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# Question Paper Code : 52886

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2019.

Seventh Semester

Electronics and Communication Engineering

EC 6004 — SATELLITE COMMUNICATION

(Regulation 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is geostationary orbit?
2. Define limits of visibility.
3. What is an inter modulation noise?
4. What is meant by passive attitude control?
5. Define Fade Margin.
6. Write link budget power equation.
7. Define Guard time.
8. Define Preamble and Postamble.
9. Define Dilution of Precision.
10. What are the uplink and downlink frequency of GSM?

PART B — (5 × 13 = 65 marks)

11. (a) (i) Write about Look angle determination. (8)

(ii) Explain the different types of Satellite Orbits. (5)

Or

(b) State and explain the three Kepler's laws of planetary motion and list the various orbital parameters. (13)

12. (a) Explain in detail about Telemetry, Tracking and Command subsystem. (13)

Or

(b) Explain the satellite uplink and downlink design analysis in detail. (13)

13. (a) (i) Write short notes on CAT. (7)

(ii) Briefly Explain the Free space transmission model. (6)

Or

(b) Explain how the TWTA is used in satellite communication with neat diagrams. (13)

14. (a) (i) Write short notes on spectrum spreading and despreading. (7)

(ii) Define Compression and explain the MPEG compression standard. (6)

Or

(b) State the Comparison between FDMA, TDMA and CDMA. (13)

15. (a) (i) Write short notes on DTH. (7)

(ii) Write short notes on GSM (6)

Or

(b) Explain in detail about the GPS Navigational System. (13)

PART C — (1 × 15 = 15 marks)

16. (a) (i) The range between a ground station and a satellite is 42,000 km. Calculate the free-space loss at a frequency of 6 GHz. (7)

(ii) A satellite link operating at 14 GHz has receiver feeder losses of 1.5 dB and a free-space loss of 207 dB. The atmospheric absorption loss is 0.5 dB, and the antenna pointing loss is 0.5 dB. Depolarization losses may be neglected. Calculate the total link loss for clear-sky conditions. (8)

Or

(b) (i) A satellite TV signal occupies the full transponder bandwidth of 36 MHz, and it must provide a C/N ratio at the destination earth station of 22 dB. Given that the total transmission losses are 200 dB and the destination earthstation G/T ratio is 31 dB/K. calculate the satellite EIRP required. (10)

(ii) For a satellite circuit the individual link carrier-to-noise spectral density ratios are uplink 100 dBHz: downlink 87 dBHz. Calculate the combined C/N0 ratio. (5)

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