



Examination Answer Books

12 Pages

Instructions to Candidates

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	2410530
2	Title of Examination Paper	Electronics 1
3	Module Code	ACDB 5002
4	Date and Time of Examination	16/01/26 10:00
5	Examination Venue	14208
6	Seat Number	4
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
(i)	20 ✓
(ii)	10 ✓
(iii)	6 1/2 ✓
(iv)	3 ✓
(v)	13 ✓
(vi)	10 ✓
Total	62 1/2 100

2a

V

a) the night light sensor uses an LDR, and the LM393 IC to compare voltage. the LDR connects to the inverting pin, and the potentiometer connects to the non inverting pin.

2

the pot should be set to give 4.5v to the non inverting pin. The LDR gives a low resistance when in the light condition and a high when its dark. This causes the voltage connecting to the inv terminal to alter due to light. the LM393 can then use these voltages from the inv and non inv to and compare them

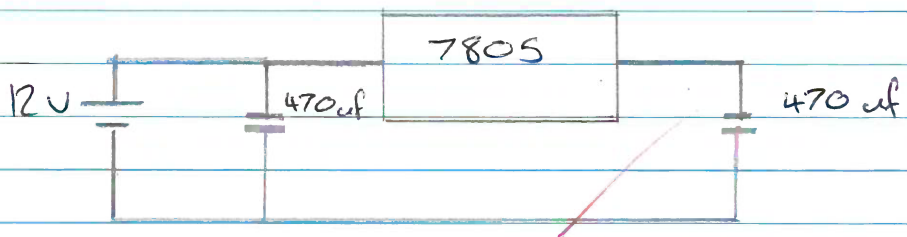
3

5

if $inv > non\ inv$ light will be on
if $inv < non\ inv$ light will be off
it does this by switching to ground

13/20

b)



3

the Voltage regulator is an IC which takes an unregulated Voltage as an input, it then outputs a regulated Voltage. the capacitors are to smooth the output/input. you can have voltage regulators for both positive and negative voltages. positive being the 78xx Series and negative being the 79xx series. the input will always

2

2

7

need to be higher than the output. for example the 7805 needs atleast 7.3 volts to give a regulated 5v Output.

V:

VSS	ground
VDD	+5v Supply
VEE	Contrast
RS	0 = data 1 = Command
RW	0 = Read 1 = write
E	enable
Do-D7	data pins

the 16x2 LCD module is a display unit that can display 32 characters. 16 on the first row and 16 on the bottom. it can be used in 4bit or 8bit mode. to use in 8bit use all data pins and for 4 bit use pin 4-7, the 4bit uses less pins so saves space on the PIC but is slower than the 8bit.

VSS, VDD, and VEE are used to power the LCD. the VEE pin will be connected to a pot to adjust the contrast.

Marks from the screen shots

- (i) 20/20
- (ii) 10/10
- (iii) 6 1/2/20
- (iv) 3/20