

1- Which statement is false about RDF blank nodes?

- ✓ a) Blank nodes represent a resource without an URI or literal ✓
- ? b) Blank nodes can be used as both subject and object in RDF triples
- ✓ c) Blank node can be used for representing complex data structures and attaching it to RDF resources
- d) Blank node can only include data properties and no object properties

2- Which one of the following statements is not true about OWL Lite?

- ✗ a) Using OWL Lite we cannot express the fact that every child has exactly one father.
- ✓ b) OWL Lite does not support definition of disjoint classes
- c) Using OWL Lite, it is not possible to express the fact that value of hasContinent property is restricted to Europe and Asia.
- ✓ d) Using OWL Lite it is not possible to express that each table has at least three legs
(arbitrary card.)

3- Which statement is true about Open World Assumption (OWA) and Close World Assumption (CWA)?

- a) Under OWA, when "Alex" is not classified as "Father" we can assume that he is not a father. ✗
- b) Under CWA, when "Alex" is classified as "Father" then the same will not hold under OWA
- c) Under CWA, when "Alex" is not classified as "Father" then we can assume that he is not a father.
- d) Under OWA, when "Alex" is classified as Father then the "Alex" is not a father under CWA.

4- Suppose that class Pizza has the following necessary restriction: $\exists$ hasBase.PizzaBase. Which one of the following statements is not true?

- ✓ a) There can be no individual, that is a member of Pizza class, that does not have at least one hasBase relationship with an individual from the class PizzaBase
- ✗ b) Any individual that has a base of type PizzaBase is a Pizza
- ✓ c) Any Pizza has necessarily the property hasBase with some value of type PizzaBase
- d) Class Pizza is subclass of an anonymous class that includes all things that have a base of type PizzaBase.

7- How the following statement can be formulated in DL syntax :

```
ObjectProperty(reviews
  inverseOf(isReviewedBy)
  domain(programCommittee)
  range(paper)
)
```

- a) $\text{reviews} \equiv \neg \text{isReviewedBy}$ ✓
 $T \sqsubseteq \forall \text{reviews}.\text{programCommittee}$
 $T \sqsubseteq \forall \text{reviews}^{\neg}.\text{paper}$
- b) $\text{reviews} \equiv \text{isReviewedBy}^{\neg}$ ✓
 $T \sqsubseteq \forall \text{reviews}^{\neg}.\text{programCommittee}$
 $T \sqsubseteq \forall \text{reviews}.\text{paper}$
- c) $\text{reviews} \equiv \text{isReviewedBy}^{\neg}$
 $T \sqsubseteq \forall \text{reviews}.\text{programCommittee}$
 $T \sqsubseteq \forall \text{reviews}^{\neg}.\text{paper}$
- d) $\text{reviews} \sqsubseteq \text{isReviewedBy}^{\neg}$
 $T \sqsubseteq \forall \text{reviews}^{\neg}.\text{programCommittee}$
 $T \sqsubseteq \forall \text{reviews}.\text{paper}$

8- Which one of the following tools can be used to publish dereferenceable Linked Data resources?

- a) Pubby combined with a SPARQL endpoint supports the dereferenceable URIs.
- b) Any SPARQL endpoint is able to dereference resource URIs.
- c) Open Refine supports dereferenceable URIs via its reconciliation feature.
- a) Apache Jena framework is capable of URI dereferencing for RDF files and also the distributed RDF resources.

9- What statement is not true about Linked Open Data (LOD)?

- a) LOD set links between data from one data source to data within other data sources
- b) LOD turns the web of documents to Web of uniquely identifiable data objects
- c) The LOD resources should provide raw data which can be understood and queried by computers.
- d) In order to link the data together, they should be all loaded into one namespace such as DBPedia.

5- Suppose you want to capture the following statement in RDF format and also specify that this statement is created by Max Mustermann on 2011-12-12: "Charles Darwin has introduced the Evolution Theory". Which one of the following RDF snippets captures this correctly?

