UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2013/2014

COURSE NAME	:	SEMANTIC WEB
COURSE CODE	:	BIW 30803
PROGRAMME	:	2 BIW
EXAMINATION DATE	:	JUNE 2014
DURATION	:	2 HOURS AND 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **EIGHT (8)** PAGES

Q1 (a) Who started the idea of Semantic Web?

(1 mark)

(b) What is the definition of Semantic Web?

(2 marks)

(c) Based on Figure **Q1** below, what is the problem with the current web?

(3 marks)

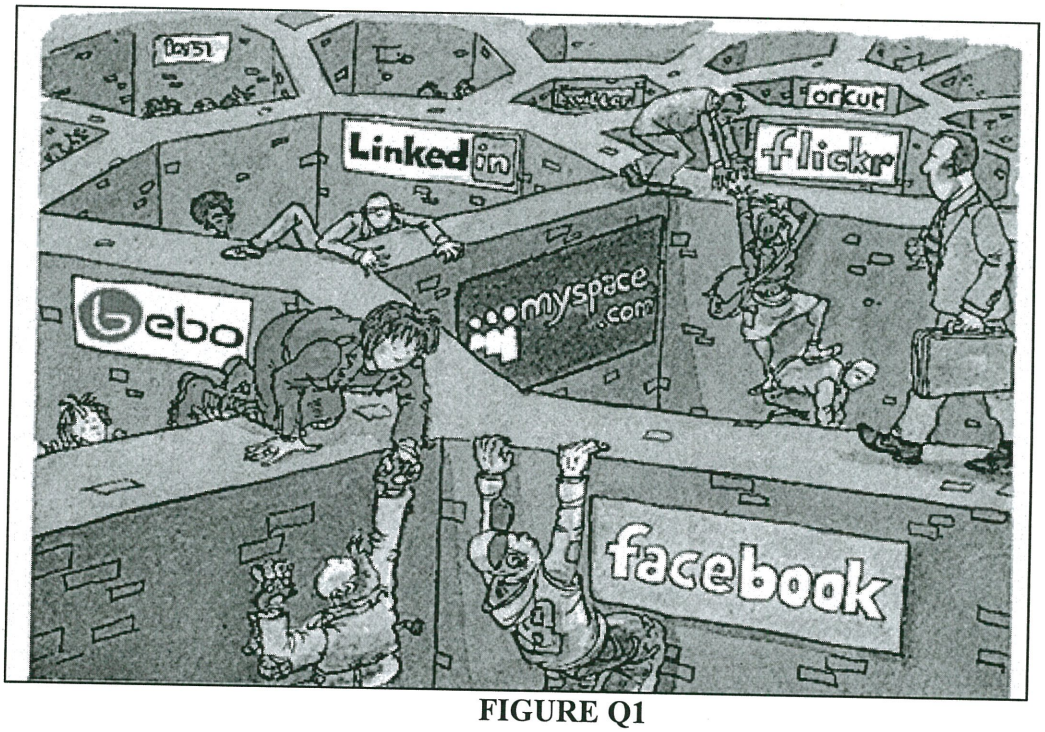

FIGURE Q1

Q2 (a) What can be simplified from the Figure **Q2** below? Redraw.

(5 marks)

