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Reg. No. : | | | | | | | | | | |

Question Paper Code: 96401

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Sixth Semester

Electronics and Communication Engineering

19UEC601– WIRELESS COMMUNICATION SYSTEMS

(Regulation 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. The techniques used to improve the capacity of cellular systems are CO1-U

   (a) Splitting (b) Sectoring (c) Coverage zone approach (d) All of the above

2. The angle at which no reflection occurs in the medium of origin CO1-U

   (a) Brewster angle (b) Phase Angle (c) Path Angle (d) All of the above

3. ----------amplifies the signal such that its level is well adjusted to the quantization at the subsequent ADC. CO1-U

   (a) Amplifier (b) Rectifier (c) Op amp (d) Automatic Gain Control

4. Diversity technique CO1- U

   (a) Provides significant link improvement (b) Needs training overhead

   (c) Both of the mentioned (d) None of the mentioned

5. The data speed of Bluetooth is around _____ CO1- U

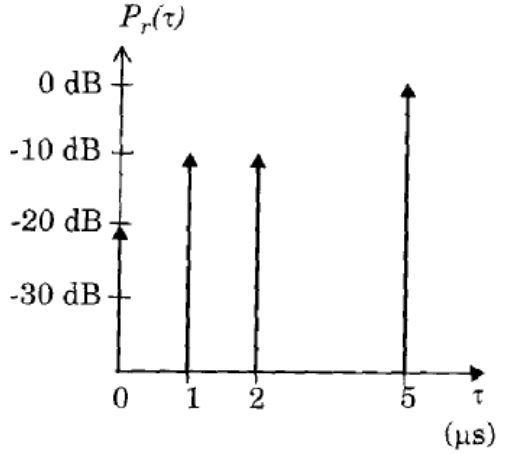
   (a) 1Mbps (b) 2Mbps (c) 3 Mbps (d) 5Mbps

PART – B (5 x 3= 15 Marks)

6. Mention the significance of frequency reuse in cellular networks. CO1- U
7. List the factors influencing small scale fading CO1- U
8. State the advantages of Offset-QPSK. CO1-U
9. Write the advantages of LMS algorithm CO1-U
10. What are the main functions of cognitive radio? CO1-U

PART – C (5 x 16= 80 Marks)

11.	(a)	Explain the Principle of Cellular networks.	CO1- U	(16)
		Or		
	(b)	Explain the different types of wireless services and the requirements for the types of services.	CO1- U	(16)
12.	(a)	(i) Explain Flat fading and frequency selective fading in detail.	CO1-U	(8)
		(ii) In the US digital cellular system, if fc=900MHZ and the mobile velocity is 70km/hr. Calculate the received carrier frequency if the mobile (a) directly toward the transmitter(Positive Doppler Shift (b) directly away from the transmitter(Negative Doppler shift) and (c) in a direction perpendicular to the direction of the arrival of the transmitted signal.	CO2-App	(8)
		Or		
	(b)	(i) Calculate the mean excess delay, rms delay spread and the maximum excess delay (10dB) for the multipath profile given in the figure below. Estimate the 50% coherence BW of the channel. Would this channel be suitable for GSM service without the use of an Equalizer.	CO2- App	(8)



		(ii) Explain RMS delay spread, Maximum excess delay, Mean Excess delay and Coherence Bandwidth,	CO1-U	(8)
13.	(a)	What is QPSK? Derive the bit error probability of QPSK and also explain the constellation diagram of it.	CO1- U	(16)
		Or		
	(b)	Explain Direct sequence Spread spectrum in detail	CO1- U	(16)

14.	(a)	Explain space diversity techniques used in wireless communication	CO1- U	(16)
		Or		
	(b)	Explain the training A generic adaptive equalizer in detail.	CO1- U	(16)
15.	(a)	Explain how the LoraWAN works better than WAN?.	CO1- U	(16)
		Or		
	(b)	Discuss about various cellular networks	CO1- U	(16)