- a) `< rdf:Description rdf:about="CharlesDarwin">
 <example:introduces rdf:resource=" EvolutionTheory" />
 <rdf:type rdf:resource="http://www.w3c.org/1999/02/22-rdf-syntax-ns#Statement" />
 <dc:creator rdf:resource="MaxMustermann" />
 <dc:date rdf:datatype="xsd:date">2011-12-12</dc:date>
 </ rdf:Description >`
- b) `< rdf:Description rdf:about="statement1">
 <rdf:subject rdf:resource="CharlesDarwin" /> ✓
 <rdf:predicate rdf:resource="introduces" /> ✓
 <rdf:object rdf:resource="EvolutionTheory" /> ✓
 <rdf:type rdf:resource="http://www.w3c.org/1999/02/22-rdf-syntax-ns#Statement" /> ?
 </ rdf:Description >
 < rdf:Description rdf:about="MaxMustermann">
 <dc:creator rdf:resource="statement1" />
 <dc:date rdf:datatype="xsd:date">2011-12-12</dc:date>
 </ rdf:Description >`
- c) `< rdf:Description rdf:about=" CharlesDarwin">
 <example:introduces rdf:resource=" EvolutionTheory" />
 <dc:creator rdf:resource="MaxMustermann" />
 </ rdf:Description >
 < rdf:Description rdf:about="MaxMustermann">
 <dc:date rdf:datatype="xsd:date">2011-12-12</dc:date>
 </ rdf:Description >`
- d) `< rdf:Description rdf:about="#statement1">
 <rdf:subject rdf:resource="CharlesDarwin" /> ✓
 <rdf:predicate rdf:resource="introduces" /> ✓
 <rdf:object rdf:resource="EvolutionTheory" />
 <dc:creator rdf:resource="MaxMustermann" />
 <dc:date rdf:datatype="xsd:date">2011-12-12</dc:date>
 </ rdf:Description >`

6- Which one of the following statements is true about inverse functional properties?

- ✓ a) No two individuals can be connected using an inverse functional property to a third individual.
- b) for a given individual, there can be at most one individual that is related to the individual via the inverse functional property
- ✓ c) Two individuals that are related to a third individual, then it can be inferred that they are the same individual
- ✗ d) The inverse property of any functional property is not inverse functional.

10- What is the human readable format of the following assertion?

$\text{MyFavouritePizza} \sqsubseteq \text{Pizza} \sqcap \exists \text{hasTopping. } \neg \text{GarlicTopping} \sqcap (\geq 2 \text{ hasTopping CheeseTopping})$

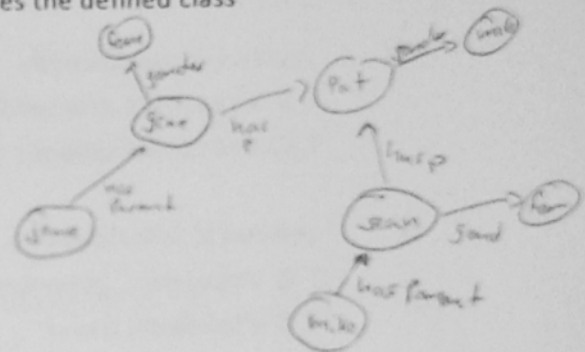
- a) My favorite pizza does not have garlic topping and it has at least two type of cheese
- ✓ b) The domain of my favorite pizza is those pizza without garlic topping that have at least two cheese toppings
- c) All pizza that have garlic topping and two type of cheese toppings are my favorite pizza
- d) My favorite pizza has two type of cheese and no garlic topping

11- Which statement is false about Defined classes?

- ✓ a) Defined classes may have more than one necessary conditions
- ✓ b) Defined classes should have at least one necessary and sufficient condition
- ✓ c) After inference, the Defined class collects all classes that meets its condition as subclasses
- ✗ d) If all individuals of class A satisfies the necessary and sufficient condition of a Defined class, then it can be inferred that class A subsumes the defined class

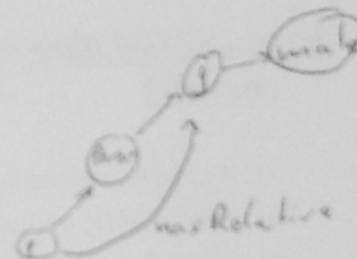
12- Consider the following set of triples:

`:jane :hasParent :gene .
:gene :hasParent :pat ;
:gender :female .
:joan :hasParent :pat ;
:gender :female .
:pat :gender :male .
:mike :hasParent :joan .`



What is the output of the following SPARQL statement?

```
CONSTRUCT ( ?p :hasRelative ?g . )
WHERE {
  ?p :hasParent ?parent .
  ?parent :hasParent ?g .
  ?g :gender :male . }
```



- a) `:joan :hasRelative :pat .`
`:mike :hasRelative :pat .`
- b) `:pat :hasRelative :joan .`
`:pat :hasRelative :mike .`
- c) `:pat :hasRelative :joan .`
`:pat :hasRelative :gene .`
- d) `:jane :hasRelative :pat .` ✓
`:mike :hasRelative :pat .` ✓