Reg. No. :

Question Paper Code: 92022

M.E. DEGREE EXAMINATION, MAY 2014.

Elective

Communication Systems

01PCM511 - SATELLITE COMMUNICATION

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. List the different orbital parameters.

2. State the need for station keeping.

3. Distinguish between Multiplexing and Multiple Access.

4. What is Burst Time Plan?

5. State the need for Back off in satellite link design.

6. Define atmospheric scintillation.

7. List out different satellite orbit and satellite systems used for navigation.

8. State the need for radio navigation.

9. Draw the block diagram of a DTH receiver.

10. Name some payloads carried by recent INSAT series satellites.

PART - B (5 x 14 = 70 Marks)

11. (a) Explain in detail about the causes of different orbital perturbation.   (14)

Or

(b) (i) Explain in detail about Hohmann Transfer. (7)

    (ii) Explain in detail about satellite Transponder. (7)

12. (a) Explain in detail about the frame structure of TDMA system. (14)

Or

(b) Explain the principles of CDMA system and its features in detail. (14)

13. (a) Derive the uplink and downlink Carrier to Noise ratio of a satellite system and the overall Carrier to Noise ratio. (14)

Or

(b) A QPSK signal is transmitted by a satellite. Raised Cosine Filtering is used, for which the roll of factor is 0.2 and Bit Error Rate (BER) of 10^{-5} is required . For the satellite downlink, the losses amount to 200 db. The receiving earth station G/T ratio is 32 db/K, and the transponder bandwidth is 36 MHz. Calculate the bit rate which can be accomodated and the EIRP required. (14)

14. (a) Explain the working of a GPS system. (14)

Or

(b) Explain the salient features and working of a differential GPS system. (14)

15. (a) Write an explanatory note on

    (i) VSAT (7)
    (ii) Mobile satellite Service (7)

Or

(b) Write an explanatory note on

    (i) INSAT series of satellites. (7)
    (ii) Satellite Phone. (7)

PART - C (1 x 10 = 10 Marks)

16. (a) Explain in detail about any two satellite subsystems. (10)

Or

(b) Explain in detail about satellite packet communication. (10)

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