Topic 15: Hardware

Keyword sheet - Cambridge AS & A Level Computer Science 9618. Tick each term once you can define it from memory.

Keyword	Definition	Know it?
RISC	Reduced instruction set computer: few simple, fixed-length instructions, many registers, pipelining-friendly.	
CISC	Complex instruction set computer: many variable-length, multi-cycle instructions.	
Pipelining	Overlapping the fetch, decode and execute stages of consecutive instructions to increase throughput.	
Pipeline hazard	Situation, e.g. branching or data dependency, that stalls or disrupts the pipeline.	
Flynn's taxonomy	SISD, SIMD, MISD, MIMD: classification of architectures by instruction and data streams.	
Massively parallel computer	System using very many processors working on parts of a problem simultaneously.	
Virtual machine	Software emulation of a computer system running on a host; used for testing and compatibility.	
Half adder	Adds two bits, producing sum (XOR) and carry (AND).	
Full adder	Adds two bits plus a carry-in, producing sum and carry-out.	
Flip-flop (SR, JK)	Bistable circuit that stores one bit; JK removes the invalid state of SR.	
Boolean algebra identities	Rules such as A+0=A, A.1=A, A+A'=1 used to simplify expressions.	
De Morgan's laws	NOT(A.B) = NOT A + NOT B ; NOT(A+B) = NOT A . NOT B.	
Karnaugh map	Grid, using Gray code ordering, to group 1s and simplify Boolean expressions.	
Sum-of-products	Boolean expression written as ORs of AND terms.	