



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	2307453
2	Title of Examination Paper	Electronics 1
3	Module Code	ACDBS002
4	Date and Time of Examination	07/03/24 11:00
5	Examination Venue	
6	Seat Number	
7	Number of Answer Books handed in	

[illegible]

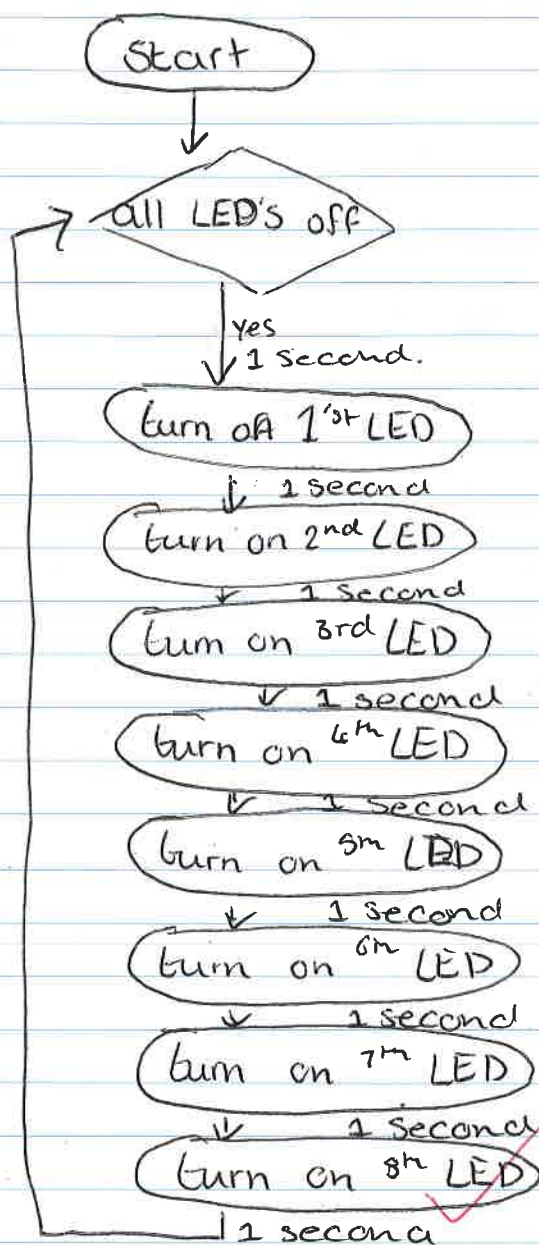
(Gweler yr ochr arall am y fersiwn Cymraeg)

85
—
100

PLP
14/5/22



1 a)



1 c)

void main ()

{

TRISC=0;

PORTC=0;

{

do

{

PORTC = 0b00000000;

delay_ms(1000);

PORTC = 0b00000001;

delay_ms(1000);

PORTC = 0b00000011;

```

delay-ms (1000);
PortC = 0b00000111;
delay-ms (1000);
PortC = 0b00001111;
delay-ms (1000);
PortC = 0b00011111;
delay-ms (1000);
PortC = 0b00111111;
delay-ms (1000);
PortC = 0b01111111;
delay-ms (1000);
PortC = 0b11111111;
delay-ms (1000);
    
```

while (1);

3
3
3

Correctness

Optimization

Design

Simulation

2
2

5

2

7

9

5

14

35
40

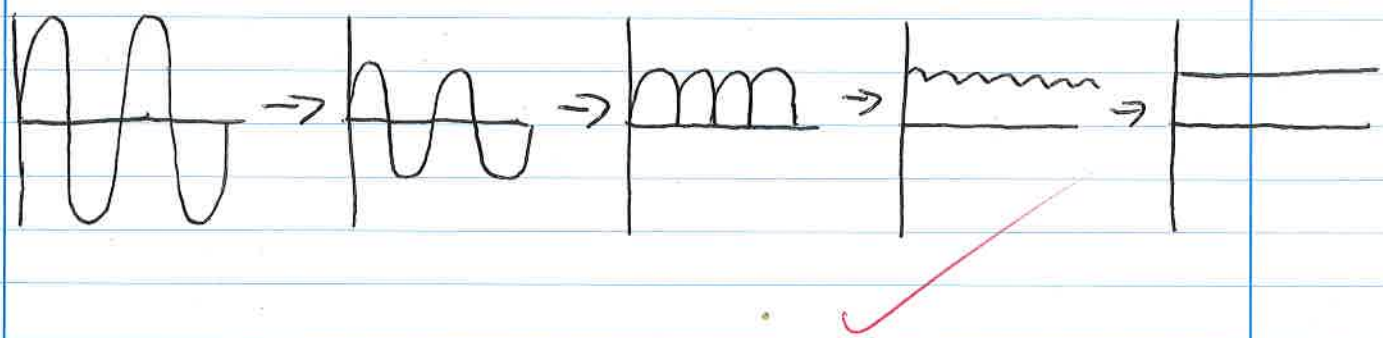
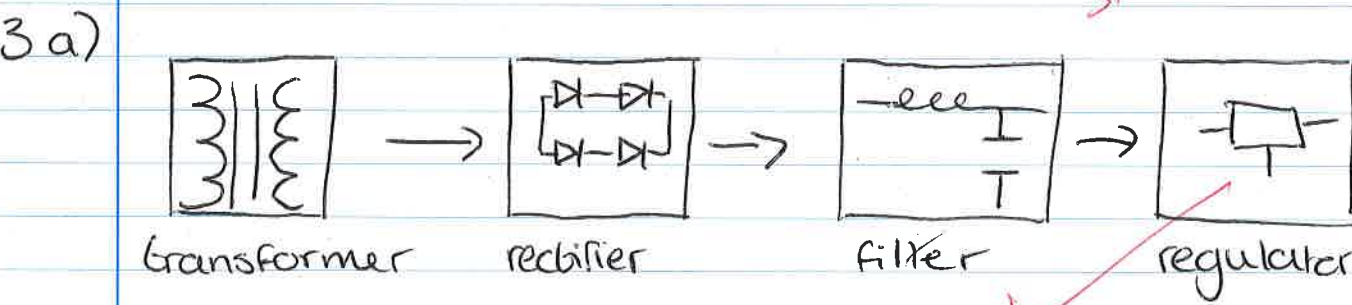
35
40



