

**Indian Statistical Institute
Documentation Research and Training Center**

**MS in Library and Information Science
Semester Exam (IV semester) (2016-2018)
Paper -20 : SEMANTIC WEB**

Date: 01.05.2018

Max Marks: 100
Time: 3 Hours

Answer *question number one* and any *four* from the rest five questions.

1. Answer all the following questions. [2*10=20]
- i. What is a model?
 - ii. What is a punning?
 - iii. What is a transitive property?
 - iv. What is a disjunction?
 - v. What is a unique name assumption?
 - vi. What is a domain?
 - vii. What is a closed world assumption?
 - viii. Interpret the following DL axiom: $\text{Person} \sqcap \forall \text{hasChild.Female}$
 - ix. Interpret the following DL axiom: $\text{Parent} \sqcap \geq 2 \text{ hasChild}$
 - x. Transform the following statement expressed in natural language to DL axiom: "all those persons that have a child."
2. (a) Discuss the limitations of RDFS as an ontology language. [10]
(b) Discuss critically the salient features of OWL 2.0. [10]
3. What is an ontology? Discuss with examples the steps of designing a domain ontology. [20]
4. (a) What is a reasoner? Illustrate the basic functionalities of a reasoner. [2+8]
(b) Given the following RDF data (expressed in Turtle format)

```
@prefix owl: <http://www.w3.org/2002/07/owl#> .
@prefix rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#> .
@prefix xml: <http://www.w3.org/XML/1998/namespace> .
@prefix xsd: <http://www.w3.org/2001/XMLSchema#> .
@prefix foaf: <http://xmlns.com/foaf/0.1/> .
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .
@prefix : <http://www.semanticweb.org/ontologies/people#> .
```

```
:Mary rdf:type owl:NamedIndividual ,
      :Person ;
      :isSpouseOf :John ;
      :isCitizenOf :USA ,
      :France ;
```