CBCS SCHEME

USN | | | | | | | | | | |

17MT551

Fifth Semester B.E. Degree Examination, Aug./Sept.2020
Wireless Networks and Communication

Time: 3 hrs. Max. Marks: 100

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. List out merits and demerits of wireless communication system. **(08 Marks)**

b. Discuss the diversity techniques to combat fading in wireless communication. **(07 Marks)**

c. Classify wireless networks based on signal range and area of application. **(05 Marks**

OR

2 a. Explain wireless communication problems encountered in wireless networks. **(08 Marks)**

b. Explain wireless switching technologies. **(08 Marks)**

c. For a given communication system, transmitter operates at a frequency of 850 MHz with a power of 125mw. This transmitter communicates with the receiver having the received power of 1μw. What is the distance between the transmitter and receiver. **(04 Marks)**

Module-2

3 a. With a neat diagram explain network architecture of WBAN and also discuss properties and applications of WBAN. **(10 Marks)**

b. Explain sensor MAC and Timeout MAC protocols in WBAN. **(10 Marks)**

OR

4 a. Explain WPAN network architecture and topologies. **(08 Marks)**

b. Explain protocol stack arrangement of Bluetooth technology. **(08 Marks)**

c. A Bluetooth piconet master has 3 slaves S1, S2 and S3 having the packet types DM1, DM3 and DM5 respectively. All the slaves want to send the data to the master at different intervals of time. Draw the timing diagram for master slave communication. **(04 Marks**

Module-3

5 a. What is the received power in dBm for a signal in free space with a transmitting power of 1W, frequency of 1900MHz and distance from the receiver of 1000 meters if the transmitting antenna and receiving antennas both use dipole antennas with gain of approximately 1.6? What is the path loss in dB? Note 1W = + 30dBm. **(04 Marks)**

b. Explain error detection and correction coding techniques in wireless telecommunication system. **(08 Marks)**

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

OR

6 a. Explain frequency hop spread spectrum modulation system (FHSS). **(08 Marks)**

b. With a neat block diagram explain RAKE receiver used for CDMA systems. **(08 Marks)**

c. Write a note on single antenna interference cancellation. **(04 Marks)**

Module-4

7 a. With a neat architecture diagram, explain network components and design requirements of WLAN. **(10 Marks)**

b. Explain the following in WLAN physical layer protocol.
i) Layer description of IEEE802.11
ii) FHSS PMD PHY sub layer
iii) FHSS PLCP sub layer. **(10 Marks)**

OR

8 a. Explain WMAN network components, features of WIMAX with neat diagram of WMAN architecture. **(10 Marks)**

b. Explain with neat diagram GSM network architecture. **(06 Marks)**

c. A cellular network has a total bandwidth of 56MHz. If two 35KHz simplex channels are used to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses :
i) 4 – cell reuse
ii) 7 – cell reuse
iii) 12 – cell reuse. **(04 Marks)**

Module-5

9 a. Explain quantitative and qualitative features and advantages of Adhoc network. **(10 Marks)**

b. Give classification of MANET routing protocol and explain reactive Adhoc on demand protocol. **(10 Marks)**

OR

10 a. With neat diagram, explain wireless Mesh network architecture and give applications of it. **(10 Marks)**

b. Explain unique characteristics of VANET and also explain applications of VANET. **(10 Marks)**

* * * * *