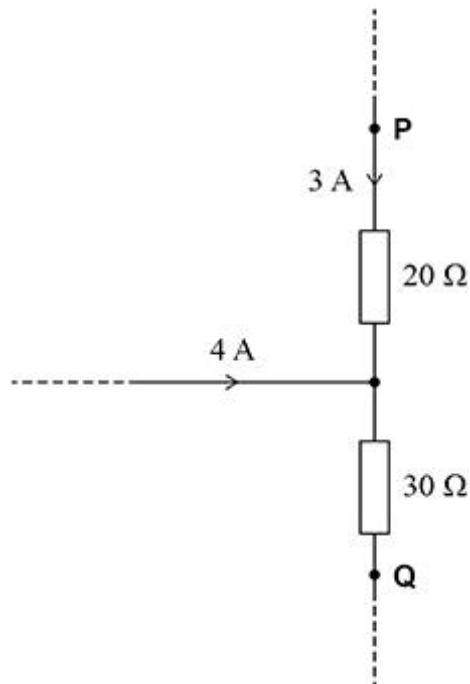


Q1.

The diagram shows the currents in part of a circuit.



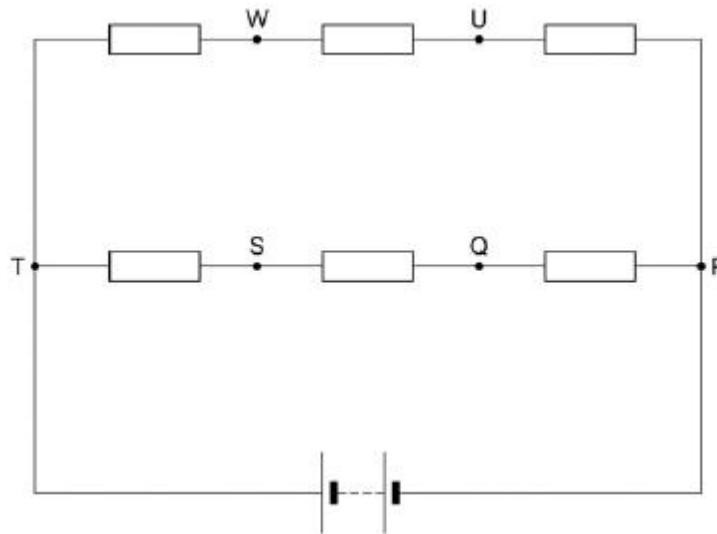
What is the potential difference between points **P** and **Q**?

- | | |
|----------------|-----------------------|
| A 60 V | <input type="radio"/> |
| B 70 V | <input type="radio"/> |
| C 180 V | <input type="radio"/> |
| D 270 V | <input type="radio"/> |

(Total 1 mark)

Q2.

In the circuit shown below, each of the resistors has the same resistance.



A voltmeter with very high resistance is connected between two points in the circuit.

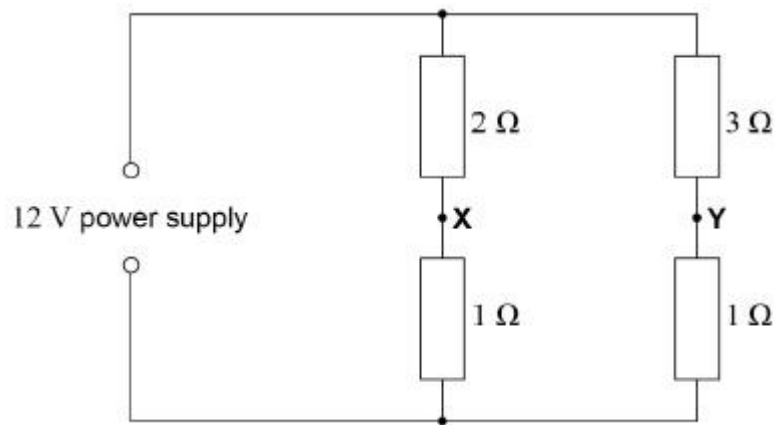
Between which two points of connection would the voltmeter read zero?

