

## 2006 Paper 12 Question 2

### Computer Design

- (a) Why do pipelines exhibit branch and load delays? [6 marks]
- (b) What impact does pipeline length have on clock frequency? [4 marks]
- (c) Why might a shorter pipeline result in a more power-efficient design? [4 marks]
- (d) Recently we have seen microprocessor manufacturers release dual-processor chips where each processor has a shorter pipeline than the earlier single-processor per chip designs. What sort of applications might run better on the older chips and *vice versa*? [6 marks]