

2006 Paper 8 Question 1

Comparative Architectures

- (a) One or more processors must be selected for inclusion in a portable device that handles audio, image, video, telephone calls and simple word processing.

Possible design combinations include:

- a single processor;
- a pair of basically similar processors but with different coprocessor and bus structures;
- a standard processor and a custom VLIW processor.

Explain whether one of these combinations is clearly the best. [2 marks]

- (b) For *each* of the following processor technologies, justify whether it is applicable in the device:

- (i) Dynamically Scheduled Instruction Dispatch;
- (ii) Simultaneous Multi-Threading (SMT);
- (iii) SIMD extensions, similar to Intel's MMX;
- (iv) Virtual Memory;
- (v) Dynamic Clock Frequency/Power Control;
- (vi) Snooping Cache.

[3 marks each]