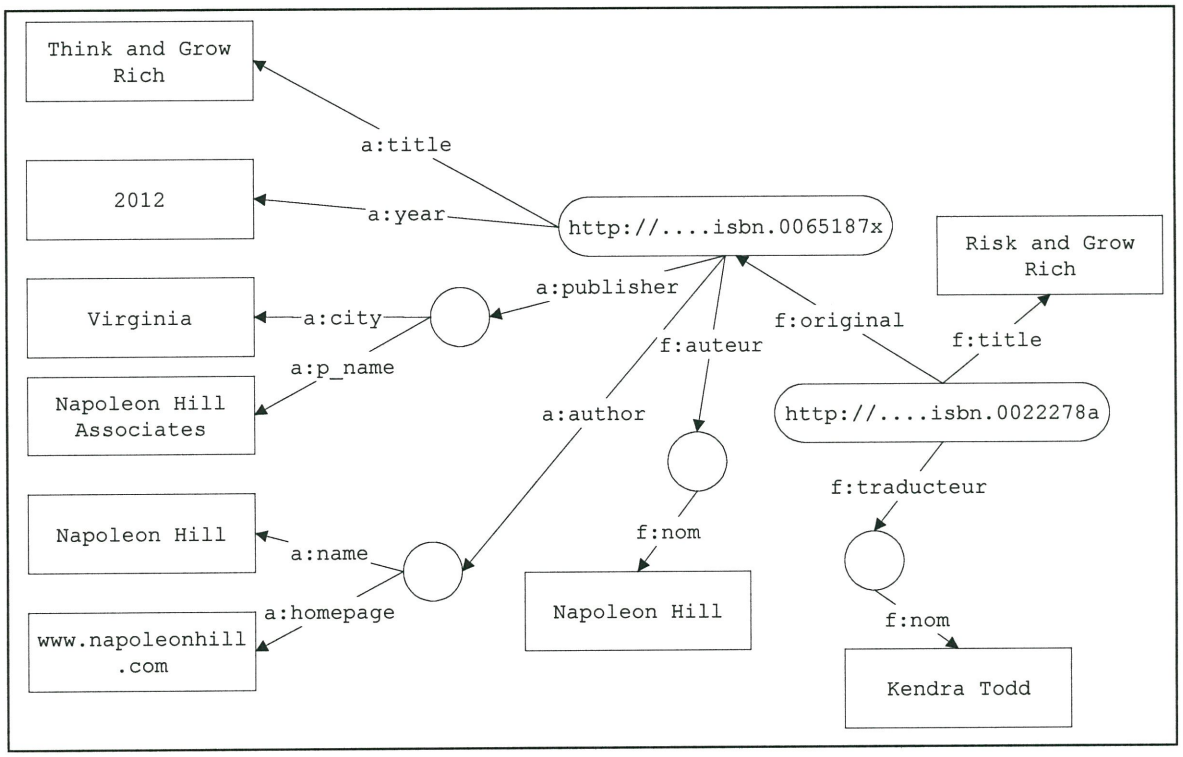

FIGURE Q2

(b) Distinguish **FIVE(5)** differences between Document Web and Data Web in Semantic Web.

(10 marks)

(c) Universal Resource Identifier (URI) consists of two components. Give **TWO(2)** examples for each component.

(4 marks)

Q3 (a) By analyzing the following statement, write an XML statement regarding the information below:

```
A book available in Bindu library:
URL: www.library-hakim.com/semanticweb
Title: Semantic Web For Beginners
Author: M. Hakim and A. Hamid
Publisher: MH publication Sdn. Bhd.
ISBN: 0-123-45678-9
```

(5 marks)

(b) What are the **TWO(2)** differences between XSLT and XPath? Rewrite your answer in Q3(a) by using XPath.

(10 marks)

(c) By analyzing Figure **Q3(c)**, write the XML codes.

