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Question Paper Code	13648
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Fourth Semester

Computer Science and Engineering (Internet of Things)

20CIPW401 - COMMUNICATION AND NETWORKING TECHNOLOGIES FOR IoT WITH LABORATORY

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. Infrared transmission is often used in: (a) Remote controls (b) Long-distance data transfer (c) Underwater communication (d) fiber optic networks	1	K1	CO1
2. Which addressing method is often used in conjunction with QoS (Quality of Service) to manage network traffic? (a) MAC Addressing (b) IP Addressing (c) Port Addressing (d) Multicast Addressing	1	K1	CO1
3. In WSN, sensor nodes communicate using which type of communication? (a) Wired Ethernet (b) Short-range wireless communication (c) Fiber optics (d) Satellite communication	1	K1	CO2
4. Which IPv4 address class is used for multicasting? (a) Class A (b) Class B (c) Class C (d) Class D	1	K1	CO2
5. Which wireless technologies operate in the 2.4 GHz frequency band and are commonly used for short-range communication? (a) NFC (b) Bluetooth (c) LoRa (d) FlexRay	1	K1	CO3
6. Which industrial protocol is widely used for Machine-to-Machine (M2M) communication in IoT applications? (a) DSRC (b) MQTT (c) WAVE (d) Ethernet/IP	1	K1	CO3
7. Which type of cloud is most commonly used for storing highly sensitive data? (a) Public cloud (b) Private cloud (c) Hybrid cloud (d) Community cloud	1	K1	CO4
8. Which of the following malware types self-replicates to spread to other systems? (a) Virus (b) Worm (c) Trojan (d) Spyware	1	K1	CO4
9. Smart parking solutions use sensors to: (a) Track the number of vehicles in a city (b) Monitor car speeds (c) Identify available parking spots in real-time (d) Reduce fuel consumption	1	K1	CO5
10. In a star topology, what happens if the central hub fails? (a) The entire network fails (b) Other nodes continue communication normally (c) Only the failed node is affected (d) Data transmission speeds up	1	K1	CO6

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11. Consider a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with two signal levels. Calculate the maximum bit rate.	2	K2	CO1
12. What is the need for switching?	2	K1	CO1
13. Define Masking.	2	K1	CO2
14. Differentiate VANET from MANET.	2	K2	CO2
15. How does MQTT (Message Queuing Telemetry Transport) support Industrial IoT (IIoT) applications?	2	K1	CO3
16. List the key advantages of Zigbee for home automation and industrial applications.	2	K1	CO3

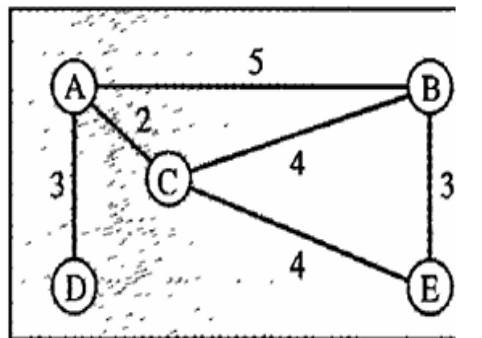
17. What does ESP add to the IP packet? 2 K1 CO4
18. Relate the role of compression in the operation of a virus. 2 K1 CO4
19. List any two benefits of effective asset management. 2 K1 CO5
20. How can smart traffic management improve urban mobility in Smart Cities? 2 K1 CO5
21. What is the purpose of a subnet mask in IP configuration? 2 K1 CO6
22. Differentiate congestion control and flow control. 2 K2 CO6

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23. a) Explain the TCP/IP Protocol suite with a neat diagram. 11 K2 CO1
- OR**
- b) Illustrate the different types of guided media used in communication networks. 11 K2 CO1

24. a)



11 K2 CO2

Demonstrate Dijkstra algorithm for the above figure to node A of the given topology and obtain the routing table.

OR

- b) Summarize the structure of an IPv6 address and its key features. 11 K2 CO2
25. a) Describe the Ethernet frame structure with necessary diagram. 11 K2 CO3
- OR**
- b) Explain the IEEE 802.15.4 standard and its role in low-power wireless communication. 11 K2 CO3
26. a) Discuss different types of security attacks, including phishing, malware, denial-of-service (DoS), man-in-the-middle (MitM), and ransom ware. 11 K2 CO4
- OR**
- b) Infer the importance of IP Security (IPSec) in securing network communications. 11 K2 CO4
27. a) Apply a Building Management System (BMS) that integrates HVAC, lighting, access control, and energy metering. 11 K3 CO5
- OR**
- b) Construct a smart grid model using smart meters, edge devices, and cloud analytics. Explain the role of bidirectional communication and discuss how your model ensures real-time monitoring and energy optimization. 11 K3 CO5
28. a) Identify a program to explain the Process of Configuring IP Addresses in a Network. 11 K3 CO6
- OR**
- b) Develop a Program for Exchanging Messages between a Client and a Server. 11 K3 CO6