

## 2003 Paper 8 Question 9

### Database Theory

- (a) Describe the key features of the ODMG object model. [6 marks]
- (b) Describe the key features of the semi-structured data model. [6 marks]
- (c) Consider the following DTD.

```
<!ELEMENT class (student)*>
<!ELEMENT student (name, college, course*, (phone|email))>
<!ELEMENT name (#PCDATA)>
<!ELEMENT college (#PCDATA)>
<!ELEMENT course (title, year)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT year (#PCDATA)>
<!ELEMENT phone (#PCDATA)>
<!ELEMENT email (#PCDATA)>
```

- (i) Detail how XML data satisfying such a DTD could be stored in a traditional (non-complex value) relational DBMS. Comment on the efficiency of your strategy. [5 marks]
- (ii) Detail how XML data satisfying such a DTD could be stored in an ODMG-compliant DBMS. [3 marks]