



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Complete, fold and seal
(see note 2 below)

SURNAME: De Lange

FORENAME(S): Emily Rose

Examination Answer Books

12 Pages

Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either reject illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.

1	Student Number	2306894
2	Title of Examination Paper	micro peripherals and interfaces
3	Module Code	ACDA4004
4	Date and Time of Examination	8/1/25 9.00am
5	Examination Venue	Swence St Dawids
6	Seat Number	
7	Number of Answer Books handed in	1

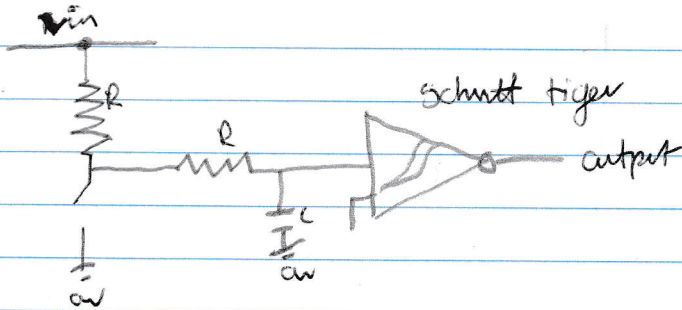
List the numbers of the questions you have attempted	Office Use
1	5
2	5
3	~~2~~ 2
4	2
5	~~9~~ 9
6	1
	24
	+ 2
Total	48%

5
5
2
2
9
1
24.

1.

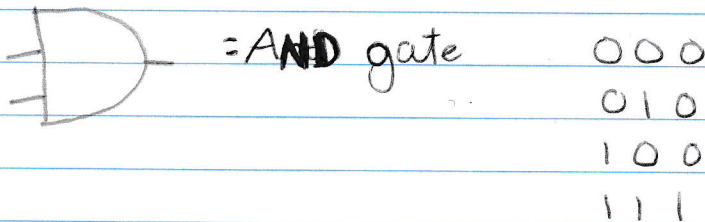
- a. RETURN = Return from subroutine
 b. SLEEP = Switch to standby mode
 c. ADDLW = Add literal with W
 d. BCF f, b = Bit clear f.
 e. DECF = Decrement F.

2.

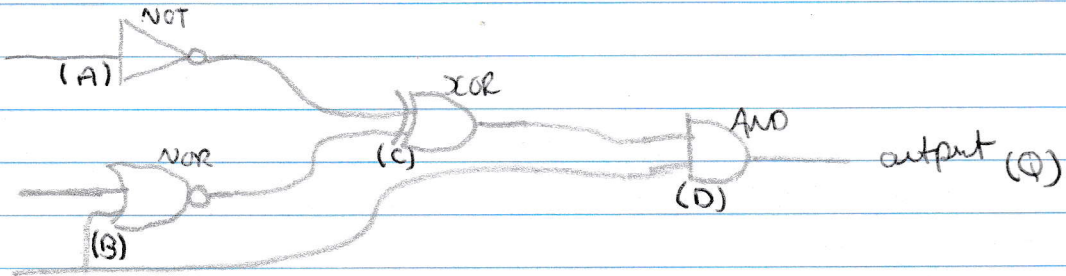


- * Switch bounce is when 1 button press could result in multiple on/off cycles
- * This could cause problems with counting/toggling
- * Adding a capacitor creates a time constant (RC circuits)
- * (RC circuits) have a smoothed input wave.
- * Schmitt trigger can be used
- * It is used in some logic gates
- * Has 2 different thresholds
- * Also called 'hysteresis'

3.



4.
a.



