



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

Complete, fold and seal
(see note 2 below)

SURNAME: Webb

FORENAME(S): Robert E W

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, and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners cannot ignore 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	2308625
2	Title of Examination Paper	Micros Peripherals and interfaces
3	Module Code	ACDA4004
4	Date and Time of Examination	9AM 8/01/25
5	Examination Venue	10 310
6	Seat Number	36

7	Number of Answer Books handed in	
---	----------------------------------	--

List the numbers of the questions you have attempted	Office Use
1	4 1/2
2	0
3	3
4	0
5	0
6	1
	8 1/2
Total	17%

4 1/2
0
3
0
0
1
8 1/2

Q1 RETURN

A) Return - Return ~~code~~ to the loop within the code. / 1B) ~~SLEEP~~ Sleep - Device goes into 'stand by' mode ready to be called at a later time. / 1C) ~~ADD~~ ADD LW - Add Literal with W. Adds the values within the code for the desired output. ? / 1D) BCF F, b - Bit Clear F, Skip b. ^x
code clears bit register f and skips B. ^{1/2} ~~1/2~~ /E) DECF - Decrement F. Count down / reduce F value as required. ^x / 1~~Q2~~

4 1/2

Q2

Switch bounce is the sudden change of power when a switch is first turned on and not fully connected straight away. The bounce is the current 'jumping' for the first few ms when the ~~switch~~ switch is connected due to multiple reasons, one could be not clean contacts etc which doesn't allow the direct flow of current straight away.

Diagram 1

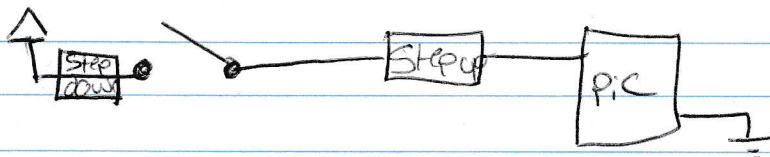


Diagram 1 shows a Step down controller followed by a Step up controller after the switch. This would allow the voltage to be reduced whilst the ~~switch~~ switch is being pressed to reduce the incidence of switch bouncing.

Diagram 2

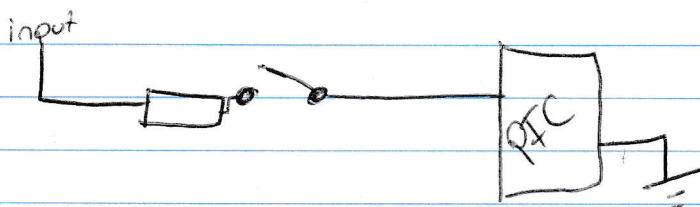
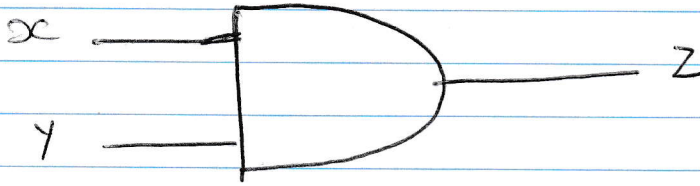


Diagram 2 shows a resistor before the switch which would be used to reduce the current levels around the switch when it is being switched on which should reduce the incidence of switch bouncing.

Q3

AND Gate



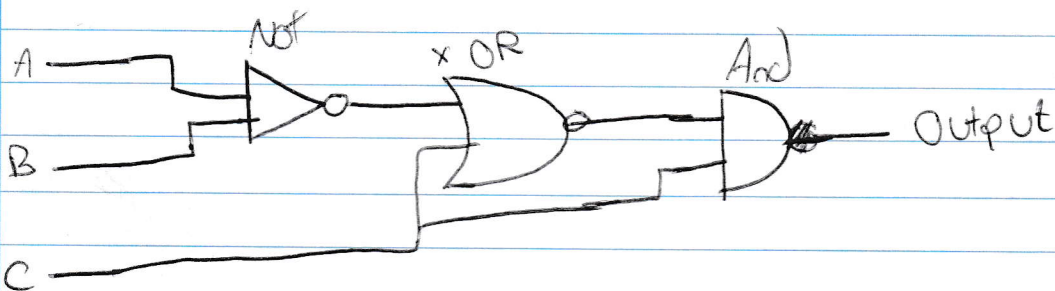
input		out put
x	y	z
0	0	0
0	1	0
1	0	0
1	1	1

Q4 Truth Table

A)

