長庚大學 110 學年度第二學期 資訊工程學系博士班資格考 計算機架構 考題

1. (30 pts) Explain the following structures and show how they improve the processor performance:
   (a) Branch Target Buffer (BTB)
   (b) Translation Lookaside Buffer (TLB)
   (c) Reorder Buffer (ROB)

2. (30 pts) There are many processor structures targeted to different applications. For each of the following processors, list their design considerations as many as possible:
   (a) General purpose processor
   (b) Network processor
   (c) Graphic processor

3. (20 pts) List two approaches to improve the cache performance for a computing system.

4. (10 pts) Give an example to explain why a multi-core processor needs cache-coherence protocol.

5. (10 pts) Explain how the virtual memory design can enhance the memory management.