NOT = 01

10

✓

NOR = 000

010

101

111

XOR = 000

011

101

110

✓

AND = 000

000

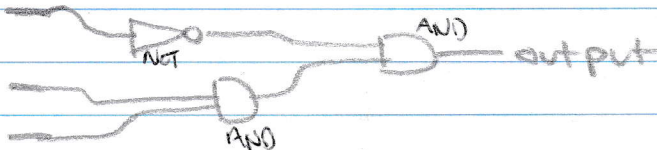
100

111

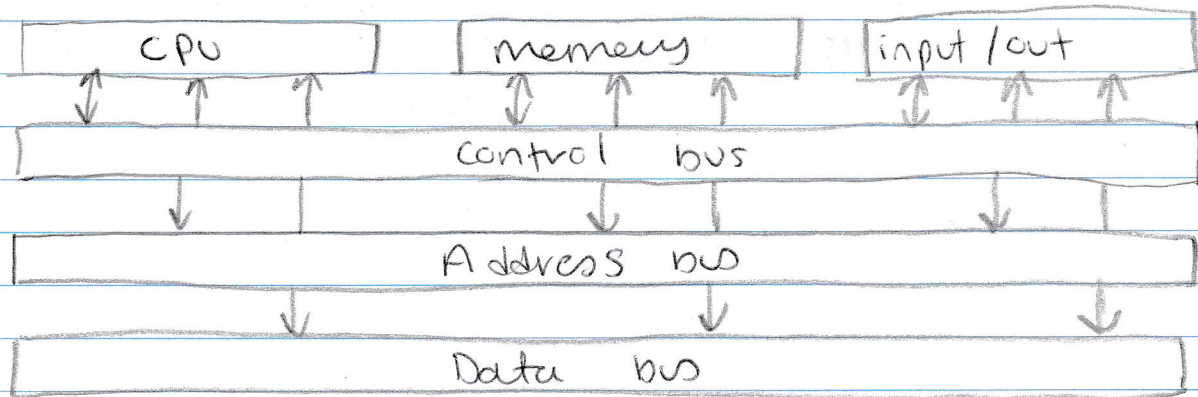
$$(\bar{A} + \bar{B}) + (\bar{C} \cdot D) = Q$$

A	B	C	D	Q
1	0	0	0	0
0	1	0	1	1

b.



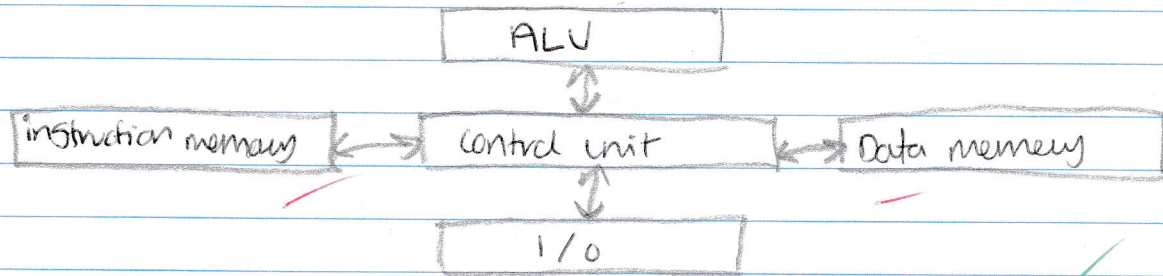
5.



