Computer Design

(a) For a processor pipeline, what is the difference between control and data dependencies? [4 marks]

(b) For a superscalar processor, under what conditions can instructions from the same thread be executed in parallel? [4 marks]

(c) What does it mean to have coherent shared memory and in this context what do the terms write propagation and write serialisation mean? [8 marks]

(d) If a simultaneous multithreading processor core supports two hardware threads (or Hyperthreads), under what conditions might performance be decreased by scheduling two jobs in parallel rather than running them sequentially? [4 marks]