Q.P. Code: 19EC0426 **R19**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech IV Year I Semester Regular Examinations November/December-2022

WIRELESS COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Briefly discuss about the evolution of Mobile radio communication.	L1	6M
	b	Explain the concept of second generation (2G) cellular networks.	L2	6M

OR

2	a	Discuss briefly about impact of adjacent channel interference on the system capacity.	L1	6M
	b	Express the prioritizing handoffs and practical handoff considerations in cellular systems.	L2	6M

UNIT-II

3	a	Determine the path difference, phase difference, and path loss for the two ray model using the method of images.	L3	6M
	b	Derive the received power at a distance d from the transmitter for the two-ray ground bounce model.	L3	6M

OR

4	a	Explain about Fresnel zone geometry model.	L2	6M
	b	A mobile is located at 5 km away from a base station and uses a vertical $\lambda/4$ monopole antenna with a gain of 2.55dB to receive cellular radio signals. The E field at 1km from the transmitter is measured to be 10-3V/m. The carrier frequency used for the system is 900MHz. (i) Find the length and the effective aperture of the receiving antenna. (ii) Find the received power at the mobile using the two-ray ground reflection model. Assuming the height of the transmitting antenna is 50m and the receiving antenna is 1.5m above ground.	L4	6M

UNIT-III

5	a	Illustrate the Doppler shift in radio propagation.	L2	6M
	b	Explain parameters of mobile multipath channels and Time dispersion parameters.	L2	6M

OR

6	a	Evaluate frequency selective fading due to Multipath time delay spread.	L4	6M
	b	If the coherence bandwidth is calculated as 100 kHz in the given radio channel of 900 MHz frequency, calculate the maximum symbol rate that can be transmitted over this channel that will suffer minimal inter symbol interference.	L4	6M

UNIT-IV

7	a	Briefly explain equalizers in a communications receiver.	L2	6M
	b	Explain linear transversal equalizer & lattice equalizer.	L2	6M

OR

8	a	Explain the concept of selection diversity and feedback diversity.	L2	6M
	b	Explain about maximal ratio combining and equal gain diversity.	L1	6M

UNIT-V

9	a	Explain the features of code division multiple access (CDMA) scheme.	L2	6M
	b	Write the differences between TDMA & FDMA.	L2	6M

OR

10	a	With neat diagram Illustrate transmit diversity and receive diversity.	L2	6M
	b	Obtain the capacity expression for fading channels.	L3	6M

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