Soldering License Assessment

Collect your evidence here to demonstrate that you are suitably qualified to use a soldering iron safely and correctly in school to create circuits. Read the instructions carefully, and write your answers in the spaces provided on the sheet.

**1. Health and Safety**

Write down three H&S points to remember when using a soldering iron.

*Example: Tie back long hair and remove jewellery before plugging a soldering iron in.*

i.

ii.

iii.

(*3 marks*)

**2. Drilling**

a. Describe how to change the drill bit on a drills which uses a chuck key.

Answer: (*2 marks*)

DELETE THIS BOX, AND PLACE YOUR DRILLING IMAGE HERE.

KEEP IT APPROXIMATELY THIS SIZE.

b. Drill the holes in your PCB, using the 1mm and 3mm drill bits. When finished, take a photo, and put it in the space provided, cropping the image and ensuring it is in focus.

*All holes drilled to correct size – 1 mark*

*75% of holes in the centre of their pads – 1 mark*

*100% of holes in the centre of their pads – 1 mark*

**3. Component Soldering**

Solder in the resistors, diode and chip carrier. You will take a photograph of each side of your PCB when it is finished, which your teacher will use to assess your work.

*Components flat against the board – 1 mark*

*Correct resistors, diode and chip carrier orientation – 2 marks*

*All components on PCB – 1 mark, no shorts – 1 mark, no dry joints/over soldering – 1 mark*

**4. Wire links**

Solder on a single-core and multi-core link wire across the spaces indicated on the PCB.

*Links soldered into board with no shorts – 1 mark*

*Links are perfectly flat on the top of the PCB – 1 mark*

*<2mm of bare wire visible on top of board – 1mark*

**5. De-soldering**

Use a manual solder pump, electric solder pump and solder wick to neatly remove the solder from the DIL socket, and remove it from your board. Briefly, describe how to use: -

Solder wick (*1 mark*):

A manual solder pump (*1 mark*):

An electric solder pump (*1 mark*):

**(Continued over the page)**

**6. Track repairs**

Make the two track repairs on the board, using either resistor legs or single-core wire.

*Working repairs – 1 mark*

*Tidy repair, with no over-soldering – 1 mark*

*<2mm of wire on each side of track repair – 1 mark*

**7. Multimeter testing**

Use a multimeter to complete the table below.

The first row is completed for you.

*Correct meter settings – 2 marks*

*Correct expected reading – 2 marks*

*Sensible actual reading – 2 marks*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Meter setting | Expected reading | Actual reading | Pass? |
| *330Ω Resistor* | *2k* | *330* | *322* | *Yes* |
| 2k2Ω Resistor |  |  |  |  |
| 470Ω Resistor |  |  |  |  |
| 18kΩ Resistor |  | 18.00 |  |  |
| Resistance between E-F |  |  |  |  |
| Continuity from A-B |  |  |  |  |
| Continuity from B-C | 200 |  |  |  |
| Continuity from C-D |  |  |  |  |
| Continuity from D-E |  |  |  |  |

When all the work has been completed, take a photo of each side your board, and put them in the spaces provided below, so that your teacher can mark your work

DELETE THIS BOX, AND PLACE YOUR SECOND SOLDERING IMAGE HERE, SHOWING THE SOLDER SIDE OF YOUR BOARD.

KEEP IT APPROXIMATELY THIS SIZE.

DELETE THIS BOX, AND PLACE YOUR FIRST SOLDERING IMAGE HERE, SHOWING THE COMPONENT SIDE OF YOUR BOARD.

KEEP IT APPROXIMATELY THIS SIZE.

*Again, ensure you crop the image so the teacher can see it clearly, and that the image is in focus*.