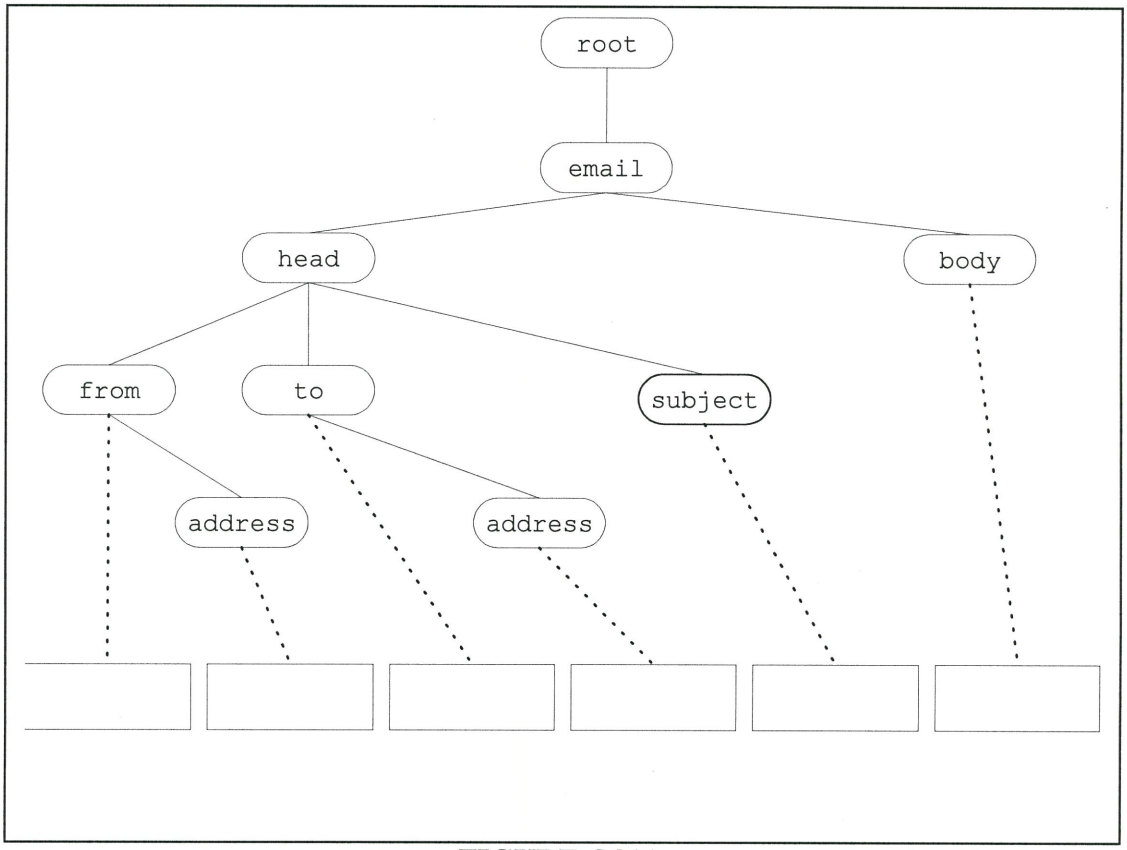

FIGURE Q3(c)

(10 marks)

Q4 Figure **Q4** shows RDFS Semantic for a faculty. Using your knowledge of RDF and RDFS semantic, give the summary of subclass and membership relations involved.

