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
<?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)