

SURNAME: Smith

FORENAME(S): Oscar

12 Pages

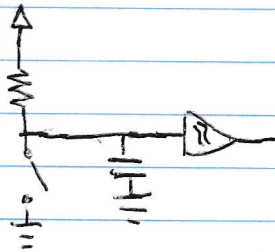
1. Please give the information requested in the boxes below
2. Enter your name in the space provided to the right, fold and seal down (using the label provided) to hide your name
3. The answers must be legibly written. The Examiners cannot ignore illegible script or have it typed and the expense of typing 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.**

List the numbers of the questions you have attempted	Office Use
1	7 $\frac{1}{2}$
2	5
3	1 $\frac{1}{2}$
4	0
5	6
6	0
	20
Total	40%

(Gweler yr ochr arall am y fersiwn Cymraeg)

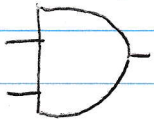
1. a. RETURN: return to subroutine, tells the code to return to previous instructions ✓ $1\frac{1}{2}$
1. b. SLEEP: set the microprocessor to standby mode, microprocessor will go into standby ✓ 2
1. c. ADDLW: Add Literal with W, perform addition on a provided literal value and the value on the W register ✓ $1\frac{1}{2}$
1. d. BCF f, b: Bit Clear F register, clears the data from f register ✓ 1
1. e. DECF: decrement F register, decreases the ~~value~~ value of f register using subtraction ✓ $1\frac{1}{2}$

2.



This is a switch debounce circuit using just a resistor, capacitor and switch, it works by charging the capacitor when the switch is open and discharging when closed meaning it can only activate once per press ✓

3.



A B out

0 0 0 ✓

1 0 1 ✓

0 1 1 ✓

1 1 1 ✓

X

1 1/2

1 1/2

4.

A B C out

0 0 0 1

0 0 1 1

0 1 0 1

1 0 0 1

0 1 1 1

1 1 0 0

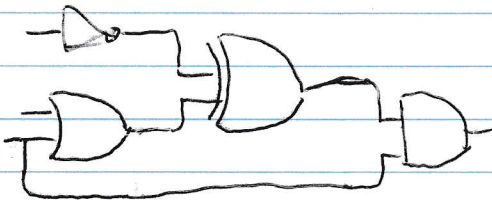
1 1 1 1

1 0 1 1

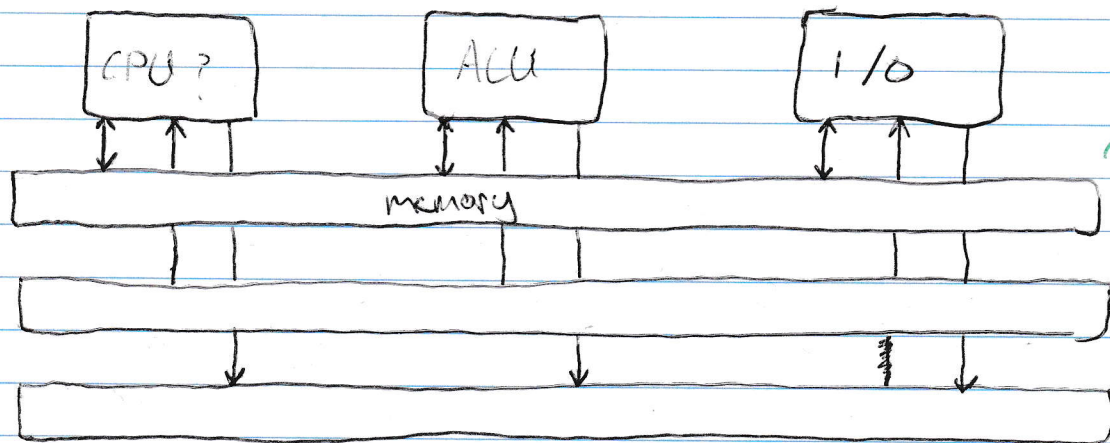
X

X

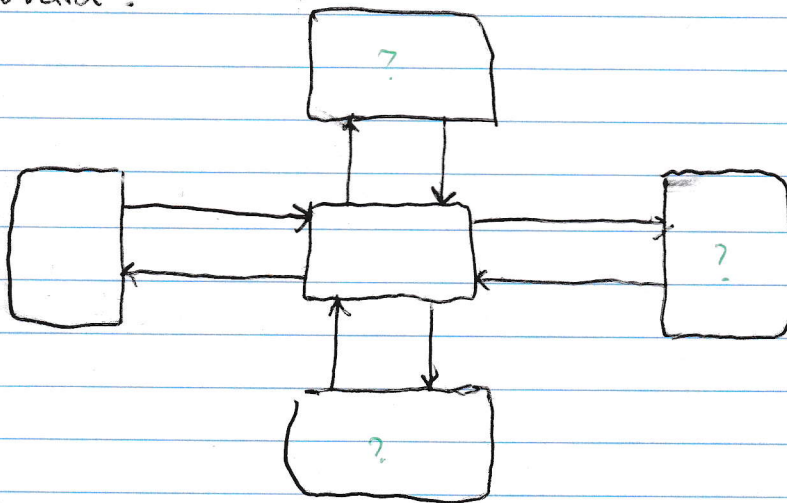
0



5. Von Neumann :



Harvard :



The advantage of a Von Neumann processor is that its sequential processing structure means it is cheaper and ~~easy~~ easier to produce.

The advantage of a Harvard processor is that while it is larger and harder to produce its multiple buses allow parallel processing and therefore much higher processing power.