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Question Paper Code	12997
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B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2024

Fourth Semester

Computer Science and Engineering (IoT)

20CIPW401 - COMMUNICATION AND NETWORKING TECHNOLOGIES FOR IOT WITH LABORATORY

Regulations - 2020

Duration: 3 Hours

Max. Marks: 100

PART - A (MCQ) (20 × 1 = 20 Marks)

Answer ALL Questions

	<i>Marks</i>	<i>K- Level</i>	<i>CO</i>
1. The TCP/IP model has how many layers? (a) 4 (b) 5 (c) 6 (d) 7	1	K1	CO1
2. The process of dividing messages into smaller units to optimize transmission is called: (a) Fragmentation (b) Switching (c) Multiplexing (d) Encoding	1	K1	CO1
3. Twisted pair cables are commonly used in: (a) Long-distance, high-speed data transfer (b) Telephone networks and local area networks (c) Satellite communication (d) Fibre optic systems	1	K1	CO1
4. A typical MAC address consists of how many bits? (a) 32 bits (b) 48 bits (c) 64 bits (d) 128 bits	1	K1	CO2
5. In an Ad Hoc network, nodes: (a) Have fixed infrastructure (b) Depend on centralized control (c) Communicate directly with each other (d) Require a wired connection	1	K1	CO2
6. Which of the following routing protocols is considered distance vector? (a) OSPF (b) RIP (c) BGP (d) EIGRP	1	K1	CO2
7. MQTT is primarily used for: (a) Web browsing (b) Messaging in IoT devices (c) Vehicle-to-vehicle communication (d) Real-time video streaming	1	K1	CO3
8. Which wireless technology allows communication between devices at a distance of 10-30 meters with low energy consumption? (a) Zigbee (b) NFC (c) BLE (d) LoRa	1	K1	CO3
9. In automotive networks, the Controller Area Network (CAN) protocol is used primarily for: (a) Wireless communication (b) Real-time control in vehicles (c) High-speed internet access (d) Streaming audio	1	K1	CO3
10. The purpose of HTTPS is to: (a) Encrypt data sent over the web (b) Block pop-ups (c) Provide faster web browsing (d) Secure file storage	1	K1	CO4
11. Trojan horses are malware that: (a) Self-replicate and spread automatically (b) Appear as legitimate software to trick users (c) Encrypt files and demand ransom (d) Modify system firmware	1	K1	CO4
12. 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
13. In industrial automation, HMI stands for: (a) High Memory Integration (b) Human-Machine Interface (c) Heavy Machinery Integration (d) Hardware Memory Interaction	1	K1	CO5

14. Programmable Logic Controllers (PLCs) are commonly used in automation to: 1 K1 CO5
 (a) Send data to the internet (b) Control and automate machinery and processes
 (c) Communicate with smart phones (d) Monitor weather conditions
15. Sensors in industrial automation are used to: 1 K1 CO5
 (a) Monitor and collect data from physical processes (b) Repair equipment automatically
 (c) Display images on screens (d) Automate accounting tasks
16. Advanced Metering Infrastructure (AMI) is a critical component of: 1 K1 CO5
 (a) Asset management (b) Smart grid systems
 (c) Traditional grid (d) Internet routers
17. Which of the following IPv4 addresses is private? 1 K1 CO6
 (a) 192.168.1.1 (b) 8.8.8.8 (c) 172.60.5.5 (d) 1.1.1.1
18. What is the primary purpose of NAT (Network Address Translation) in IP configuration? 1 K1 CO6
 (a) To assign static IP addresses
 (b) To enable multiple devices to share a single public IP address
 (c) To secure data using encryption
 (d) To route packets within a local network
19. Which protocol allows remote file access and transfer in a client-server model? 1 K1 CO6
 (a) POP3 (b) FTP (c) HTTP (d) SMTP
20. What is the default port number used by HTTP in a client-server model? 1 K1 CO6
 (a) 21 (b) 22 (c) 80 (d) 443

PART - B (10 × 2 = 20 Marks)

Answer ALL Questions

21. What are the advantages of a multipoint connection over a point-to-point connection? 2 K1 CO1
22. What is a peer-to-peer process? 2 K1 CO1
23. Compare MANET Vs VANET. 2 K2 CO2
24. Why do OSPF messages propagate faster than RIP messages? 2 K1 CO2
25. What is handshaking? 2 K1 CO3
26. Compare DSRC and Ethernet. 2 K2 CO3
27. What is a replay attack? 2 K1 CO4
28. What are the challenges faced in executing network security? 2 K1 CO4
29. How does industrial automation improve workplace safety? 2 K1 CO5
30. Differentiate between TCP and UDP in client-server communication. 2 K2 CO6

PART - C (6 × 10 = 60 Marks)

Answer ALL Questions

31. a) Summarize and draw the ISO-OSI architecture and outline the functions performed by each layer. 10 K2 CO1
- OR**
- b) Explain in brief circuit switching with an example. 10 K2 CO1
32. a) Describe in brief about IPv6 address. 10 K2 CO2
- OR**
- b) Explain about link state routing. 10 K2 CO2
33. a) Outline the working principle of Bluetooth technology. 10 K2 CO3
- OR**
- b) Discuss LoRa technology, fundamental principles of operation and key applications in the Internet of Things (IoT). 10 K2 CO3

34. a) Detail about the PGP and S/MIME in Email security. 10 K2 CO4
- OR**
- b) Discuss in brief about transport level security. 10 K2 CO4
35. a) Interpret the Role of the Internet of Things (IoT) in Smart Cities. 10 K2 CO5
- OR**
- b) Illustrate the working of Asset Management. 10 K2 CO5
36. a) Develop a Program to implement File Integrity Checks in a Simple Client-Server File Transfer Program. 10 K3 CO6
- OR**
- b) Develop a program for the implementation of IP address configuration. 10 K3 CO6