2021
B.E. (Information Technology)
Fifth Semester
IT-502: Wireless Communication Technologies

Time allowed: 3 Hours   Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I.   Attempt the following:-

   a) Explain why the complexity of 3G and beyond wireless communication system is higher than 1G/2G devices?

   b) What is the most suitable cell size to cover maximum area in wireless communication?

   c) Explain the hard and soft handoff with list of parameters influencing handoff.

   d) Compare LTE and LTE-Advance technologies.

   e) How sensor networks revolutionized wireless communication?   (5x2)

UNIT – I

II.   a) Compare 2G and 3G wireless communication system in terms of coverage, carrier frequency, required infrastructure, complexity, hardware cost and functionality etc.

   b) Determine the techniques that how the capacity is improved in 4G systems. (2x5)

III.   a) Explain the cellular concept in mobile communication and illustrate how frequency reuse helps in increasing the capacity by taking suitable example.

   b) If 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 cells if a system uses:
   i) Four cell reuse
   ii) Seven cell reuse
   iii) Twelve cell reuse

   If 1MHz is dedicated to control channels, determine distribution of control and voice channels in each cell for each of the three systems.   (2x5)

IV.   a) Define the forward channel, reverse channel and control channel with respect to GSM and CDMA wireless cellular systems.

   b) Explain the procedure to setup a call in GSM network.   (2x5)

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UNIT – II

V.   a) Explain diffraction and reflection criteria w.r.t wireless communication and select suitable outdoor propagation model to minimize the same.

b) What are the parameters that are predicted using free space propagation model?

(2x5)

VI.   a) Compare Bluetooth and WiFi networks in terms of frequency, data rate, coverage area etc.

b) Which modulation schemes are supported by wi max technology and explain the communication setup between devices using the same.   (2x5)

VII.   Explain following networks by taking typical examples:-

a) Biomedical network

b) IoT

c) Cognitive radios   (10)

x-x-x