GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022
B. Tech Degree Examinations, December – 2020
(Seventh Semester)
BECPE7021 – MOBILE COMMUNICATION
(ECE)

Time: 2 hrs   Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions

a. The 2G systems is based on

   (i)   TDMA   (ii)   CDMA

   (iii)   Both i and ii   (iv)   FDMA

b. The actual radio coverage of a cell is known as

   (i)   Foot print   (ii)   Transmission range

   (iii)   Cell coverage   (iv)   None of the above

c. Coherence time is

   (i) Directly proportional to Doppler spread   (ii) Directly proportional to square of Doppler spread

   (iii) Indirectly proportional to Doppler spread   (iv) Directly proportional to twice of Doppler spread

d. Flat fading or frequency non-selective fading is a type of

   (i) Multipath delay spread small scale fading   (ii) Doppler spread small scale fading

   (iii)Fast fading   (iv) Both i and iii

e. CDMA is

   (i) Spread spectrum technology   (ii) Each user has unique PN code

   (iii) Using same communication medium   (iv)All the above

f. In time diversity

   (i) Multiple versions of signals are transmitted at different time instants   (ii) The signal is transmitted using multiple channels

   (iii) Signal is transmitted with different polarization   (iv) All of the above

g. The interference between the neighbouring base stations is avoided by

   (i) Assigning different group of channels   (ii) Using transmitters with different power level

   (iii) Using different antennas   (iv)Using orthogonal coding

h. Doppler spread refers to

   (i) Signal fading due to Doppler shift in the channel   (ii) Temporary failure of message transfer

   (iii) Large coherence time of the channel as compared to the delay constraints   (iv)Signal delay

i. Which of the following spread spectrum techniques were used in the original IEEE 802.11 standard?

   (i)FHSS and DSSS   (ii)THSS and DSSS

   (iii)THSS and FHSS   (iv)Hybrid technique

j. Which physical interface defined in the 802.16 standard are considered in WIMAX.

   (i)Wireless MAN-OFDM   (ii)Wireless-CDMA

   (iii)Wireless-MAN-SC   (iv)Wireless-FDMA

PART – B: (Short Answer Questions)   **(2 x 5 = 10 Marks)**

Q.2. Answer *ALL* questions

   a.   Differentiate between soft handoff and hard handoff.

   b.   How 120^0 sectoring improves the capacity of the cellular system?

   c.   Differentiate between frequency selective fading and fast fading.

   d.   What are the requirements of direct sequence spread spectrum?

   e.   State different types of topologies used in WLAN.

PART – C: (Long Answer Questions)   **(6 x 5 = 30 Marks)**

Answer *ANY FIVE* questions   Marks

3.   What is Co-channel interference? Discuss with the worst case with neat diagram. How can it be minimized?   (6)

4.   A cellular system can tolerate a signal to interference ratio of 15 dB. Find the optimal value of N for (a) omni-directional antenna, (b) 120^0 sectoring and (c) 60^0 sectoring. Path loss exponent is 4.   (6)

5.   Derive an expression for the receiver power in free space. A transmitter produces 100 watts of power and applied to unity gain antenna with 900 MHz carrier frequency. Find the received power if the gain of the receiver antenna is unity   (6)

6.   Discuss the physical factors in the radio propagation channel that influence small scale fading.   (6)

7.   List the difference between TDMA, FDMA and CDMA   (6)

8.   What is diversity technique? Explain feedback diversity.   (6)

9.   What is ZigBee technology? Write some of its applications.   (6)

10. Discuss WiMAX topologies.   (6)

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