- A** Q and U ☐
- B** P and T ☐
- C** Q and W ☐
- D** S and U ☐

(Total 1 mark)

Q3.

In this resistor network, the emf of the supply is 12 V and it has negligible internal resistance.



What is the reading on a voltmeter connected between points **X** and **Y**?

A 0 V

☐

B 1 V

☐

C 3 V

☐

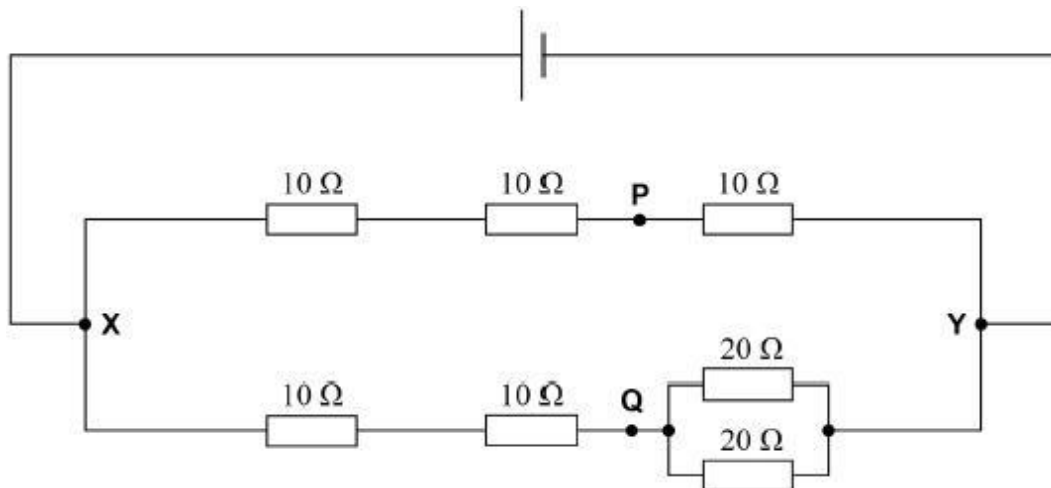
D 4 V

☐

(Total 1 mark)

Q4.

The potential difference between points **X** and **Y** is V .



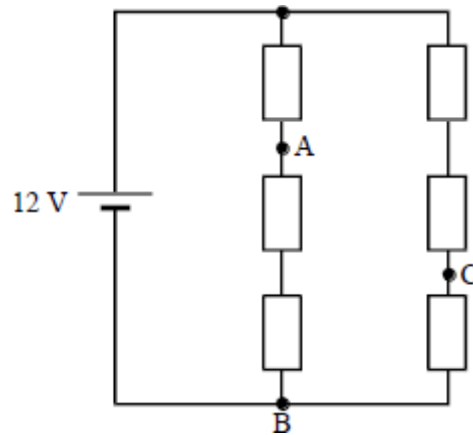
What is the potential difference between **P** and **Q**?

- | | | |
|----------|----------------|-----------------------|
| A | zero | <input type="radio"/> |
| B | $\frac{V}{3}$ | <input type="radio"/> |
| C | $\frac{V}{2}$ | <input type="radio"/> |
| D | $\frac{2V}{3}$ | <input type="radio"/> |

(Total 1 mark)

Q5.

- (a) In the circuit shown, each resistor has the same resistance. The battery has an e.m.f. of 12 V and negligible internal resistance.



- (i) Calculate the potential difference between A and B.

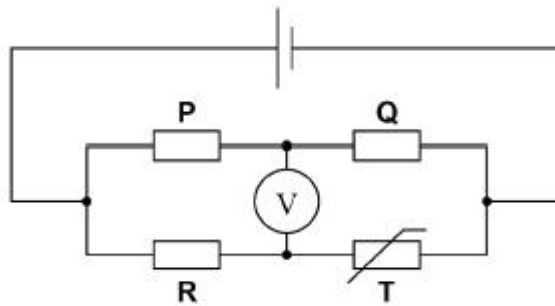
- (ii) Calculate the potential difference between B and C.

- (iii) A high resistance voltmeter is connected between A and C. What is the reading on the voltmeter?

