

Two hours

The exam will be taken on line.
This paper version is made available as a backup
In this event, only MCQ answers written in the boxes on the exam paper will be marked.

EXAM PAPER MUST NOT BE REMOVED FROM THE EXAM ROOM

**UNIVERSITY OF MANCHESTER
SCHOOL OF COMPUTER SCIENCE**

Modelling Data on the Web

Date: Tuesday 24th January 2017

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

*Questions 1 – 23 are
Multiple Choice Questions
and are therefore restricted*

24. In 4-5 sentences, describe the processes of parsing and serialising in the context of XML; for full marks, include a description of internal and external representation and various levels of internal representation. (6 marks)
25. Sketch out a RelaxNG schema for XML documents to record simplified data in a medical clinic (minor syntax errors will be ignored) as exemplified by the following document (which you have seen in an earlier question):

```
<?xml version="1.0" encoding="UTF-8"?>
<patientList>
  <patient FirstName="Bob" LastName="Builder" age="19">
    <suffersFrom>
      <disease code="Diabetes" severity="3"/>
    </suffersFrom>
    <treatedWith>
      <medicin name="Insulin" dosage="daily"/>
    </treatedWith>
  </patient>
  <patient FirstName="Hilary" LastName="Bolder" age="29">
    <suffersFrom>
      <disease code="Diabetes" severity="4"/>
      <disease code="Eczema" severity="3"/>
    </suffersFrom>
    <treatedWith>
      <medicin name="Insulin" dosage="daily"/>
      <medicin name="Steroids" dosage="on demand"/>
      <medicin name="Antihistamins"/>
    </treatedWith>
  </patient>
  <patient FirstName="Bill" LastName="Pooter">
    <suffersFrom>
      <disease code="Back Pain"/>
    </suffersFrom>
  </patient>
  <patient FirstName="Mary" LastName="Smiley" age="73">
    <treatedWith>
      <medicin name="Aspirin" dosage="daily"/>
    </treatedWith>
  </patient>
</patientList>
```

(5 marks)

26. In 3-5 sentences, discuss the advantages and disadvantages of a grammar-based XML schema language (in contrast to, e.g., a rule-based one). (5 marks)
27. Consider an information system where people share their cartoons, and where each cartoon has a description in form of an XML document, as discussed in class.
In 3-5 sentences, explain how a web based information system can make use of several schemas to follow Postel's law. (5 marks)