C 41264 (Pages 2) Name.....

Reg. No.....

SIXTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, MAY 2013

AI 09 L 01—WIRELESS COMMUNICATION SYSTEM

(2009 Admission onwards)

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*

1. Differentiate LEOs, MEOs, and GEOs.
2. What is the 'run property' of PRBS ?
3. What is EDGE ?
4. Determine the number of cells in clusters for the following values $j = 4$, $i = 2$ and $j = 3$, $i = 3$.
5. What is the PUSH process in WAP ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*

6. An earth station is located at latitude 35°N and longitude 100°W. Calculate the antennalook angles for a satellite at 67°W.
7. Briefly explain about WLL.
8. Explain Frequency hopped spread spectrum systems.
9. If a total of 33 MHz of bandwidth is allocated to particular FDD cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if the system uses seven cell reuse. If 1 MHz of the allocated spectrum is used for control channels, determine an equitable distribution of control channels and voice channels in each cell.
10. Explain the terms coherence time and coherence bandwidth.
11. Explain the Bluetooth protocol stack.

(4 × 5 = 20 marks)

Turn over

Part C

Answer any **one** *question from each module.*

Module I

12. 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 of clear sky conditions.

13. With block schematic explain various components of microwave radio station.

Module II

14. Draw the circuit of a 4 bit maximal length sequence generator using shift registers. Also find the sequence.

15. Briefly explain the 3G wireless networks.

Module III

16. A base station produces 40 Watts of power applied to a unity gain antenna with 900 MHz carrier frequency. The receiving antenna with unity gain is located at a distance of 5 km. What is the received power for free space path loss model in decibels ?

17. Discuss various measures to improve coverage and capacity in cellular systems.

Module IV

18. Explain briefly the type of multiple accessing technique used in GSM.

19. Give an overview of different 802.11*x* WLAN standards.

(4 × 10 = 40 marks)