(5)**(Total 5 marks)**

Q6.

In the circuit below, the initial voltmeter reading is zero.



The temperature of the negative temperature coefficient thermistor **T** is then increased.

Which change to the circuit could restore the voltmeter reading to zero?

A Decreasing the resistance of **R**.

☐

B Increasing the resistance of **R**.

☐

C Decreasing the resistance of **P**.

☐

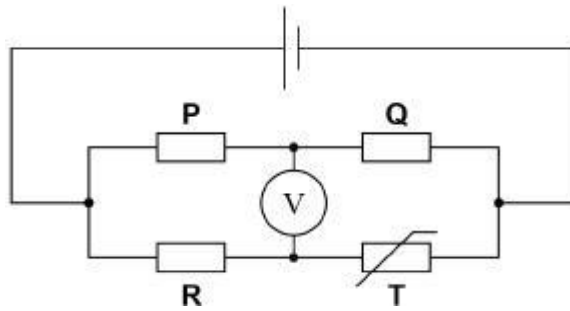
D Increasing the resistance of **Q**.

☐

(Total 1 mark)

Q7.

In the circuit below, the voltmeter reading is zero.



When the temperature of the thermistor **T** is increased, the voltmeter reading changes.

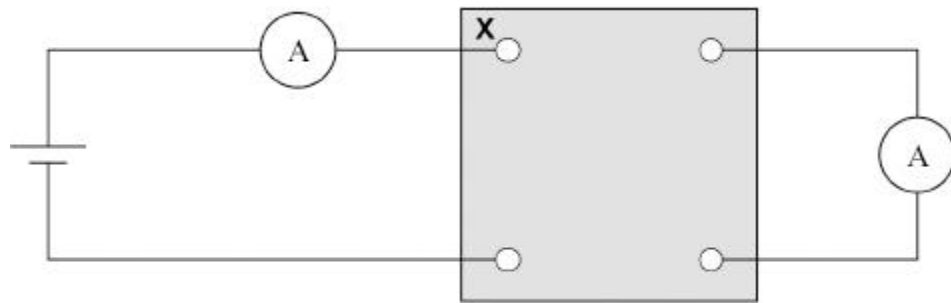
Which change to the circuit will restore the voltmeter to zero?

- | | |
|--|-----------------------|
| A a reduction in the emf of the cell | <input type="radio"/> |
| B a reduction in the resistance of P | <input type="radio"/> |
| C an increase in the resistance of Q | <input type="radio"/> |
| D a reduction in the resistance of R | <input type="radio"/> |

(Total 1 mark)

Q8.

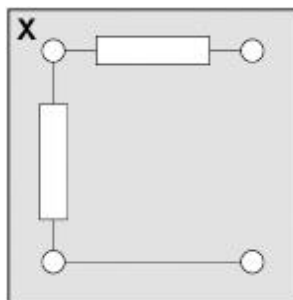
A box with four terminals is connected to a cell and two ammeters. The top left terminal is **X**.



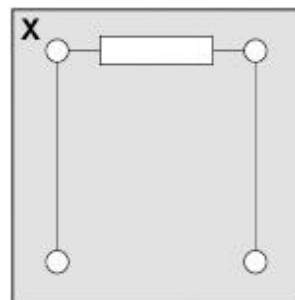
Each of the boxes **A** to **D** is connected into the circuit in turn. All the resistors have equal resistance.

Which box gives the same reading on both ammeters?

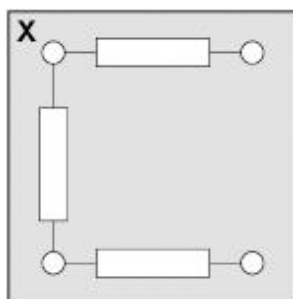
A



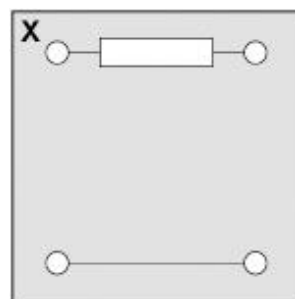
B



C



D



A

☐

B

☐

C

☐

D

☐

(Total 1 mark)