F 9066   (Pages : 2)   Reg. No....................................

Name..................................

B.TECH. DEGREE EXAMINATION, NOVEMBER 2011

Eighth Semester

Information technology

SATELLITE AND MOBILE COMMUNICATION (Elective II) (T)

[Supplementary]

Time : Three Hours   Maximum : 100 Marks

Answer **all** *questions.*

Part A

Each question carries 4 marks.

1. Define EIRP.

2. Define the following with respect to satellite orbit

    (a) Apogee.   (b) Perigee.

    (c) Ascending mode.   (d) Inclination.

3. Explain the features of code division multiple access system.

4. Sketch a block diagram for the earth station showing the different components.

5. Sketch and explain a scheme to generate PN sequence.

6. "In spread spectrum system, many users can simultaneously use the same bandwidth". Comment on this statement.

7. What is the significance of C/I ratio in cellular systems ?

8. Show that the frequency reuse factor for a cellular system is given by K/S where K is the average number of channels per cell and S is the number of channels available to the cellular service provider.

9. What is meant by preample efficiency in TDMA ?

10. What are the basic features of AIN architecture ?

                                                          (10 × 4 = 40 marks)

Part B

Answer **all** *questions.*
Each question carries 12 marks.

11. (a) State and explain Kepler's laws.   (6 marks)

    (b) Draw the block diagram of a satellite transponder and explain.   (6 marks)

                                    Or

12. (a) What is meant by attitude control with respect to satellites ? Suggest schemes to accomplish this.

                                                          (6 marks)
                                                          Turn over

(b) A satellite link operates at a frequency of 14 GHz. The transmission path loss is 200 dB. Assuming earth station EIRP as 50 dBW, compute the power flux density at the receiving antenna.

(6 marks)

13. Explain in detail various types of multiple access schemes.   (12 marks)

Or

14. Explain the various types of antenna systems used in earth stations.   (12 marks)

15. (a) Explain the properties of PN sequence.   (6 marks)

(b) Explain a chirp spread spectrum system.   (6 marks)

Or

16. (a) Explain slow frequency hopping spread spectrum.   (6 marks)

(b) Obtain an expression for jamming margin for spread spectrum systems. Indicate your assumptions.

(6 marks)

17. Explain the frequency reuse concept in cellular communication.   (12 marks)

Or

18. Explain the different types of interference and methods to improve the system performance in this respect in cellular systems.

(12 marks)

19. Explain the various logic channel in GSM.   (12 marks)

Or

20. (a) Explain the intelligent cell concept.   (6 marks)

(b) Compare packet and circuit switched schemes for personal communication networks.

(6 marks)

($5 \times 12 = 60$ marks)