2a) The circuit shown is a night light sensor. the purpose of this circuit is that when there is light, the LED wont be lit up and when there is no light, it will be. this is so that the LED isn't on, waisting power needlessly.

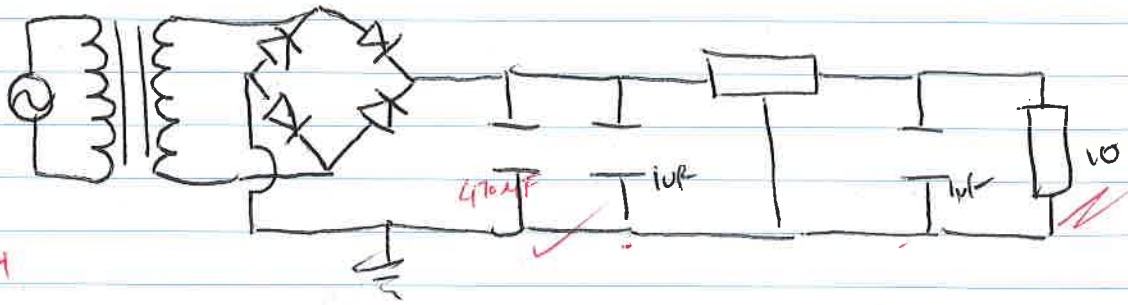
the function of this circuit is that it has a ~~comparing~~ ^{comparator} amplifier that will compare the voltage between terminal 3 and 2 of the amplifier and depending on what it sees, it will either allow ~~the~~ ^{the} terminal 1 of the ~~amplifier~~ ^{comparator} to pass to terminal 8 or terminal 4.

when it is passing through terminal 8, there will not be a voltage drop and herefore will not allow the LED to turn on, when it passes to terminal 4, it will go down to ground allowing a voltage drop so that the LED should be able to work.



3b)

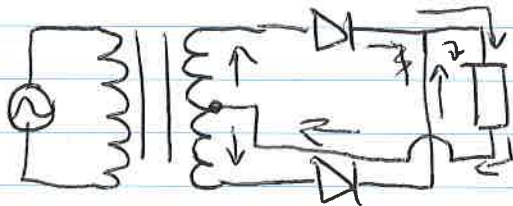
penetrol.
0/penetrol
p1 p
01/05/2024



3

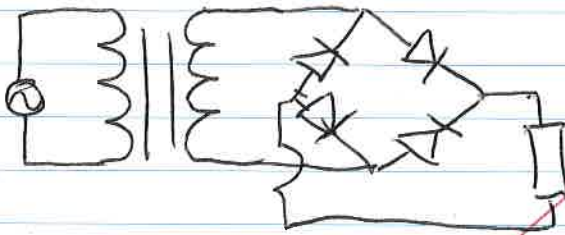
3ii)

a full wave rectifier can be either of the following:



full wave

or



bridge.

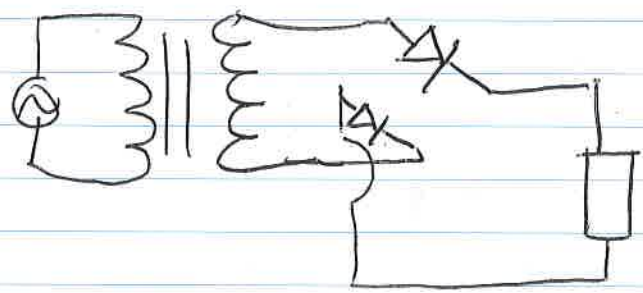
the difference being that the full wave will require a centre tapped transformer and will therefore be more expensive than a bridge. It uses the centre tap of the transformer as its path back for both the positive and the negative cycle of the AC sin wave.

3

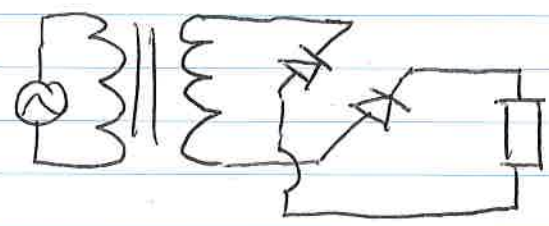
a bridge however uses the other diode as its path back so doesn't require a centre tapped transformer. On the positive wave half cycle it



will work as follows:

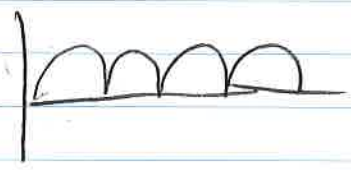


on the negative ^{half cycle} it will work as:



by doing this it will take the final wave to DC from AC.

so it will look like:



capacitors can then be used to filter it and a voltage regulator so that the final outcome if these are used will give a smooth DC wave form

Circuit design
Oscilloscope output

14
02

30
40

30
40



Examiner Only

Question No.

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