4.8.2 Electricity Paper 2 (448/2)

EXERCISE 1

(a) Using the materials and equipment provided, connect the circuit as shown in Figure 1.
(3 marks)

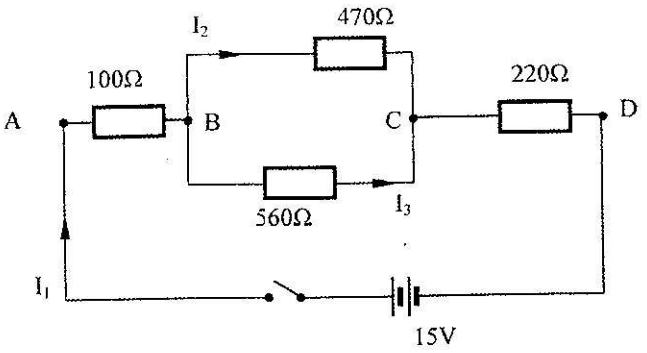


Figure 1

Let the examiner check your work.

(b) Close switch S, measure and record the values of the following quantities in table 1.
(15 marks)

Table 1

	MEASURED VALUES	CALCULATED VALUES
Current: - I_1		26mA
- I_2		14mA
- I_3		12mA
Voltage Drop Across - AB		2.6v
- BC		6.6v
- CD		5.6v

(c) Give reasons for the differences between the measured values and the calculated values given in the table. (2 marks)

EXERCISE 2

Using the tools, materials and equipment provided, fabricate the cell holder shown in figure 2.

(20 marks)

