



Dezyne École College

Bachelor of Computer Application (B.C.A.) Third Year-5th Semester
Internet of Things

University Exam Probable Questions

UNIT 1

Short Answer Questions

1. What are the four main components of an IoT system?
 2. List any five characteristics of IoT sensor nodes.
 3. Define edge computing in the context of IoT.
 4. What is the difference between cloud computing and peripheral cloud computing?
 5. Name three popular single board computers used in IoT applications.
 6. What does MQTT stand for and what is its primary purpose?
 7. Explain the publish-subscribe model in two sentences.
 8. What is the default port number for HTTP and HTTPS protocols?
 9. Define what an MQTT broker is and its role in IoT communication.
 10. What does CoAP stand for and mention one key advantage over HTTP?
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Long Answer Questions

1. What are the main parts of an IoT system? How does data travel from a temperature sensor to a smartphone app? Explain the basic layers: sensors, network, and applications.
2. How are IoT sensors different from laptops or smartphones? Why do IoT devices need to save battery power and use less memory? What makes them special for specific tasks?

3. What is edge computing and why is it useful for IoT? How does processing data locally (at the edge) help with speed and privacy? Give simple examples like smart cameras or voice assistants.
4. When should IoT data be processed in the cloud versus locally? What are the benefits of each approach? Compare scenarios like weather monitoring vs autonomous cars.
5. What are Raspberry Pi, Arduino, and BeagleBone? How do you choose the right board for your IoT project? Compare their basic features and what projects they're good for.
6. How do IoT devices talk to each other and the internet? Compare MQTT, HTTP, and CoAP protocols in simple terms. When would you use each one?
7. What is MQTT and how does it work? Explain the publish-subscribe system with simple examples like a smart home. What are QoS levels and why do they matter?
8. What's the difference between UDP and TCP? When would you choose fast but less reliable (UDP) versus slow but reliable (TCP) for IoT devices? Give practical examples.
9. How do IoT systems work in smart cities, factories, hospitals, and farms? What components and technologies are used in each case? What are the main benefits and challenges?
10. What is an IoT gateway and why is it needed? How do gateways help different devices communicate with each other? Explain with examples like connecting old machines to new IoT systems.

UNIT 2

Short Answer Questions

1. Define IoT point-to-point communication and give two examples where it is commonly used.
2. List the four main IoT communication patterns and briefly describe each.
3. What does 6LoWPAN stand for and what is its primary purpose in IoT networks?
4. Compare ZigBee and Bluetooth Low Energy (BLE) in terms of power consumption and range.
5. What is the typical operating range of NFC (Near Field Communication) technology?
6. Explain the difference between WiFi and WiDi technologies in one sentence each.
7. What does LoRa stand for and mention its key advantage for IoT applications?
8. Define LiFi technology and state how it differs from WiFi.
9. What are the three layers of a typical IoT protocol architecture?

10. Name three factors that influence the selection of wireless technologies for IoT applications.
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Long Answer Questions

IoT Communication Technologies - Beginner-Friendly Questions

1. What is point-to-point communication in IoT? How do two devices talk directly to each other versus through a network? When is direct communication better? Give examples like car key fobs or wireless headphones.
2. How do IoT devices communicate? Explain Device-to-Device (like smart bulbs), Device-to-Cloud (like fitness trackers), Device-to-Gateway (like smart home hubs), and data sharing between apps. Which pattern works best for different situations?
3. How do IoT protocols work in layers? What do Physical (radio waves), Network (addressing), Transport (reliability), and Application (data format) layers do? Why do small IoT devices need special lightweight protocols?
4. What are 6LoWPAN and ZigBee protocols? How do they help IoT devices connect and save power? Compare their basic features and when you'd choose one over the other for smart home or sensor networks.
5. How do WiFi and Bluetooth (including BLE) work in IoT? Compare their power use, range, and speed. When would you use WiFi for smart thermostats versus Bluetooth for fitness bands?
6. What are LoRa, LiFi, and NFC technologies? How do they work and what makes them special for IoT? Give simple examples like long-range sensors (LoRa), light communication (LiFi), or tap-to-connect (NFC).
7. How do you pick the best wireless technology for your IoT project? What factors matter: power use, distance, speed, cost? Create a simple guide for choosing between different options.
8. What is WiDi and how can it be used in IoT? How does wireless screen sharing work in smart homes or offices? Compare it with other ways to share displays wirelessly.
9. How do Bluetooth, BLE, NFC, and ZigBee compare? Make a simple comparison of their range, power use, speed, and typical uses. What happens when multiple technologies work in the same area?
10. Why do we need standard protocols for IoT? How do different protocol layers work together to ensure devices can communicate? What are the challenges in making all IoT devices work together, and how are standards helping solve this?

UNIT 3

Short Answer Questions

1. Define cloud computing and list three key characteristics that make it suitable for IoT applications.
 2. What is Big Data analytics and mention the 3 V's of Big Data?
 3. Name three major commercial cloud platforms and one key feature of each.
 4. What is Hadoop and what are its two main components?
 5. Why is encryption necessary in IoT systems? Give two reasons.
 6. What is lightweight cryptography and why is it important for IoT devices?
 7. Define M2M communication and explain how it differs from IoT.
 8. What does Industry 4.0 represent and name two key technologies it encompasses?
 9. List three major security threats specific to IoT systems.
 10. What is the Web of Things (WoT) and how does it extend IoT concepts?
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Long Answer Questions

1. How has cloud computing changed to support IoT devices? What are the basic cloud service types (IaaS, PaaS, SaaS) and how do they help IoT? What challenges arise when connecting millions of small devices to the cloud?
2. Compare popular IoT cloud services like AWS IoT, Google Cloud IoT, and Microsoft Azure IoT. What features do they offer for IoT projects? When would you choose a commercial cloud versus building your own IoT platform?
3. Why do IoT systems generate so much data? How do technologies like Hadoop help process large amounts of sensor data? What's the difference between analyzing data immediately versus storing it for later analysis?
4. What are the main security risks in IoT systems? Why do IoT devices need special lightweight security methods? How do we protect data as it travels from sensors to the cloud and back?

5. What threats can attack IoT devices, networks, and applications? How do we establish trust between IoT devices and systems? What security measures can protect against common IoT attacks?
6. How is cloud security different when dealing with IoT data? What are data privacy concerns with IoT in the cloud? Who is responsible for security - the cloud provider or the IoT developer?
7. How do IoT systems work in smart cities (traffic, lighting, waste management) and healthcare (patient monitoring, smart hospitals)? What technologies are used and what benefits do they provide?
8. How does IoT help farmers monitor crops and manage irrigation? How do smart meters work for electricity and water? What are the challenges of deploying IoT in rural areas?
9. What is Industrial IoT and how does it enable smart factories? How do M2M communication and cellular IoT support manufacturing? What is Industry 4.0 and how does IoT enable it?
10. Why do we need standards for IoT devices and systems? What organizations create IoT standards? How do standards help different IoT devices and platforms work together? What is the Web of Things concept?