



07 LED8

off

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 cost 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.
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1	Student Number	2318473
2	Title of Examination Paper	Electronics 1
3	Module Code	ACDB5002
4	Date and Time of Examination	07/05/2024 11:00
5	Examination Venue	UWTSID Swansea
6	Seat Number	
7	Number of Answer Books handed in	

List the numbers of the questions you have attempted	Office Use
Q1	33 ✓
Q2	20 ✓
Q3	23 ✓
Total	76/100

$\frac{76}{100}$

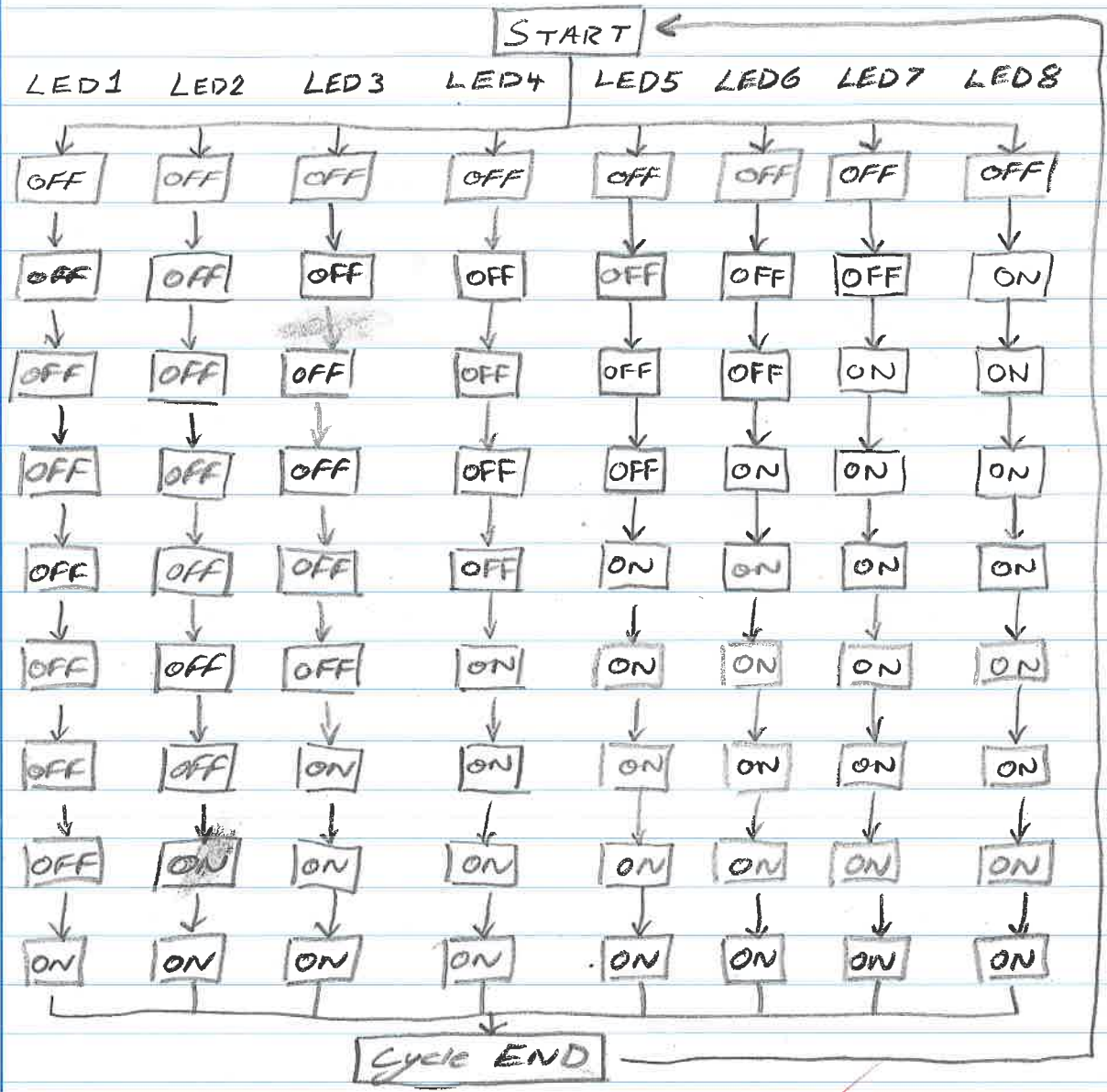
p2 1
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(Gweler yr ochr arall am y fersiwn Cymraeg)



1

a)



4

1

c) sbit LED_1 at RC0_BIT;
sbit LED_2 at RC1_BIT;
sbit LED_3 at RC2_BIT;
sbit LED_4 at RC3_BIT;
sbit LED_5 at RC4_BIT;
sbit LED_6 at RC5_BIT;
sbit LED_7 at RC6_BIT;
sbit LED_8 at RC7_BIT;

void main()

{

PORTC = 0;
TRISC = 0;

do

{

LED_1 = 0;
LED_2 = 0;
LED_3 = 0;
LED_4 = 0;
LED_5 = 0;
LED_6 = 0;
LED_7 = 0;
LED_8 = 0;

delay_ms(1000);

LED_1 = 0;
LED_2 = 0;
LED_3 = 0;
LED_4 = 0;



```
LED_5 = 0;  
LED_6 = 0;  
LED_7 = 0;  
LED_8 = 1;
```

```
delay_ms(1000);
```

```
LED_1 = 0;  
LED_2 = 0;  
LED_3 = 0;  
LED_4 = 0;  
LED_5 = 0;  
LED_6 = 0;  
LED_7 = 1;  
LED_8 = 1;
```

