Computer Design

(a) What is a data cache and what properties of data access does it exploit? [5 marks]

(b) What is a direct mapped cache and under what conditions will it exhibit poor performance? [5 marks]

(c) Under what circumstances might a word of data in main memory be simultaneously held in two separate first-level cache lines? [5 marks]

(d) A translation look aside buffer is a specialised cache. What does it typically store and why is it often a factor of 1000 smaller than a data cache? [5 marks]