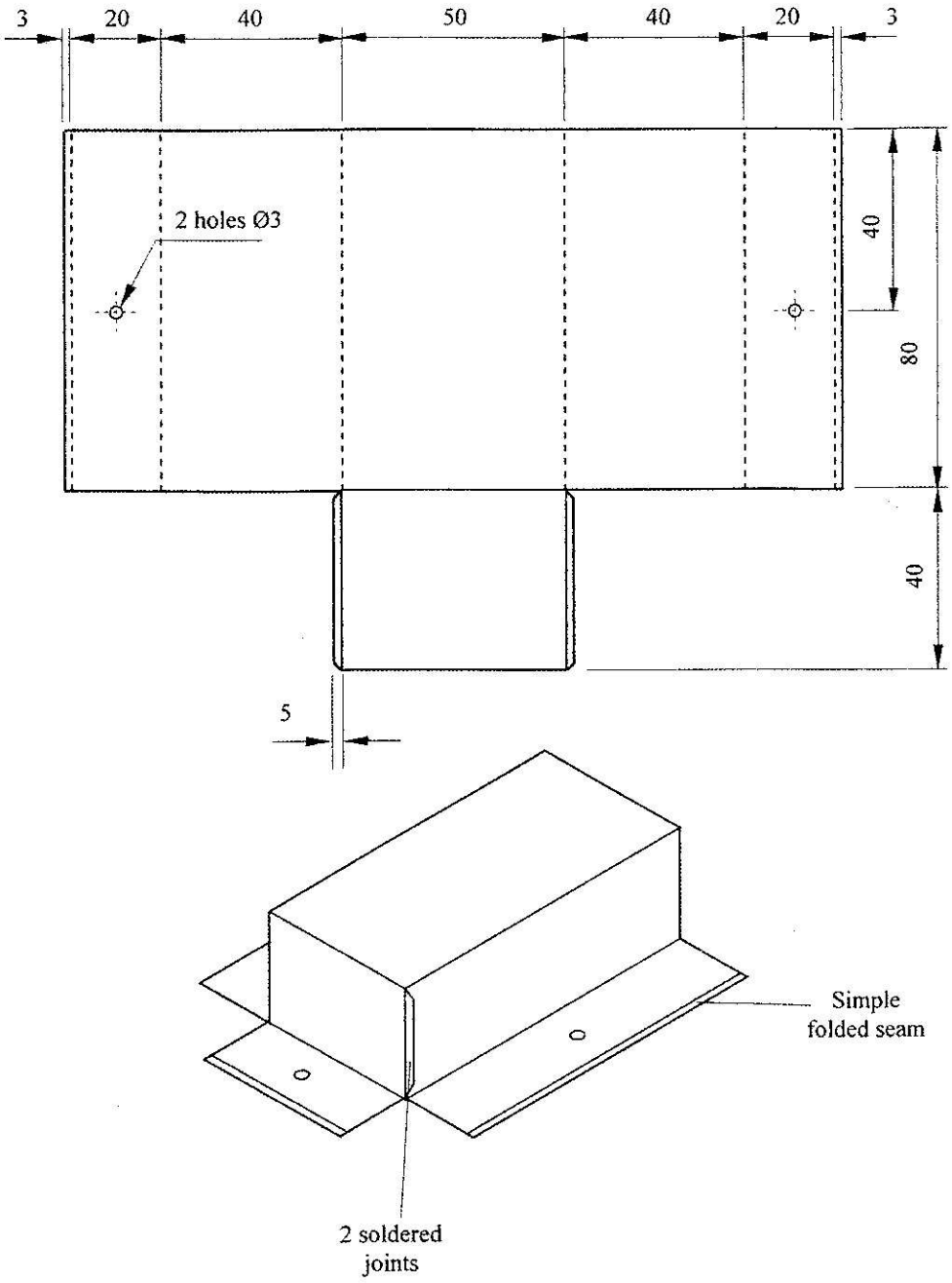


Figure 2

EXERCISE 3

Using the tools, materials and equipment provided, carry out the following tasks:

(a) terminate the three-core flexible cable to the top plug and the iron box. (15 marks)

(b) turn the thermostat switch to open position. (1 mark)

(c) measure and record the values of the resistance between:

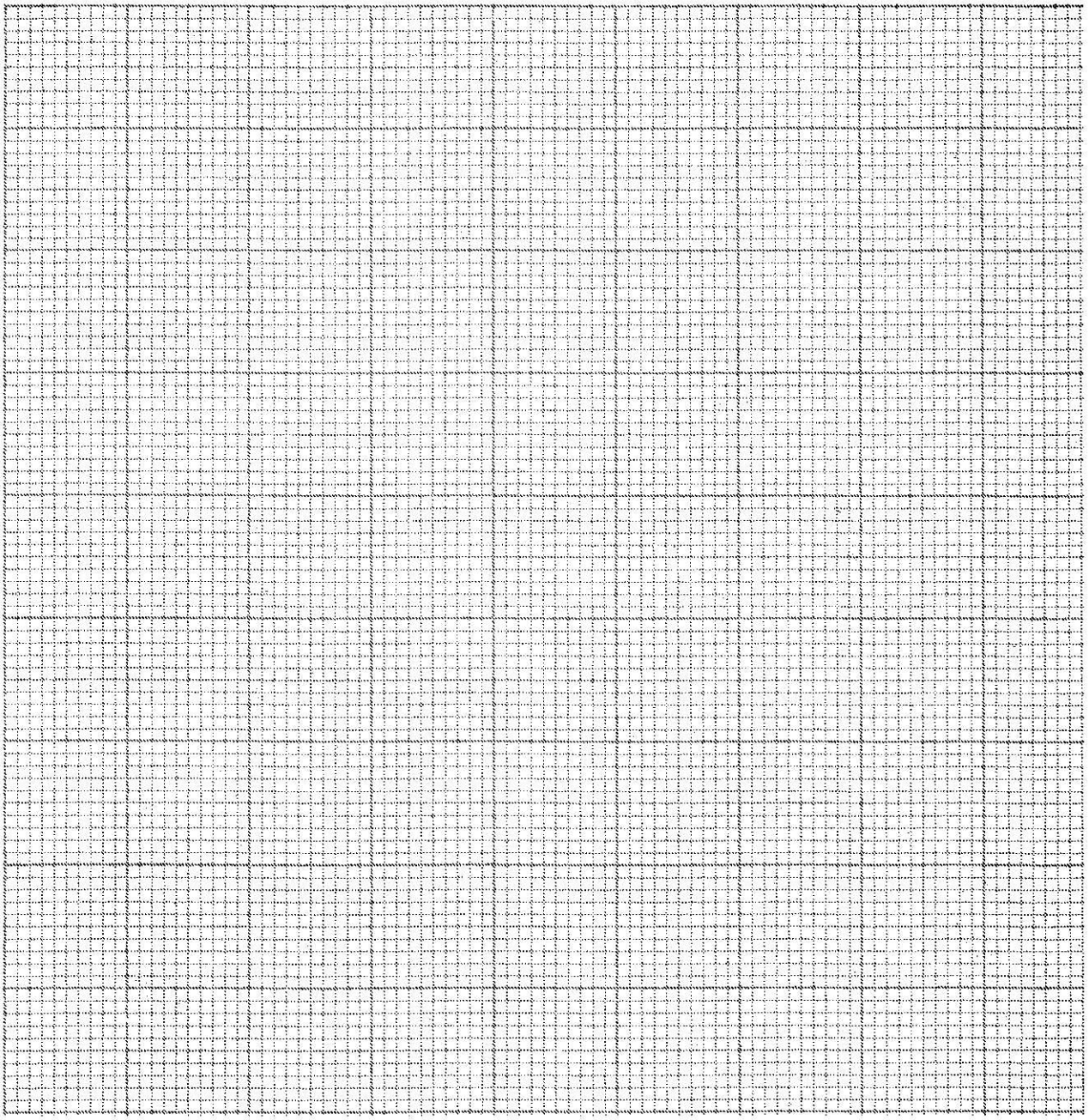
(i) live and neutral at plug
(ii) live and earth at plug
(iii) earth at plug and at iron box body
(iv) neutral at plug and at iron box.

