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Question Paper Code : 70498

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fifth/Sixth/Seventh/Eighth Semester

Electronics and Communication Engineering

EC 8094 — SATELLITE COMMUNICATION

(Common to Electronics and Telecommunication Engineering/
Geoinformatics Engineering)

(Regulations 2017)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the necessity of kick start motors.
2. How position of satellite is affected? List a few factors.
3. What to do mean by EIRP?
4. How stabilization by momentum wheel is achieved? Demonstrate.
5. What do you mean by intermodulation noise. How it occurs in a link?
6. Why frequency reuse is employed? Give reasons.
7. Is Compression and encryption are essential in satellite communication? Justify with examples.
8. List the issues in satellite digital transmission.
9. Brief INMARSAT and the regions covered by the satellite.
10. Mention a few applications supported by INTELSAT and INSAT series.

PART B — (5 × 13 = 65 marks)

11. (a) State Kepler's laws of planetary motion. Demonstrate their with reference to artificial satellites orbiting the earth.

Or

- (b) What do you mean by look angles?. How they are determined for a geo stationary orbits? Give details.

12. (a) List the variety of antennas employed for satellite communication. Explain about antenna subsystem in detail.

Or

- (b) How spin stabilization of systems is achieved through attitude and orbit control systems? Give essential sketches and explain.

13. (a) Derive the satellite link design equation and explain in detail.

Or

- (b) Outline how the signal propagation are affected during rainy season and also Explain ionospheric effects in details.

14. (a) Compare and contrast various multiples access schemes and Discuss the multiple access schemes deployed for satellite access in detail.

Or

- (b) Elucidate about pre assigned and demand assigned TDMA in detail.

15. (a) (i) Differentiate indoor and outdoor unit functional block diagram for a DBS home receiver and explain in detail. (7)

- (ii) With a neat sketch explain DTH system in detail. (6)

Or

- (b) Why mobility need to be increased? Discuss in detail how GSM and GPS satellites have improved the mobility.

PART C — (1 × 15 = 15 marks)

16. (a) Explain the necessity of TT and C and the functional blocks in detail.

Or

- (b) How mobile services are utilized in communication satellites explain in detail.