**1. What is the purpose of authentication in Fog Computing?**

* **Answer:** Authentication ensures that only authorized devices, users, and applications can access the network and its resources, preventing unauthorized access.

**2. How does Device Authentication work in Fog Computing?**

* **Answer:** Device authentication uses **Physical Unclonable Functions (PUFs)**, which leverage unique hardware characteristics for device identification, or **Dongle-based Authentication**, which binds devices to detachable security dongles for added protection.

**3. What is Multi-Factor Authentication (MFA), and why is it important?**

* **Answer:** MFA combines multiple authentication methods, such as passwords, SMS verification, and biometrics, to strengthen security. It reduces the risk of unauthorized access by requiring more than one form of verification.

**4. How are Digital Certificates used in Application Authentication?**

* **Answer:** Digital certificates verify the legitimacy of applications, ensuring that only trusted software is allowed to interact with the network.

**5. What is the difference between Authentication and Authorization?**

* **Answer:** Authentication verifies the identity of an entity (e.g., user or device), while Authorization determines what actions that entity can perform and what resources they can access.

**6. What are the key types of Access Control Mechanisms in Authorization?**

* **Answer:**
  1. **Access Control Lists (ACLs):** Define which users or devices have access to specific resources.
  2. **Role-Based Access Control (RBAC):** Assign permissions based on roles, simplifying group management.
  3. **Attribute-Based Access Control (ABAC):** Grants access based on user, device, or environmental attributes.

**7. In the case of Alice's healthcare monitoring system, why are authentication and access control important?**

* **Answer:** Authentication ensures that only authorized medical personnel and devices access Alice's sensitive medical data. Access control restricts data access to those who need it for care purposes.

**8. How can privacy-preserving techniques protect Alice's medical records?**

* **Answer:** Techniques like **data anonymization** and **encryption** can hide Alice's identity while securing her medical data from unauthorized access.

**9. Why are industry standards and regulations important in Fog Computing?**

* **Answer:** Standards and regulations, such as those developed by **NIST** and **ISO**, provide frameworks for securing IoT systems. Laws like **GDPR** establish legal requirements for protecting personal data.

**10. How do Web Semantics enhance trust management in Fog Computing?**

* **Answer:** Web Semantics use **ontologies** to create shared vocabularies for data exchange, enabling interoperability and secure communication. **Semantic reasoning** applies access control policies based on the context and meaning of data.