O/p print

```
delay_ms(1000)
```

```
LED_1 = 0;  
LED_2 = 0;  
LED_3 = 0;  
LED_4 = 0;  
LED_5 = 0;  
LED_6 = 1;  
LED_7 = 1;  
LED_8 = 1;
```

```
delay_ms(1000);
```

```
LED_1 = 0;  
LED_2 = 0;  
LED_3 = 0;  
LED_4 = 0;  
LED_5 = 1;  
LED_6 = 1;  
LED_7 = 1;
```

Structure

Optimization

Working

4

1

5

10

LED_8 = 1 ;

delay_ms (1000);

LED_1 = 0 ;

LED_2 = 0 ;

LED_3 = 0 ;

LED_4 = 1 ;

LED_5 = 1 ;

LED_6 = 1 ;

LED_7 = 1 ;

LED_8 = 1 ;

delay_ms (1000)

LED_1 = 0 ;

LED_2 = 0 ;

LED_3 = 1 ;

LED_4 = 1 ;

LED_5 = 1 ;

LED_6 = 1 ;

LED_7 = 1 ;

LED_8 = 1 ;

delay_ms (1000)

LED_1 = 0 ;

LED_2 = 1 ;

LED_3 = 1 ;

LED_4 = 1 ;

LED_5 = 1 ;

LED_6 = 1 ;

LED_7 = 1 ;

LED_8 = 1 ;

delay_ms (1000)

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```
LED_1 = 1 ;  
LED_2 = 1 ;  
LED_3 = 1 ;  
LED_4 = 1 ;  
LED_5 = 1 ;  
LED_6 = 1 ;  
LED_7 = 1 ;  
LED_8 = 1 ;
```

```
delay (1000);
```

}

```
while (1);
```

}



Circuit design
Simulation

10 ✓
5 ✓

33
40

33
40

2

- a) The circuit shown in Question 2 is a night light. Its purpose is that when there is no light detected in Torch-LDR the resistance changes. OPAMP LM393 detects the differences in its inverting and non inverting terminals, this then determines whether the LED needs to come on or not. The pot (RV2) is used to alter the resistance to change the amount of light needed for the LED to come on.

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simulation

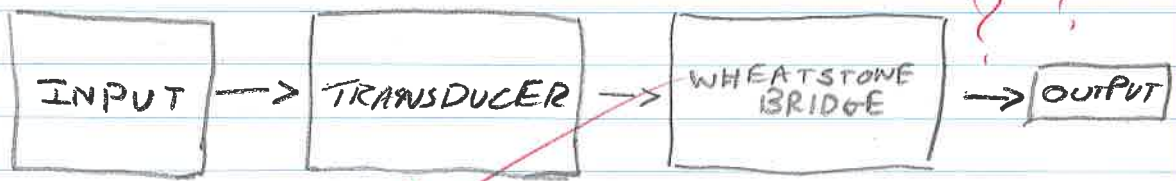
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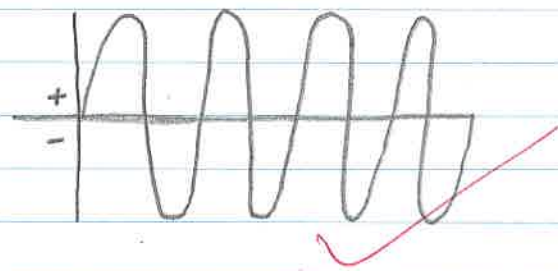
3
i. a)



filter
regulation
??

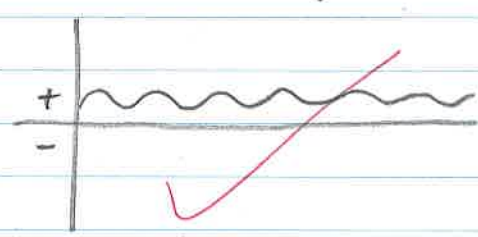
3

ii) A Full wave rectifier works by conditioning a waveform from AC to DC. Below shows a diagram of an AC sine wave.



1

As is shown, the sine wave is moving between Positive and negative which explains why its an AC waveform. If the desired output is a DC waveform then it will look like the diagram below.



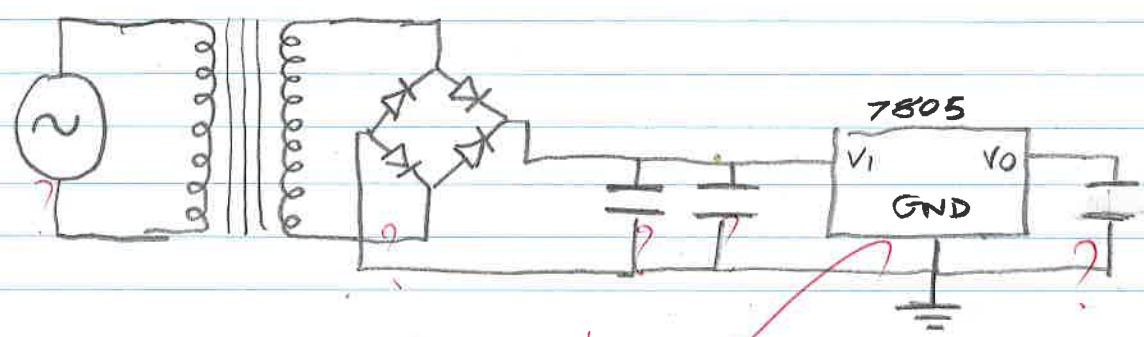
2

Shown in the diagram is a waveform remaining in the Positive which means that it is a DC signal.

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ii. b)



circuit design
Oscilloscope of P

3

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Question No.

Examiner Only

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