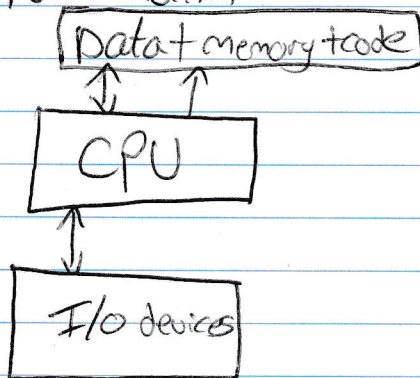
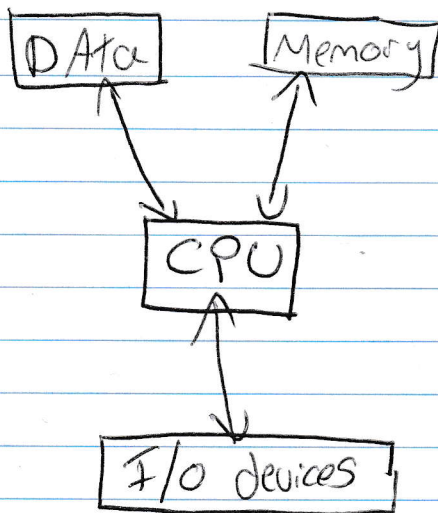
input				Output.
a	b	c		Out Q
0	0	0		0
1	0	0		0
0	1	0		0
0	0	1		0
1	1	0		0
0	1	1		1 ✓
1	0	1		1 ✗
1	1	1		0

b)



Q5

Von Neumann

Harvard

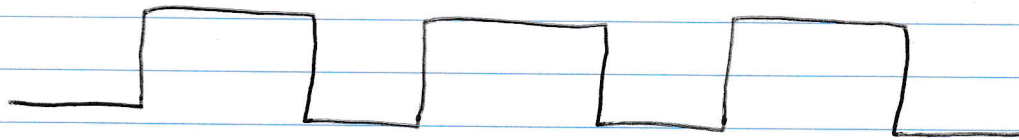
Von Neumann architectures are much more 'Streamlined' than Harvard Architecture which allows it to compute its processes much quicker than the Harvard.

The advantage of Harvard over Von Neumann is the fact it can be utilised in simple devices which don't ~~require~~ have loads of compute processes going on at the same time, i.e. Burglar alarms.

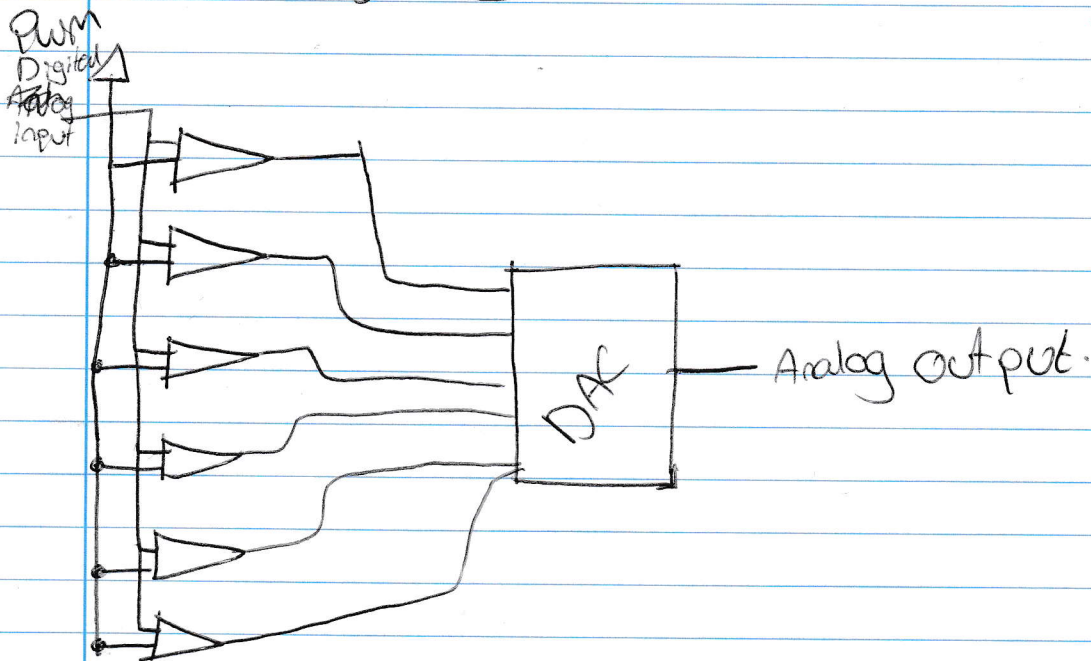
Q6)

PWM - Pulse width modulation

PWM is the factor of taking analog voltages and making them look like a digital output. This is done when analog voltages are supplied via a DAC (Digital to Analog Converter) which puts a digital signal into an analog. The PWM produces the signal which the DAC will then take the digital signal from the PWM and make it analog. PWM on a oscilloscope



There are multiple DAC's which can be used in this instance.



The PWM from the microcontroller is ~~outputted~~ inputted into the DAC which then converts it to analog allowing it to be used for other applications within the circuit.