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BIEL-018

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

Term-End Examination

00106

June, 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 evolution of mobile radio communication.

(b) Derive and explain the free space propagation model for wireless communication. *2×5=10*

2. (a) What is small-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 90% coherence bandwidth of the channel.

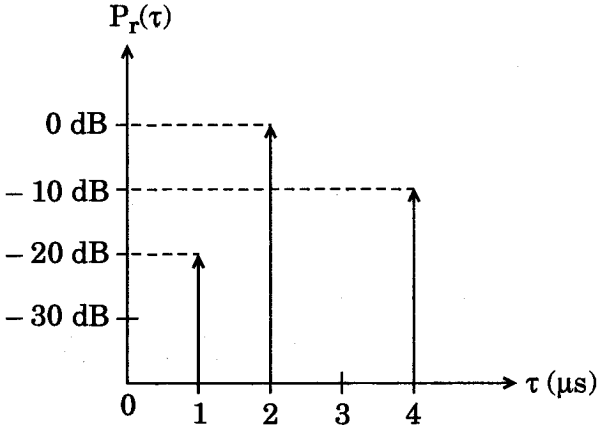

Figure 1 *2×5=10*

3. (a) Explain impulse response model for wireless communication.

(b) Discuss time diversity and frequency diversity techniques used in radio communication. *2×5=10*

4. (a) What is co-channel interference in cellular systems ? How can it be minimized ?

(b) Explain RAKE receiver with its block diagram. *2×5=10*

5. (a) What is hand-off ? Differentiate between vertical and horizontal hand-off.

   (b) Write down the various features of time division multiple access technique. *2×5=10*

6. (a) What is channel assignment ? Differentiate between fixed channel and dynamic channel assignments.

   (b) Compare 2G and 3G wireless systems. *2×5=10*

7. (a) Explain the use of equaliser in a communication receiver.

   (b) What is frequency reuse factor ? If a total of 33 MHz of bandwidth is allocated to a 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 7-cell reuse. If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell. *2×5=10*

8. Explain coverage and capacity improving techniques in wireless communication systems. *10*

9. (a) What is quantization process ? Differentiate between uniform and non-uniform quantization.

   (b) What are Vocoders ? Explain Cepstrum Vocoder. *2×5=10*

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

(a) Frequency Hopped Spread Spectrum (FH-SS)

(b) Adjacent Channel Interference

(c) Linear Predictive Coders (LPC)