1995 Paper 3 Question 1

Concurrent Systems

Why are database transactions necessary?   [4 marks]

Describe the ACID properties of transactions.   [4 marks]

What are the differences between optimistic and pessimistic mechanisms of
concurrency control (with particular reference to the ACID properties)?   [4 marks]

What factors determine whether an optimistic or pessimistic concurrency control
policy is appropriate for a transaction processing system?   [4 marks]

With reference to these factors, state whether an optimistic or pessimistic policy
would lead to a more efficient system in the following cases:

(*a*)   a flight booking system

(*b*)   a police criminal record database

(*c*)   a banking transaction processing system

(*d*)   a database maintaining patient records

[4 marks]