

Register No:

Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(R), MAY 2024**Electronics and Communication Engineering****(2020 SCHEME)****Course Code : 20ECT414****Course Name : Modern Communication Systems****Max. Marks : 100****Duration:3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. Explain why OFDM is preferred over FDM in modern communication systems.
2. Differentiate between OFDMA and SC-FDMA.
3. Discuss any three use cases for 6G networks
4. Discuss the evolution of wireless technologies from their inception to the present day.
5. Explain how LoRa is suitable for IoT applications.
6. Describe any one cutting-edge application of Healthcare IoT.
7. Discuss the merits of the VLC standard in vehicular communication.
8. Discuss any three applications of visible light communication in vehicular communication.
9. Explain the role of digital-to-analog converters (DACs) in an SDR transmitter, and how do they affect signal quality?
10. Discuss the concept of cognitive radio and its role in dynamic spectrum access.

PART B*(Answer one full question from each module, each question carries 14 marks)***MODULE I**

11. What are the benefits of multicarrier transmission? Explain how the orthogonality of subcarriers is maintained in OFDM. 14

OR

12. Define path loss in wireless communication. Mention any three effects of shadowing in communication. 14

MODULE II

13. How does millimeter wave communication address the increasing demand for high-speed wireless networks in urban environments? Write short notes on any one millimeter wave standard. 14

OR

14. Differentiate between the three different IEEE 802.15 WPAN standards. 14

MODULE III

15. Explain the role of Zigbee, Wireless HART, RFID, NFC, LoRa, WiFi, and Bluetooth in enabling different IoT applications such as smart homes, industrial automation, healthcare, and transportation. 14

OR

16. Describe the following protocols in IoT applications :MQTT, MQTT-SN, and CoAP and also differentiate between them. 14

MODULE IV

17. Discuss how 6G cellular networks could enhance communication for connected autonomous vehicles, focusing on operational scenarios like collision avoidance. 14

OR

18. Explain various applications of VANET technology in the context of intelligent transportation systems (ITS). Also describe how does collision avoidance work in Connected Autonomous Vehicles (CAVs). 14

MODULE V

19. Describe the steps involved in deploying a cognitive radio network. Also explain the challenges associated with the implementation of cognitive radio. 14

OR

20. Explain the concept of spectrum sharing in cognitive radio. How do cognitive radios enable efficient and dynamic spectrum sharing between different users? What are the potential challenges associated with implementing spectrum sharing in a cognitive radio network? 14
