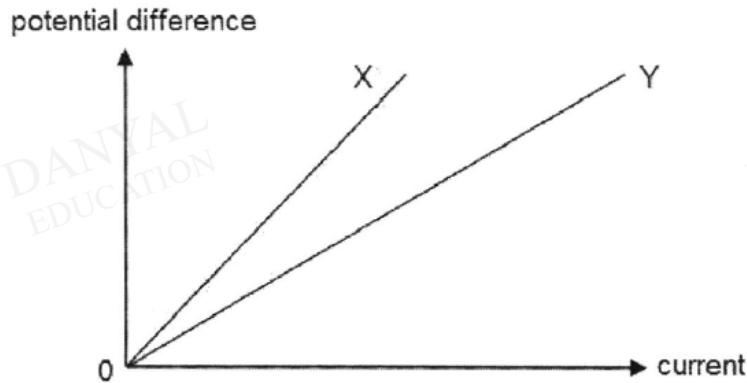**O Level Pure Physics MCQs**

Current and DC Circuits Test 3.0

Q1

The diagram shows how the potential difference varies with current for two wires X and Y.


Both wires have the same length and cross-sectional area.

Which statement is correct?

A   A higher current flows through X than Y, if the same p.d is applied across them.

B   Both X and Y do not obey Ohm's Law.

C   The resistivity of X is greater than Y.

D   Y has a greater resistance than X.

Q2

The diagram shows a thermistor connected in series with a 72 Ω resistor connected across a 6 V power supply. When the temperature of the thermistor is 20°C, the potential difference across it is 2.0 V.
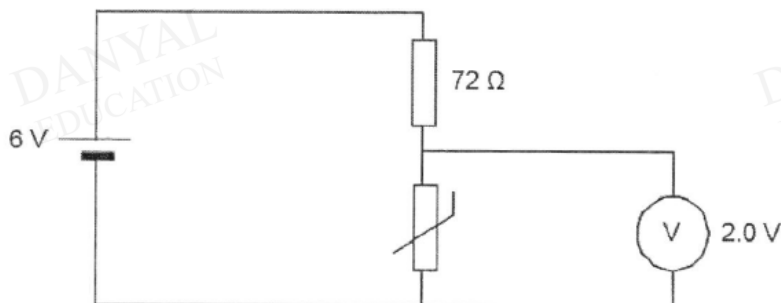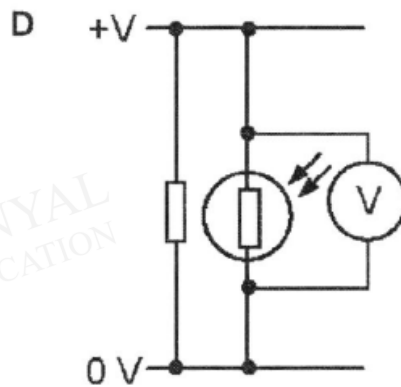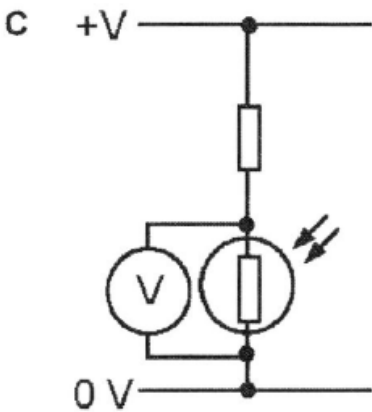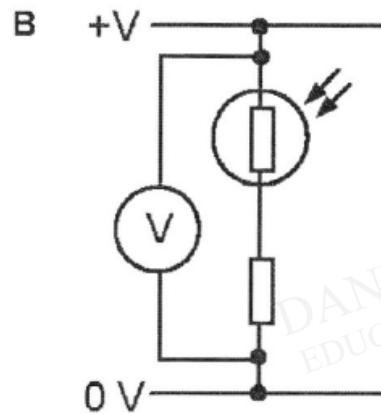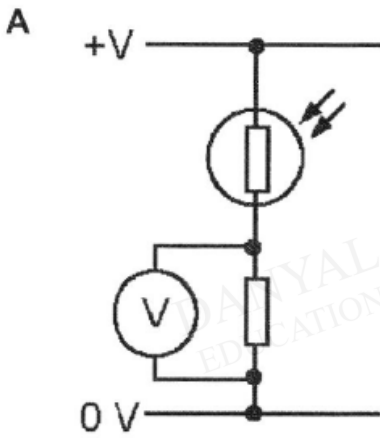

What is the resistance of the thermistor when the temperature is 20°C?

A   36 Ω

B   48 Ω

C   108 Ω

D   144 Ω

Q3

In which circuit does the voltmeter reading decrease when light shines on the light dependent resistor?

Q4

Four electric heaters are connected in parallel to the same power supply source.
The resistances of the four heaters and the amount of time it was used are shown in the table.

Which heater consumed the most electrical energy?

	resistance / Ω	time / s
A	17.6	221
B	18.8	242
C	19.4	230
D	20.3	253

2

Q5

A hand phone battery requires 900 C of charge before it is 100% charged.

