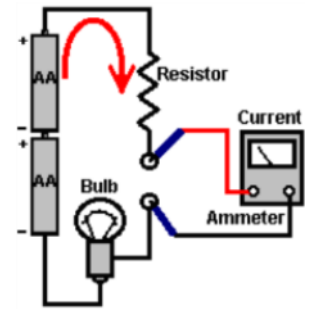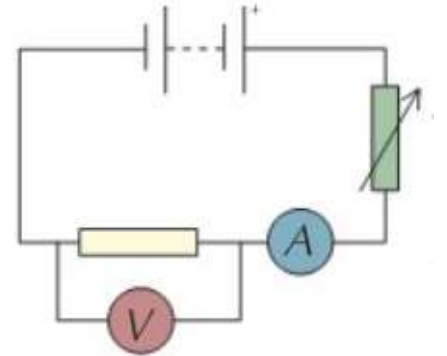Name: _____   Class: _____

Total Possible Marks: 28

Series Circuits

___
6

1. Take a close look at the diagram shown to the right. This is an example of a series circuit where the components are connected in a line, end-to-end between the positive and negative ends of the power supply (with one exception).

___
1
A. State the name of the component with the capital A in it.

_____

___
1
B. State the name of the component which looks like a rectangle with an arrow drawn diagonally through it.

_____

___
2
C. The question contains the statement "with one exception", indicating that one of the components is not connected in series. State the name of the component and for an extra mark explain why it is not connected in series.

_____

_____

___
2
D. The component at the top of the circuit consists of 2 "entities" each containing a long line and a shorter line. State the name of this component and also state what it would be if there was only one entity not two

_____

_____

_____

___
1
2. A simple series circuit consists of a 6 V power supply, an ammeter and 3 resistors of 6, 3 and 7 ohms respectively. Calculate the current through this circuit.

_____

_____

_____

___
2

3. A simple series circuit consists of a 6 V power supply, an ammeter and 3 resistors of 6, 3 and 7 ohms respectively. Calculate the potential difference across the 6 ohm resistor. You will first need to calculate the current in the circuit.

_____

_____

_____

_____

___
4

4. The circuit shown has a 7 ohm resistor and a filament lamp in series. Ammeter A reads a constant value of 1.5 A.
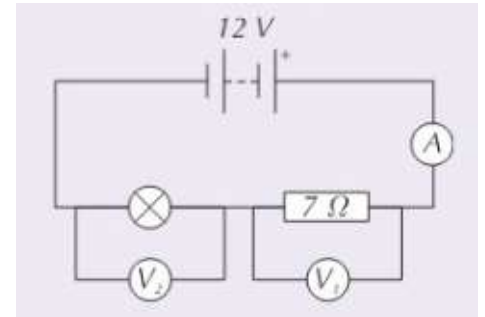
___
1

A. What is the current through the filament lamp?

_____

_____

___
1

B. What potential difference will voltmeter V1 measure?

_____

_____

_____

___
1

C. What potential difference will voltmeter V2 measure?

_____

_____

_____

_____

___
1

D. What is the resistance of the filament lamp?

_____

_____

_____

___
8

5. In a (A)_____ circuit the (B)_____ difference increases when more cells are connected in series, provided that the cells are all (C)_____ the same way. The total potential (D)_____ of the supply is (E)_____ between the various (F)_____ so that the potential differences around a series circuit always (G)_____ up to equal the (H)_____ potential difference.

connected	*series*	*source*	*potential*	*shared*
components	*add*	*difference*		

___
5

6. Read the statements below and decide which are true and which are false.

A. (T) (F) The current through each component in a series circuit depends on the resistance of the components concerned.

B. (T) (F) The sum of the resistances of components in a series circuit makes the total resistance of the circuit.

C. (T) (F) Adding resistors in series decreases the overall total resistance of the circuit.

D. (T) (F) In series circuits, the same current flows through all parts of the circuit.

E. (T) (F) The total potential difference from the power supply is shared between all components connected in series.

___
1

7. A simple series circuit consists of a 6 V battery, an ammeter connected in series (as it will always be) and 3 resistors connected in series each of 6 ohms, 3 ohms and 7 ohms respectively.

What is the total resistance of this circuit?

_____

_____

___
1

8. Match the component or property with its corresponding description. You can write the letter of the definition alongside the letter of the item you're describing (on the small horizontal line provided) or draw lines connecting the item with its description, either will be accepted.

A. ____ Series circuit

a. This is the unit of measurement for current

B. ____ Potential difference

b. This is the unit of measurement for potential difference

C. ____ Ampere

c. This is a feature of the circuit by which the flow of current is opposed

D. ____ Volt

d. In this, the different components are all connected in a line end-to-end

E. ____ Resistance

e. This can be thought of as the driving force that pushes charge around the circuit