



12 Pages

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 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	1707253
2	Title of Examination Paper	MICROS Peripherals and Interfaces
3	Module Code	ACDA4004
4	Date and Time of Examination	20 th May 2019 1300
5	Examination Venue	SA1 IQ310
6	Seat Number	G022
7	Number of Answer Books handed in	1

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

36%

36% / l.

- ①
- (a) Clear file - clears file ✓ ✓ (2) 2
- (b) bit file share x
- (c) Return - Return to main function ✓ ✓ (2) 2
- (d) Move to Working - Moves input to working Register (2) 2
- (e) Include file - file x ✓

⑤ 0110 0111

(a) 7F x 0x67

(b) 1001 1011

ca / 11 a x 0x9B

(c) 1110 1010

bf / 10f x 0xEA

(d) 0010 1100

d2 x 0x2c

(e) 1011 1000

8c x 0xB8

128 64 32 16 8 4 2 1

11101101 ✓

6

(a)

$$\begin{array}{l|l} 237/2 = 118 \text{ r } 1 & 14/2 = 7 \text{ r } 0 \\ 118/2 = 59 \text{ r } 0 & 7/2 = 3 \text{ r } 1 \\ 59/2 = 29 \text{ r } 1 & 3/2 = 1 \text{ r } 1 \\ 29/2 = 14 \text{ r } 1 & 1/2 = 0 \text{ r } 1 \end{array}$$

(1) (1)

$$\textcircled{b} \quad 125/2 = 62 \text{ r } 1$$

$$62/2 = 31 \text{ r } 0$$

$$31/2 = 15 \text{ r } 1$$

$$15/2 = 7 \text{ r } 1$$

$$7/2 = 3 \text{ r } 1$$

$$3/2 = 1 \text{ r } 1$$

$$1/2 = 0 \text{ r } 1$$

01111101 ✓

①

①

$$\textcircled{c} \quad 198/2 = 99 \text{ r } 0$$

$$99/2 = 49 \text{ r } 1$$

$$49/2 = 24 \text{ r } 1$$

$$24/2 = 12 \text{ r } 0$$

$$12/2 = 6 \text{ r } 0$$

$$6/2 = 3 \text{ r } 0$$

$$3/2 = 1 \text{ r } 1$$

$$1/2 = 0 \text{ r } 1$$

11000110 ✓

①

①



$$(d) \quad 247 \div 2 = \overset{123}{\cancel{246}} \text{ r } 1$$

$$123 \div 2 = 61 \text{ r } 1$$

$$61 \div 2 = 30 \text{ r } 1$$

$$30 \div 2 = 15 \text{ r } 0$$

$$15 \div 2 = 7 \text{ r } 1$$

11110111 ✓

(1)

(1)

$$7 \div 2 = 3 \text{ r } 1$$

$$3 \div 2 = 1 \text{ r } 1$$

$$1 \div 2 = 0 \text{ r } 1$$

$$\textcircled{e} \quad 312 /_2 = 156 \text{ r } 0$$

$$156 /_2 = 78 \text{ r } 0$$

$$78 /_2 = 39 \text{ r } 0$$

$$39 /_2 = 19 \text{ r } 1$$

$$19 /_2 = 9 \text{ r } 1$$

$$9 /_2 = 4 \text{ r } 1$$

$$4 /_2 = 2 \text{ r } 0$$

$$\frac{2}{2} = 1 \text{ r } 0$$

$$1 /_2 = 0 \text{ r } 1$$

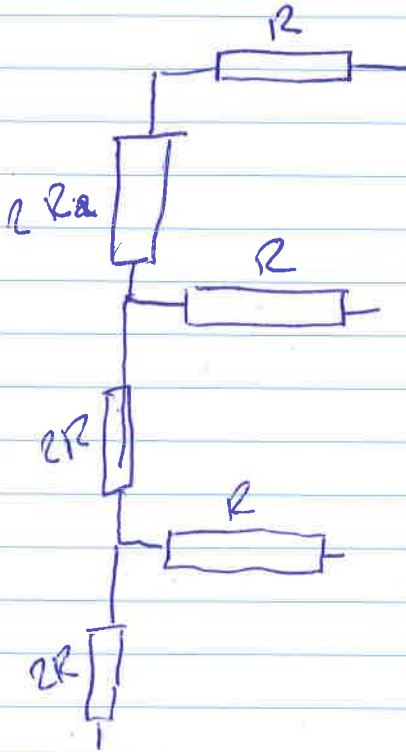
000100111000

①

①



7



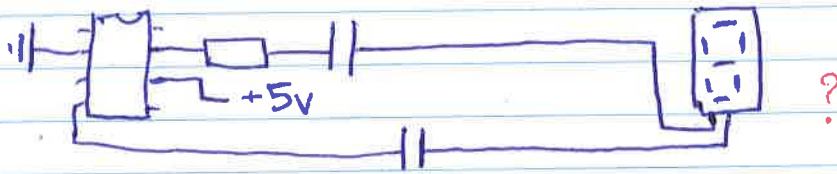
Main Reasons for
this approach are
it only uses 1D
resistors so can
cut costs for
manufacture and can
be continued as
many times as
needed

Its operation is that
each resistor (R) gets
an individual byte given
to it so this is
either 1 or 0 which
allows the resistor to
turn on off then
using this data is
converted to a current.

2

3

②



- ③ The difference between 'Source current' and 'Sink Current' is one will draw current and the other won't meaning source current pin is where the current would go in to the digital pin and the other will come out of the digital pin.

④