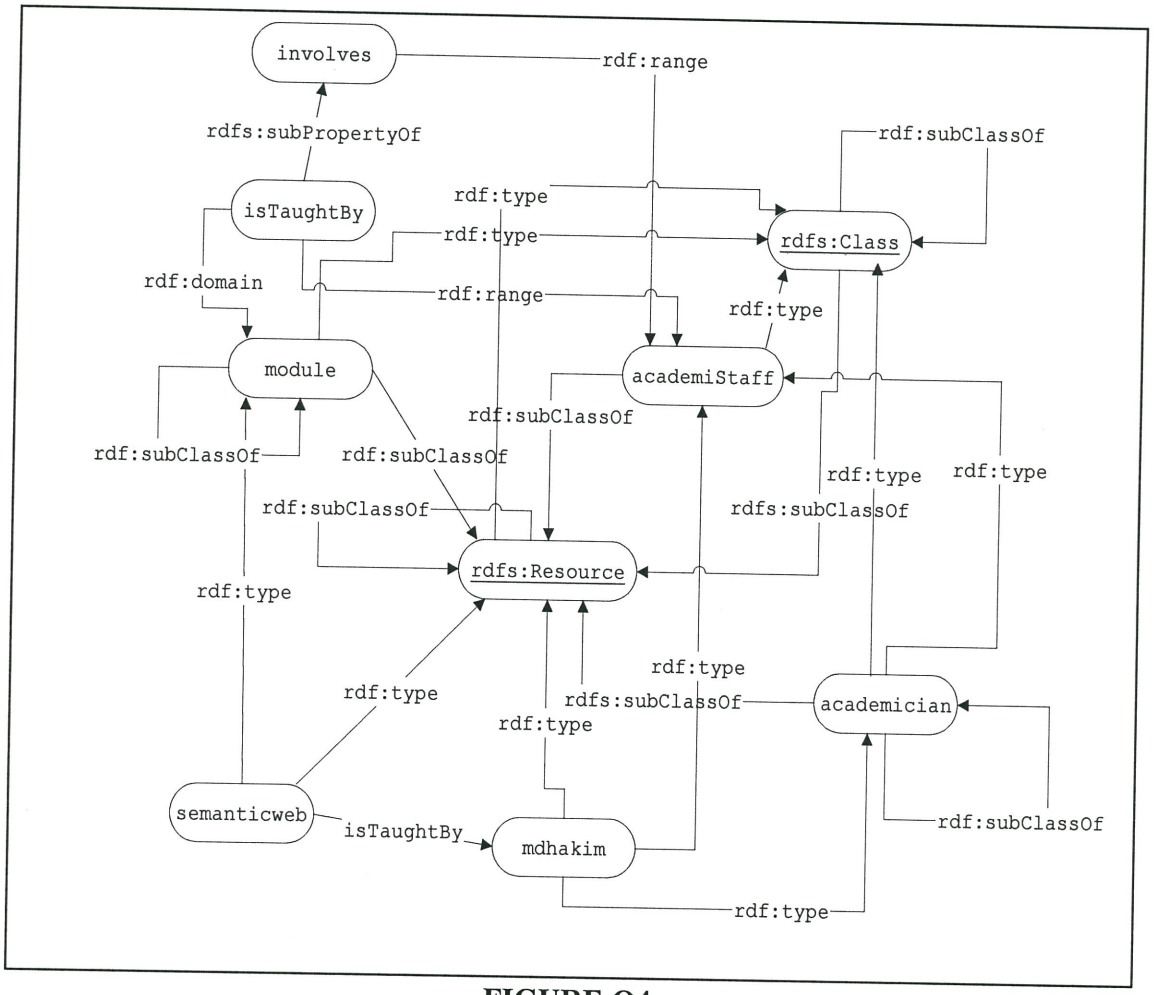

FIGURE Q4

(10 marks)

Q5 Figure **Q5** below is an ontology for Sutanate family of Sultan Mansur Syah taken from a film entitled *"Royal Melaka The Movie"*.

