C 80787

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

Reg. No.................................

SIXTH SEMESTER B.TECH. [ENGINEERING] (09 SCHEME) DEGREE EXAMINATION, APRIL 2015

AI 09 L01—WIRELESS COMMUNICATION SYSTEMS

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

1. Calculate the gain of a 3m parabolic reflector antenna at frequency of 6 GHz.

2. What is Doppler spread ?

3. What is meant by EIRP ?

4. What is the co-channel interference in cellular systems ?

5. Briefly explain the ISM spectrum.

$(5 \times 2 = 10 \text{ marks})$

Part B

Answer any four questions.

6. An earth station is located at latitude $35°$ N and longitude $100°$ W. Calculate the antenna-look angles for a satellite at $67°$ W.

7. Briefly explain a Microwave repeater station.

8. Explain the spread spectrum technique used in Bluetooth.

9. For wireless network if the received power at a reference distance 1km is equal to 1 micowatt, find the received power at a distance of 4km for

    (a) free space model ; and

    (b) with a path-loss exponent 3.

10. Explain the different steps involved in the handoff process.

11. In a GSM system with a 25 MHz forward link and 200 KHz radio channels are allocated for voice communication using TDMA/FDD, with each channel can support 8 simultaneous speech channels with a time slot of 0.57ms. Find the total number of users that can be supported, also find the frame duration.

$(4 \times 5 = 20 \text{ marks})$

Turn over

Part C

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

MODULE - I

12. With block schematic explain various components of FM microwave radio station.

Or

13. (a) Draw a satellite downlink model and explain. For a satellite with an uplink Eb/No of 16 dB and a downlink Eb/No of 13 dB, determine the overall Eb/No.

MODULE - II

14. Explain different spread spectrum systems.

Or

15. Briefly explain various WLAN standards.

MODULE - III

16. What are the different path-loss models depending on the location of the receiver.

Or

17. Calculate the mean excess delay, rms delay spread and the maximum excess delay(10 dB) for the multipath profile given in the figure . Estimate the 50% coherence bandwidth. Would this channel be suitable for AMPS or GSM service without the use of an equalizer ?
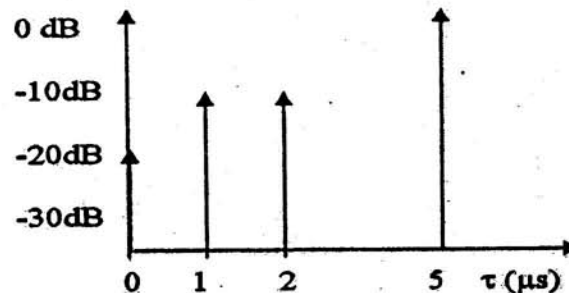
MODULE - IV

18. Explain briefly the CDMA(IS-95) mobile system ?

Or

19. Discuss the features of Wireless Application Protocol.

(4 × 10 = 40 marks)