RDF Basics:

1. **What is RDF (Resource Description Framework)?**
   - RDF is a framework for representing information about resources in a structured way. It describes resources using triples: subject, predicate, and object.
2. **What is a URI in RDF?**
   - A Uniform Resource Identifier (URI) uniquely identifies resources, which can be physical or abstract objects, such as web pages, books, or people.
3. **What is the structure of an RDF statement?**
   - RDF statements follow a triple format: a subject, a predicate (relationship), and an object.

RDF Serialization:

4. **What are some serialization formats used for RDF?**
   - RDF can be serialized in various formats, such as RDF/XML, Turtle (Terse RDF Triple Language), N-Triples, and JSON-LD.
5. **How is RDF represented in Turtle syntax?**
   - Turtle allows a compact notation for RDF triples. For example:

```
@prefix ex: <http://example.com/>.
ex:Earth rdf:type ex:Planet.
ex:Earth ex:satelliteOf ex:Sun.
```

6. **What are blank nodes in RDF?**
   - Blank nodes represent unnamed resources or individuals with attributes but no explicit URI.

RDF Concepts:

7. **What is RDF reification?**
   - RDF reification allows making statements about other RDF statements, such as specifying that someone "supposes" or "believes" something about a statement.

8. **Why is reification used in RDF?**

   - It is used to model data provenance, trust, and reliability of statements, but care is needed to avoid issues like recursion and type conflicts.

RDFS (RDF Schema):

9. **What is RDFS (RDF Schema)?**

   - RDFS is an extension of RDF that provides vocabulary for defining classes, properties, and relationships between resources. It allows defining domain and range restrictions and creating class hierarchies.

10. **How are classes defined in RDFS?**

    - Classes are defined using rdfs:Class. For example:

      ```
      :Planet rdf:type rdfs:Class.
      ```

11. **What are domain and range in RDFS?**

    - Domain specifies the class to which the subject of a property belongs, and range specifies the class to which the object of a property belongs.

12. **What is an example of a domain and range definition in RDFS?**

    - For the property :satelliteOf, the domain and range might be defined as:

      ```
      :satelliteOf rdfs:domain :CelestialBody.
      :satelliteOf rdfs:range :CelestialBody.
      ```

Hierarchical Relationships:

13. **How are hierarchical relationships defined in RDFS?**

    - Hierarchical relationships are defined using rdfs:subClassOf for classes and rdfs:subPropertyOf for properties. For example:

      ```
      :Planet rdfs:subClassOf :CelestialBody.
      :artificialSatelliteOf rdfs:subPropertyOf :satelliteOf.
      ```

Logical Inference with RDF(S):

14. **What kind of inferences can be made with RDFS?**

    - RDFS allows for logical inferences such as:
      - Deduction of class membership based on domain or range of properties.
      - Deduction of new facts based on hierarchical class and property relationships.

15. **Give an example of a logical deduction using RDFS.**

    - If Pluto is defined as a dbo:Planet, and dbo:Planet is a subclass of dbo:CelestialBody, we can infer that Pluto is also a dbo:CelestialBody.

16. **How does RDFS differ from other data definition languages?**

    - RDFS is based on formal semantics, enabling the drawing of sound and valid logical inferences from the data.