



Prifysgol Cymru
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Examiner Only

Examination Answer Books

12 Pages

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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.
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1	Student Number	2316794 ~~1081691~~
2	Title of Examination Paper	Electronics 1
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5	Examination Venue	208
6	Seat Number	n/a
7	Number of Answer Books handed in	

[illegible]

(Gweler yr ochr arall am y fersiwn Cymraeg)

PL 1
 20/21/26
 93
 100

✓)

a) when an LDR (light dependent Resistor) is exposed to light its Resistance decreases in accordance.

2

when used in a voltage divider circuit its Voltage can be compared to a Reference Voltage using a comparator such as the 1M3A3.

The Reference Voltage is derived from a secondary divider, however making use of a Potentiometer, the inclusion of a Potentiometer allows for the bright dark threshold to be adjusted.

4

the comparator will output a "high" Voltage when its inverting input (-) is higher than its non-inverting input (+) and will output a "low" Voltage when the inverting input is lower than the non-inverting.

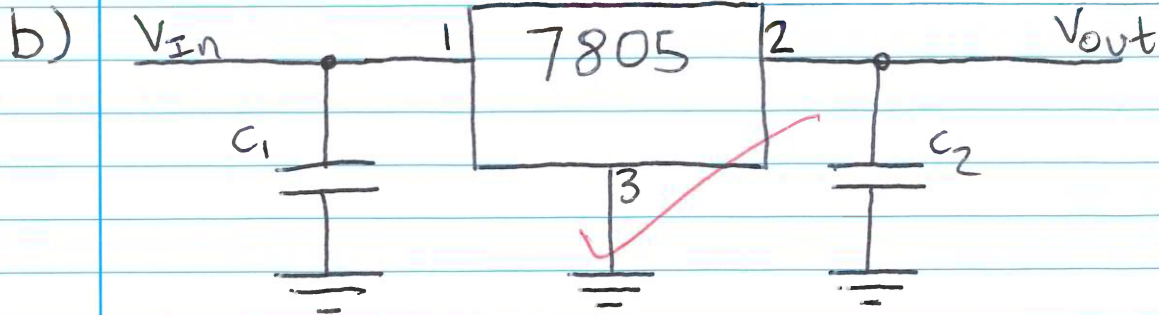
4

the LDR voltage divider is connected to the ~~output~~ inverting input and the Reference divider to the non-inverting input.

a pull up Resistor is added to the output of the 1M3A3 as ~~that~~ it is unable to drive its output high only pull it low, the Resistor pulls the output high.

(10)

v)



A Voltage Regulator takes an unregulated Voltage (V_{in}) and Regulates it down to a specified lower Regulated Voltage (V_{out}).

Shown in the diagram is a 7805 Regulator this is a common linear positive 5 volt Regulator.

C_1 and C_2 are in place to provide additional filtering to the input and output Voltage Rails.

Voltage Regulators are often Required in electronic Circuits as it is common to have several Voltages in a circuit.

As an example the Pic 16f877A has a maximum 5V input and would not work from a 12V source i.e. a battery, in this case a Voltage Regulator is Required.

the 78xx Series of Regulators provide a positive Voltage whereas the 79xx Series provide a negative Voltage.

pin 1 of the Regulator is to the unregulated input voltage pin 2 is the Regulated output Voltage and pin 3 is the ground connection

vi) RS - Register Select

the use of this pin is to select what Register inside the LCD is being ~~data~~ written to.

When the pin is low (0) it is an instruction if the pin is high (1) it is data.

RW - Read write

~~this~~ this pin is to select whether the microcontroller is Reading or writing to the display

in a low state the MCU is writing to the display, when high the MCU is Reading from the display

E - Enable

the Enable pin is latched and needs to be Pulsed to indicate the beginning of a new ~~Read~~ Read or write operation

D0-D7 Data

Pins D0 to D7 are used to Send and Receive data. these can either be used in 4 or 8 bit mode depending on system requirements.

8 bits - faster but more pins

4 bits - slower but less pins

if 4 bit mode is to be used pins D4-D7 on the LCD are used

the data on these pins can either be instructions or data i.e. characters to be displayed

VSS

VSS is the 0V connection to the display

VDD

this is the supply voltage for the display in this case 5V

V_{SS}

this is the contrast adjustment input on the display

Marks from screenshots

(i) 11/20
(ii) 11/10
(iii) 20/20
(iv) 20/20

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Question No.

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