(4 marks)

(d) Draw a graph of current I on horizontal axis against voltage V_2 on vertical axis. (5 marks)

(e) From the curve obtained in the graph, state the application of the circuit. (1 mark)

(f) Name the active device in the circuit. (1 mark)



EXERCISE 4

Figure 3 shows the block diagram of a prefabricated circuit Q. Carry out the following tasks.

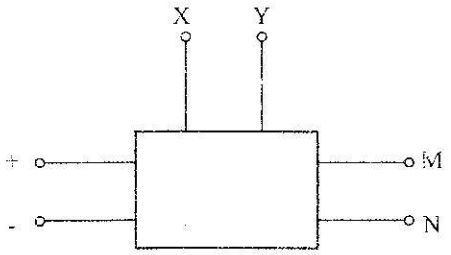


Figure 3

(a) (i) Adjust the power supply to zero volt.

(ii) connect the circuit to the power supply through the switch provided. (1 mark)

(b) Connect (i) the milliammeter provided between points X and Y of the circuit.

(ii) the voltmeter provided between points M and N of the circuit. (2 marks)

(c) Close the switch. Adjust the power supply to obtain the voltage values shown in table 2. In each case, measure and record the corresponding values of current I and voltage V_2. (10 marks)

Table 2

SUPPLY VOLTAGE V1	0	2.5	5	6	8
CURRENT I					
VOLTAGE V_2					

EXERCISE 5

Figure 4 shows the layout of a bell circuit. Using the tools and materials provided, install the circuit such that the two push buttons operate the bell independently.

(20 marks)

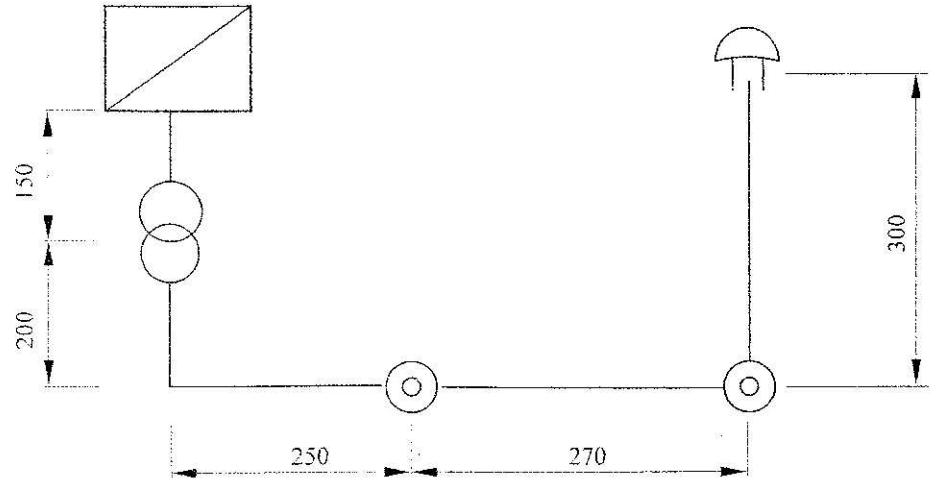


Figure 4