USN | | | | | | | | | |

15MT551

Fifth Semester B.E. Degree Examination, June/July 2019

Wireless Networks and Communication

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. With a neat block diagram, explain wireless communication system. **(08 Marks)**

b. In a communication channel, the channel bandwidth is 3.4 kHz and output S/N power ratio is 20 dB. Calculate the channel capacity. **(04 Marks)**

c. Explain multiple access method for wireless communication channel specifications. **(04 Marks)**

OR

2 a. Explain wireless switching technologies. **(04 Marks)**

b. Explain various networking issues encountered in wireless network. **(08 Marks)**

c. With neat diagram, explain wireless network architecture. **(04 Marks)**

Module-2

3 a. Explain network architecture and components of WBAN. **(07 Marks)**

b. Six EMG sensor nodes are grouped around a human body to measure the muscle activity changes at different parts of the human body in a chain topology. Each sensor node is able to hear the next and the pervious neighbor in the chain. Station 6 and1 can also hear one another. Stations optimize their behavior to avoid collisions if possible (assume that no RTS/CTS is used).

i) Sensor node 2 is sending to sensor node 1 already sensor node 3 wants to address the sensor node 4. Is sensor node 3 allowed to send a packet and will it do so? Where does the collision occur?

ii) Sensor node 3 sends to sensor node 2 and at the same time sensor node 5 would like to send a packet to sensor node 4. Will sensor node 5 start sending and should it?

iii) Sensor nodes 1 and 2 are sending. Which sensor nodes believe that they can send and which ones are actually allowed to do so?

iv) Sensor nodes 1 and 4 send. Which stations believe that they can send and which ones are actually allowed to do so? **(04 Marks)**

c. Explain the following network layer functions:

i) Fidelity aware routing

ii) Rumor routing

iii) SPIN **(05 Marks)**

OR

4 a. Explain WPAN technology IEEE 802.15.2 and IEEE802.15.3. **(08 Marks)**

b. Explain ZigBee Topology model. **(05 Marks)**

c. Explain the requirement of WPAN devices. **(03 Marks)**

Module-3

5 a. Explain the following telecommunication coding technique:
   i) Error detection and correction coding
   ii) Speech coding
   iii) Block interleaving **(08 Marks)**

   b. Explain QPSK digital modulation technique. **(08 Marks)**

OR

6 Explain the following:
   a. Ultra Wideband Radio Technology
   b. Space Diversity
   c. Smart Antennas
   d. Single Antenna Interference Cancellation **(16 Marks)**

Module-4

7 a. Explain design requirements of WLAN. **(06 Marks)**

   b. Explain the following in WLAN physical layer protocol:
   i) Layer description of IEEE 802.11
   ii) Direct sequence spread spectrum phy sublayer
   iii) Peer to peer data routing **(10 Marks)**

OR

8 a. With neat diagram explain WMAN network architecture. **(04 Marks)**

   b. Explain the following in WMAN MAC Layer:
   i) MAC PDU Formats
   ii) MAC scheduling **(08 Marks)**

   c. Draw the diagram for GSM network architecture. **(04 Marks)**

Module-5

9 a. Write the applications of MANET. **(06 Marks)**

   b. Explain 5 routing Protocols of WSN. **(10 Marks)**

OR

10 a. Explain the characteristics of VANET. **(08 Marks)**

   b. Explain the protocols in VANET. **(04 Marks)**

   c. Write application in WSN. **(04 Marks)**

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