Two hours - on line

The exam will be taken on line. This paper version is made available as a backup

QUESTION PAPER MUST NOT BE REMOVED FROM THE EXAM ROOM

UNIVERSITY OF MANCHESTER
SCHOOL OF COMPUTER SCIENCE

Semi-structured Data and the Web

Date: Tuesday 20th January 2015
Time: 14:00 - 16:00

Please answer ALL Questions provided.

The exam contains MULTIPLE CHOICE, TRUE/FALSE and SHORT ESSAY QUESTIONS. Be sure to answer ALL Questions.

Please note that wrong answers on MULTIPLE CHOICE and TRUE/FALSE questions may be penalized (i.e. receive some small negative mark) so random guessing works against you.

This is a CLOSED book examination

The use of electronic calculators is NOT permitted
COMP60411

Q1 – Q15 Multiple Choice Questions and are therefore restricted
16. Describe “well-formedness of an XML document” in one or two sentences. (2 marks)

17. Describe “the DOM tree or infoset of an XML document” in one or two sentences. (2 marks)

18. Describe “a validating XML parser” in one or two sentences. (2 marks)

19. Describe “a PSVI” in one or two sentences. (2 marks)

20. In some situations, a schema that corresponds to a single-type grammar can be more appropriate than one that corresponds to a grammar that is not single-type. Describe, in 4-5 sentences, such a situation and the relevance of the grammar being single-type. Also mention why insisting on a single-type schema could cause problems. (5 marks)

21. Discuss, in 4-5 sentences, whether it is advantageous for XML to have many different schema languages. (5 marks)
22. Pick your favourite XML schema language and, in 4-5 sentences, describe its most important advantages and disadvantages, possibly comparing it to other schema languages.

(5 marks)

23. Write a DTD that describes the following XML document. Strive for a fairly tight, but sensible DTD. (It should be about 6 declarations long. Minor syntax errors and variations are ignored.)

```xml
<libraryList library-owner='bob'>
  <item>
    <type>book</type>
    <details>J. K. Rowling: Harry Potter and the Goblet</details>
    <lent-to>Peter</lent-to>
  </item>
  <item>
    <type>cd</type>
    <details>P.J. Harvey: Let England Shake</details>
    <lent-to>nobody</lent-to>
  </item>
  <item>
    <type>cd</type>
    <details>P.J. Harvey: White Chalk</details>
    <lent-to>Mary</lent-to>
  </item>
</libraryList>
```

(6 marks)
24. In 4 - 5 sentences, discuss the quality of the following two formats for a library, as exemplified in the following example documents. Also, suggest further improvements to the better format.

Format 1:
<libraryList library-owner='bob'>
  <item>
    <type>book</type>
    <details>J. K. Rowling: Harry Potter and the Goblet</details>
    <lent-to>
      Peter
    </lent-to>
  </item>
  <item>
    <type>cd</type>
    <details>P.J. Harvey: Let England Shake</details>
    <lent-to>nobody</lent-to>
  </item>
  <item>
    <type>cd</type>
    <details>P.J. Harvey: White Chalk</details>
    <lent-to>Mary</lent-to>
  </item>
</libraryList>

Format 2:
<libraryList library-owner='bob'>
  <friend name="Peter"/>
  <friend name="Mary"/>
  <book>
    <author>J. K. Rowling</author>
    <title>Harry Potter and the Goblet</title>
    <lent to="Peter"/>
  </book>
  <cd>
    <artist>P.J. Harvey</artist>
    <title>Let England Shake</title>
    <lent/>
  </cd>
  <cd>
    <artist>P.J. Harvey</artist>
    <title>White Chalk</title>
    <lent to="Mary"/>
  </cd>
</libraryList>