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BIEL-018

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

00133

Term-End Examination

December, 2016

BIEL-018 : WIRELESS COMMUNICATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks. Use of scientific calculator is allowed.*

1. (a) Discuss the recent advancements in wireless communication.

(b) What is frequency reuse concept ? Explain with the help of a cellular diagram. *2×5=10*

2. (a) Explain the different factors influencing small-scale fading.

(b) How are interference and system capacity related ? *2×5=10*

3. (a) What is large-scale fading ? Explain its various types.

(b) Calculate the mean excess delay and rms delay spread for the multipath profile given in Figure 1. Estimate the 50% coherence bandwidth of the channel.

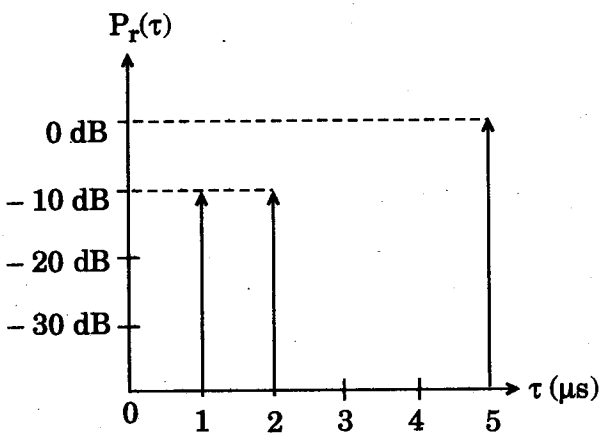

Figure 1 *2×5=10*

4. (a) Explain space diversity techniques in detail.

(b) Explain Linear Predictive Coders (LPC). *2×5=10*

5. (a) Compare the various multiple access techniques.

(b) What are the main components of a GSM system ? Explain. *2×5=10*

6. (a) What is hand-off ? Differentiate between hard and soft hand-off.

(b) Compare cell splitting and cell sectoring techniques to improve the capacity in a cellular system. *2×5=10*

7. (a) Explain non-linear equalizers with its block diagram.

(b) Differentiate between Direct Sequence Spread Spectrum (DS-SS) and Frequency Hopped Spread Spectrum (FH-SS) modulation techniques. *2×5=10*

8. (a) What are the different radio propagation mechanisms ?

(b) Explain in detail knife edge diffraction model. *2×5=10*

9. (a) If a transmitter produces 50 watts of power, express the transmit power in (i) dBm, and (ii) dBW. If 50 watts is applied to a unity gain antenna with a 900 MHz carrier frequency, find the received power in dBm at a free space distance of 100 m from the antenna. What is P_r (10 km) ? Assume unity gain for the receiver antenna.

(b) Explain the characteristics of speech signals. *2×5=10*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) RAKE Receiver

(b) Wireless Standards

(c) Impulse Response Model