

## 2000 Paper 8 Question 1

### Distributed Systems

In a large-scale distributed system, what advantages might be gained by using role-based access control (RBAC)? [2 marks]

A server which is an object manager implements RBAC by issuing principals with persistent capabilities which include the fields “role” and “object-name”.

Describe how a signature field in the capability can be used to ensure its integrity. Define the protection the signature does and does not enforce. [6 marks]

How can such a persistent capability be made principal-specific? To what extent does this improve protection? [4 marks]

Discuss the desirability or otherwise of the persistence of capabilities and the use of persistent principal names. [4 marks]

Discuss revocation for the capability schemes suggested above. [4 marks]