

COMPUTER SCIENCE TRIPOS Part IB – 2022 – Paper 5

8 Introduction to Computer Architecture (swm11)

- (a) Why are modern systems-on-chip (SoC) heterogeneous (i.e. contain a range of different processor cores)? [4 marks]
- (b) What is the *von Neumann bottleneck* and to what extent do modern SoCs suffer from it? [4 marks]
- (c) How is virtual memory used to provide isolation between applications? [4 marks]
- (d) How do GPUs hide memory access latency? [4 marks]
- (e) Why is conditional program flow control managed differently on GPUs and CPUs? [4 marks]