The following digram shows the characteristic voltage-current graph of the charging circuit. It initially displays ohmic behaviour at low voltages but its gradient increases as the circuit heats up.
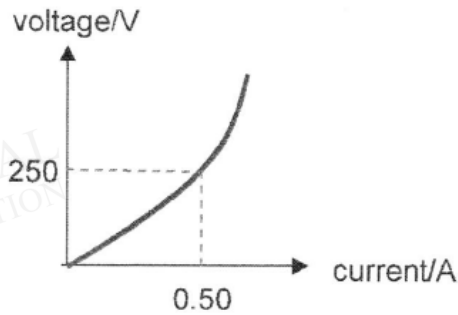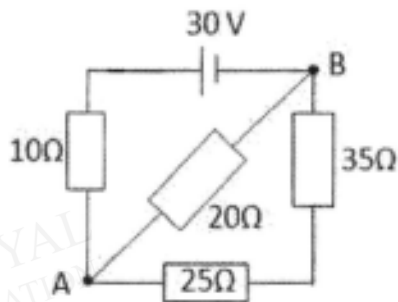

The phone is plugged into a 255 V supply. Which of the following shows the time required to charge the phone to 100%?

A   1800 s

B   1.8 hours

C   slightly more than 1800 s

D   slightly less than 1800 s

Q6

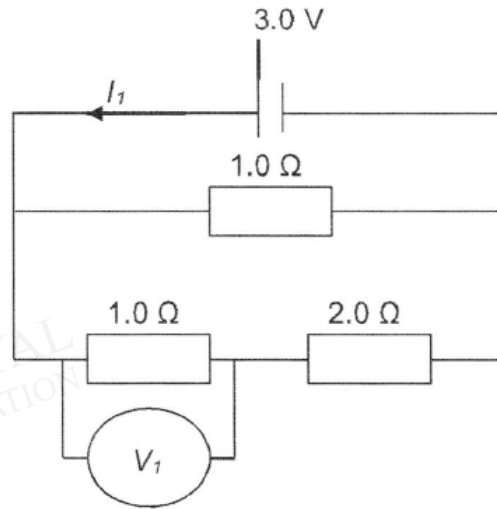The following diagram shows four resistors connected to a 30 V DC supply.

What is the effective resistance of the circuit?

A $(\frac{1}{10} + \frac{1}{20} + \frac{1}{60})$

B $(\frac{1}{10} + \frac{1}{20} + \frac{1}{60})^{-1}$

C $10 + (\frac{1}{20} + \frac{1}{60})^{-1}$

D $25 + (\frac{1}{10} + \frac{1}{20} + \frac{1}{35})^{-1}$
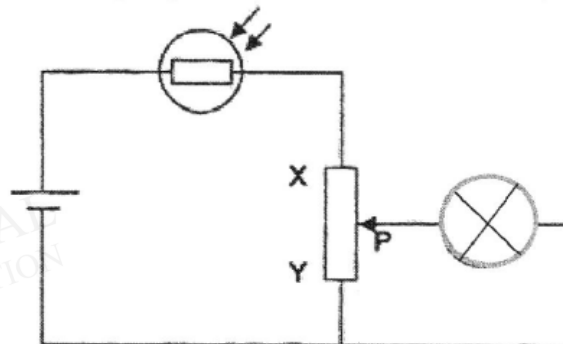
Q7

Three resistors are connected to a 3.0 V DC supply.

Which of the following shows the value of I_1 and V_1?

	I_1/A	V_1/V
A	1.5	3.0
B	6.0	3.0
C	4.0	3.0
D	4.0	1.0

Q8

The circuit diagram shows a lamp, light-dependent resistor and potential divider.

Which of the following adjustments will cause the lamp to be the brightest?

A   Light is incident on the LDR and P is moved to X.

B   Light is incident on the LDR and P is moved to Y.

C   The LDR is covered and P is moved to X.

D   The LDR is covered and P is moved to Y.

Q9

The following diagram shows three identical lamps, A, B and C. What happens to the brightness of lamps A and B when the switch is closed?
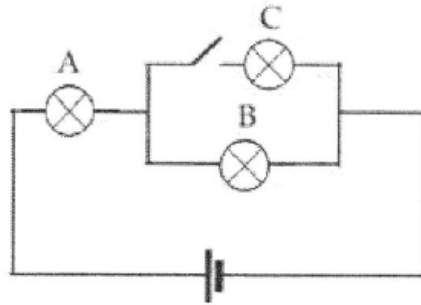
A   Brightness of A and B remain the same.

B   Brightness of A and B decrease.

C   A becomes brighter and B becomes dimmer.

D   Brightness of A stays the same, B becomes dimmer.

Q10

In a given circuit, the current is 0.32 A. If the charge of an electron is 1.6×10^{-19} C, how many electrons will flow past a fixed point in the circuit in 1 second?

A 1×10^{18}
B 2×10^{18}
C 5×10^{18}
D 8×10^{18}

Answers

Current and DC Circuits Test 3.0

Q1 C

Q2 A

Q3 C

Q4 B

Q5 D

Q6 C

Q7 D

Q8 A

Q9 C

Q10 B