communication. What is the importance of noise temperature in link design? (8)
13. (a) (i) Explain FDMA in detail and also enumerate the interference in FDMA. (8)
- (ii) Explain direct sequence spread spectrum communication in detail. (8)

Or

- (b) (i) Explain what is meant by back off and why is it necessary in multiple access systems. (6)
- (ii) Explain digital video broadcasting in detail. (10)
14. (a) (i) Draw the block diagram and explain the TVRO system. (8)
- (ii) Explain in detail the test equipment measurement on G/T; C/No. (8)

Or

- (b) (i) Explain earth station transmitter and receiver with necessary block diagram. (10)
- (ii) Explain CATV in detail with a neat diagram. (6)
15. (a) (i) Explain direct broadcast satellite in detail. (8)
- (ii) Explain GPS in detail with necessary diagrams. (8)

Or

(b) Write notes on :

- (i) INTELSAT
- (ii) E-mail
- (iii) BTV
- (iv) DTH.