

## 2010 Paper 5 Question 3

### Computer Design

- (a) Pipelining is used to improve processor performance and yet it increases instruction execution latency. How does pipelining improve performance?  
[4 marks]
- (b) Is the pipelining technique scalable to ever more pipeline stages? Justify your answer.  
[6 marks]
- (c) Flynn's original taxonomy of parallel architectures identifies four classes of parallelism: SISD, SIMD, MISD, MIMD. What do these acronyms mean?  
[4 marks]
- (d) Today's commercial desktop processors are often said to be "many-core". How would you classify them using Flynn's taxonomy? Do they exhibit other forms of parallelism?  
[6 marks]