

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026***Fifth Semester**Electronics and Communication Engineering***EC3501 – Wireless Communication***Regulations - 2021**Duration : 3 Hrs**Maximum : 100 Marks***PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)**

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	Define cell & cell cluster.	L1	1	2
2.	Recall co-channel reuse ratio.	L1	1	2
3.	Calculate the Brewster angle for wave impinging on ground having a permittivity $\epsilon_r=4$.	L3	2	2
4.	What is coherence bandwidth?	L1	2	2
5.	Give the function of Gaussian filter in GMSK.	L2	3	2
6.	Why diversity technique is needed? Why it is employed?	L2	3	2
7.	Write the formula for spectral efficiency of FDMA.	L2	4	2
8.	What is frame efficiency in TDMA?	L1	4	2
9.	Write the functions of MSCs in first generation wireless networks.	L2	5	2
10.	Identify the examples of second generation wireless systems.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a 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 a system uses (a) 4-cell reuse, (b) 7-cell reuse (c) 12-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 for each of the three systems.	L4	1	16
	Or			
	b In a cellular system with total of 917 radio channels available for handling traffic. The area of a cell is 4 km ² and the total area is 1400 km ² with cluster of 7. (a) Calculate the system capacity. (b) How many times signal can be replicated? (c) Calculate the system capacity for $N = 4$. (d) Compare the performance.	L4	1	16
12.	a Analyze the limitations of the free space propagation model by comparing it with practical propagation models (e.g., Two-ray ground reflection, Okumura-Hata). Discuss how the assumptions of free space propagation differ from real-world conditions.	L3	2	16

Or

	b	Discuss the impact of time dispersion parameter, Coherence Bandwidth, Doppler Spread and Coherence time on small scale fading.	L2	2	16
13.	a	Explain the principle of Minimum shift keying (MSK) modulation and derive the expression for power spectral density.	L2	3	16
		Or			
	b	Explain the working mechanism of Equalizers with a simplified communication system that uses adaptive equalizer at the receiver.	L2	3	16
14.	a	What are the major difference between TDMA, FDMA and CDMA? Explain in detail about each multiple access.	L2	4	16
		Or			
	b	Explain the capacity of cellular CDMA.	L2	4	16
15.	a	Illustrate the Public Switched Telephone Network with relevant architectural diagrams.	L2	5	16
		Or			
	b	Explain in detail about Packet Reservation Multiple Access. Draw and explain the Network architecture Universal Mobile Telecommunication Systems.	L2	5	16