Von Neumann architectures

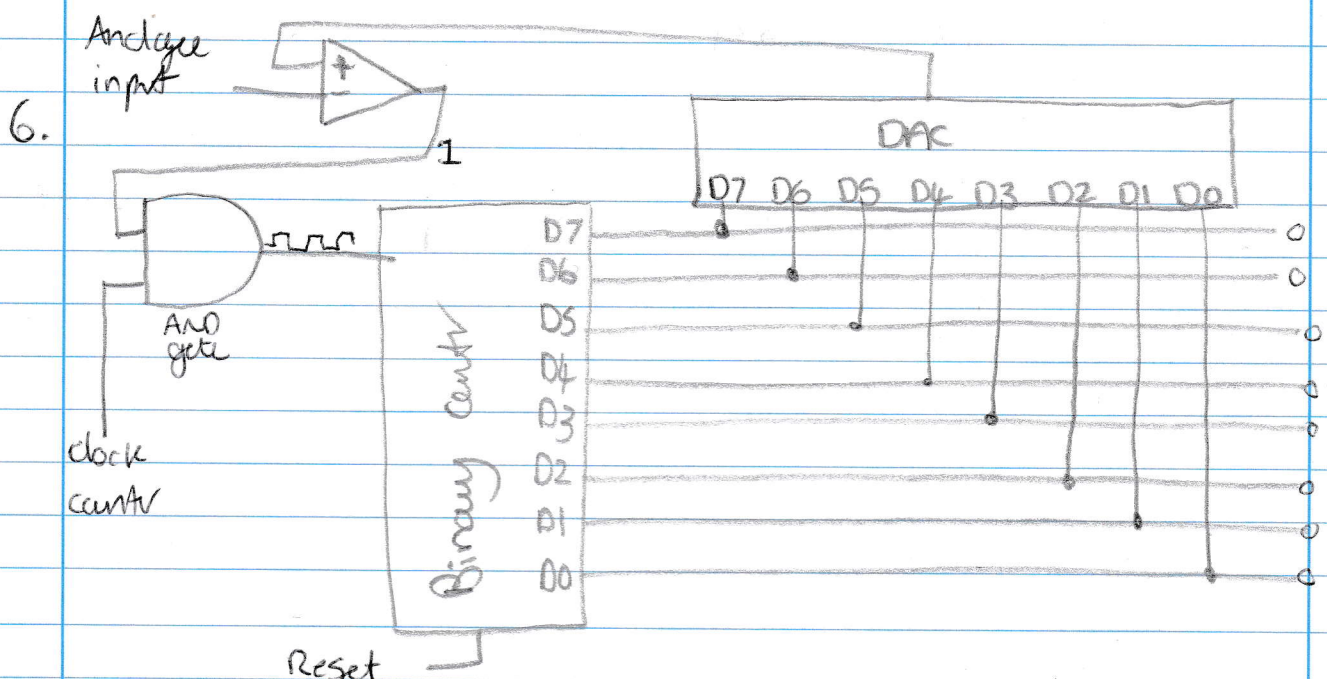
- * Invented by John Von Neuman
- * Instructions Stored as memory
- * Executed sequentially
- * ALU Control unit
- * Used in general purpose computers

Harvard architecture



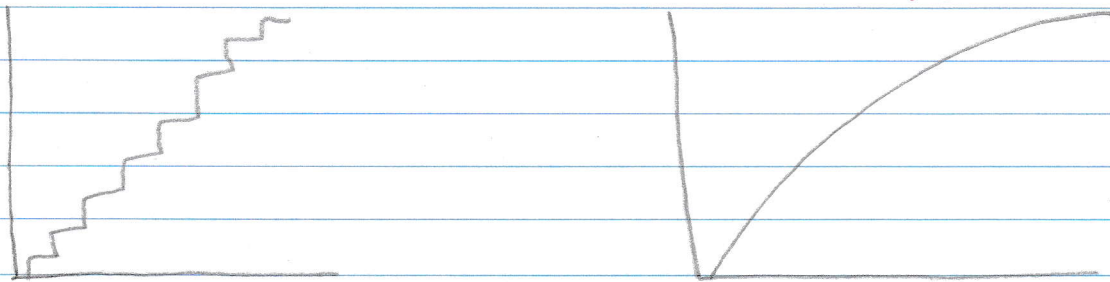
- * Harvard architecture refers to memory
- * Processes stored in 2 memory banks accessed via 2 buses.
- * memory access like Von Neuman
- * Used in modern processors, microcontrollers.

Harvard can execute more things and run quicker.

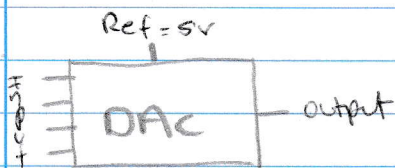


- * Analogue input
- * Binary input fed by DAC
- * Resets to 0 to start, (DAC output)
- * logic 1
- * Starts clock counter
- * Stays at logic 1 unless V_{in} exceeds V , then
- * Switches to logic 0
- * clock is then disabled.

Pulse width modulation -



- * PWM is a series of on/off continuous pulses.
- * This can be used as a smoothing device.
- * less likely to lose power when switching devices.



- * 4 inputs
- * Ref 5V
- * 16 possible outputs.