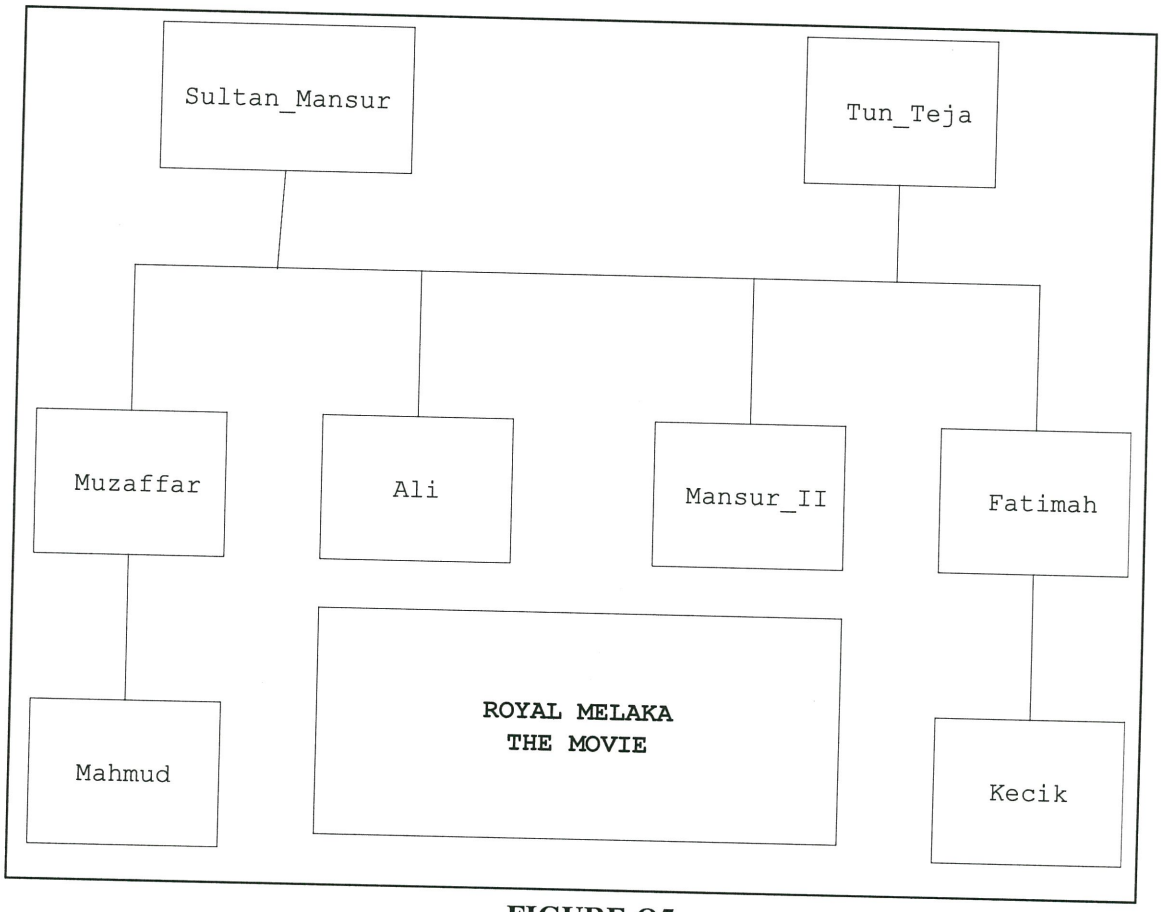

FIGURE Q5

(a) Write a statement out of these schemas
   (i) owl.equivalentProperty
   (ii) owl.transitiveProperty
   (iii)owl.FunctionalProperty
   (iv)owl.inverseOf
   (v) owl.SymmetricProperty

(15 marks)

(b) Give example for these RDFS schema:
   (i) rdfs:subpropertyOf
   (ii) rdfs:subClassOf
   (iii)rdfs:domain
   (iv)rdfs:range
   (v) rdfs:class

(15 marks)

Q6 Code 1 and Code 2 in Figure **Q6** are snippets of pizza ontology codes.

```
<!-- http://www.co-ode.org/ontologies/pizza/pizza.owl#JalapenoPepperTopping
-->

<!-- CODE 1 --/!>

<owl:Class rdf:about="#JalapenoPepperTopping">
        <rdfs:label xml:lang="pt"
            >CoberturaDeJalapeno</rdfs:label>
        <rdfs:subClassOf>
            <owl:Restriction>
                <owl:onProperty rdf:resource="#hasSpiciness"/>
                <owl:someValuesFrom rdf:resource="#Hot"/>
            </owl:Restriction>
        </rdfs:subClassOf>
        <rdfs:subClassOf rdf:resource="#PepperTopping"/>
        <owl:disjointWith rdf:resource="#GreenPepperTopping"/>
        <owl:disjointWith rdf:resource="#SweetPepperTopping"/>
        <owl:disjointWith rdf:resource="#PeperonataTopping"/>
</owl:Class>
```

CODES 1

```
<!-- http://www.co-ode.org/ontologies/pizza/pizza.owl#ThinAndCrispyPizza -->

<!-- CODE 2 --/!>

    <owl:Class rdf:about="#ThinAndCrispyPizza">
        <owl:equivalentClass>
            <owl:Class>
                <owl:intersectionOf rdf:parseType="Collection">
                    <owl:Restriction>
                        <owl:onProperty rdf:resource="#hasBase"/>
                        <owl:allValuesFrom
rdf:resource="#ThinAndCrispyBase"/>
                    </owl:Restriction>
                    <rdf:Description rdf:about="#Pizza"/>
                </owl:intersectionOf>
            </owl:Class>
        </owl:equivalentClass>
    </owl:Class>
```

CODES 2

FIGURE Q6

Based on the ontology, write ontology codes for a pizza with the information below:

```
Class: ToretoMeatoLover
SubClass: MeatoTopping
Values: Spicy, Hot
Disjoint Item: JalapenoPepperTopping
```

(10 marks)

- END OF QUESTION -