

1(a). Since 2009, filament lamps in the home have often been replaced by other lamps, called LED lamps.

The table compares a filament lamp and an LED lamp which produce the **same** intensity of light.

	Filament lamp	LED lamp
Power	60 W	0.01 kW
Lifetime	2000 hours	26 000 hours
Cost to buy	£1.00	£5.00
Cost to run over 1 year	£22.00	£3.65
Dimmable	Yes	No
Structure	Glass	Plastic

Suggest **one** reason **for** and **one** reason **against** using LED lamps.

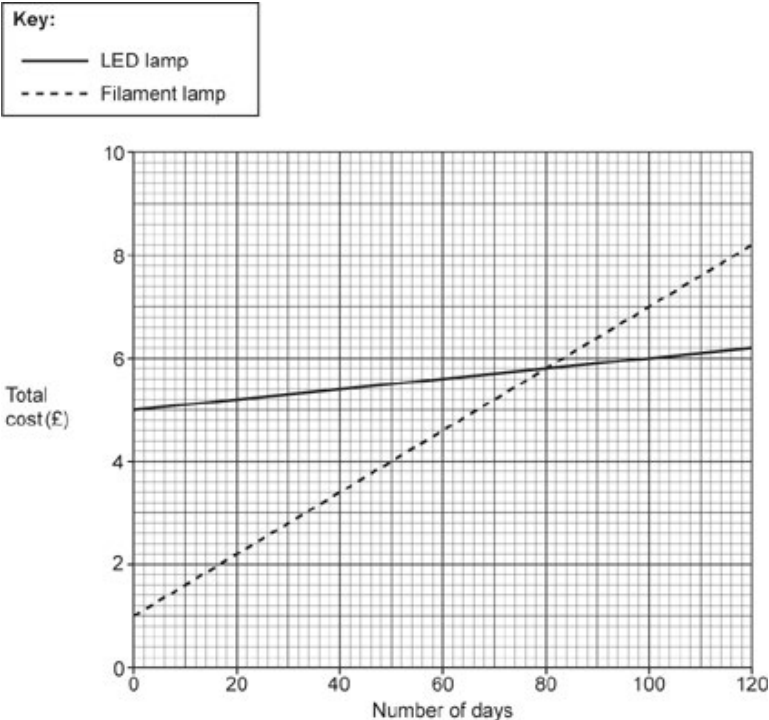
Use the data in the table.

For _____

Against _____

[2]

(b). Since 2009, filament lamps in the home have often been replaced by other lamps, called LED lamps. The graph shows how the total cost of buying and using each lamp varies with the number of days each lamp is used.



- i. A person buys an LED lamp.

After how many days is the total cost of the LED lamp the same as the total cost of the filament lamp?

Use the graph.

Number of days = days **[1]**

- ii. The person uses the LED lamp for 100 days.

How much money does the person save by buying and using the LED lamp instead of the filament lamp?

Use the graph.

Money saved = £..... **[2]**

- (c). Calculate the number of filament lamps a person must buy during the lifetime of **one** LED lamp.

Number of filament lamps = **[1]**

2. An electrician measures the potential difference (p.d.) between two different wires, **X** and **Y**, in a plug.

The plug is wired correctly and working safely.

The p.d. between wire **X** and wire **Y** is 0 V.

Which row shows the correct name of wire **X** and wire **Y**?

	Wire X	Wire Y
A	earth	live
B	earth	neutral
C	live	earth
D	live	neutral

Your answer

☐

[1]

3. A water heater is plugged into the mains supply.
The water heater has a metal case.

Which wire(s) should be connected in the electric plug of the water heater?

Tick (✓) one, two **or** three boxes.

Earth wire

☐

Live wire

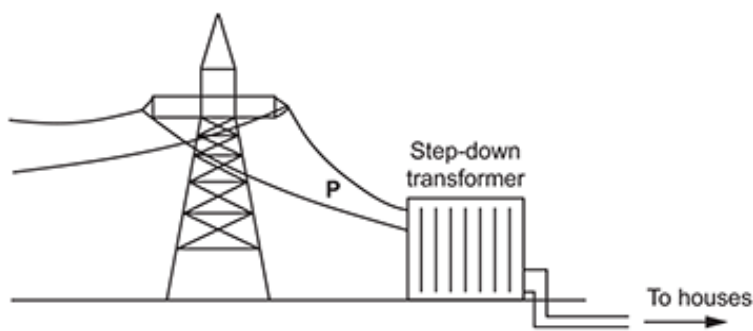
☐

Neutral wire

☐

[1]

4. The diagram shows how a step-down transformer is used before electricity is transferred to houses.



Which row gives the correct potential difference and frequency of the electricity in the wires at **P**?

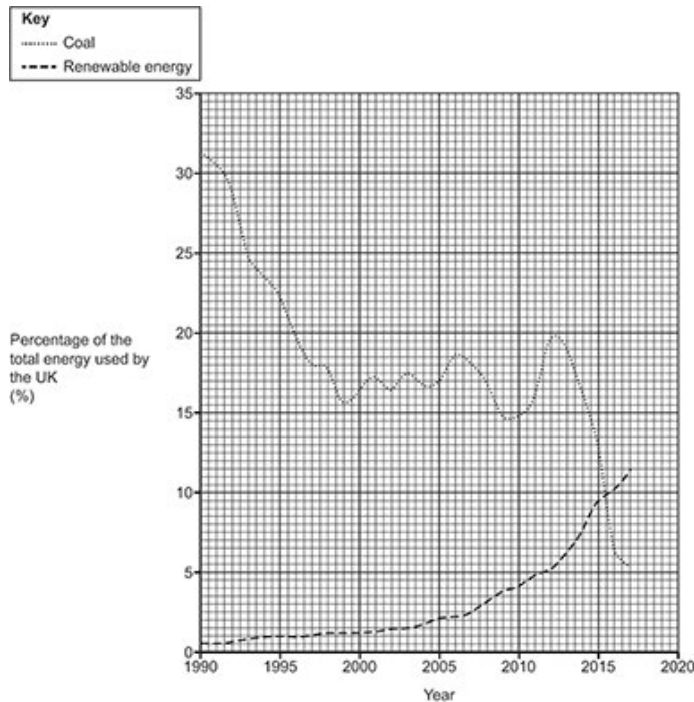
	Potential difference (V)	Frequency (Hz)
A	230	50
B	230	230
C	400 000	50
D	400 000	230

Your answer ☐

[1]

5.

* The use of coal and renewable energy resources has changed in the UK over time. The graph shows these changes.



Use data from the graph to describe the changes in the use of coal and renewable energy resources.

Suggest why these changes happened.

[6]

END OF QUESTION PAPER