5 Basic ideas of electricity

5.1 Electric current and source

1 Which one of the following statements about atom is **not** true ?

A An atom is extremely small
B An atom has a nucleus
C An atom has electrons
D An atom has no mass

2 What is an electric current made up of ?

A static charges B moving charges C atoms D molecules

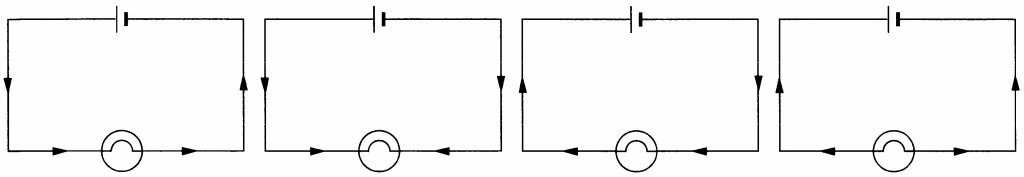
3 Electricity is a flow of

A atoms B electrons C neutrons D molecules

4 The conventional current flows

A from the positive terminal of a battery to the negative terminal of the battery
B from the negative terminal of a battery to the positive terminal of the battery
C in a clockwise direction
D in an anti-clockwise direction

5 Which one of the following circuit diagrams shows correctly the direction of flow of conventional current?



Answer: A

6 Current flowing in a copper wire is actually a flow of

A copper atoms B copper ions C nucleus D electrons

7 Copper is commonly used for making electric wires because

A it is a good conductor of electricity
B it is a cheap metal
C it is a heavy metal
D it is an active metal

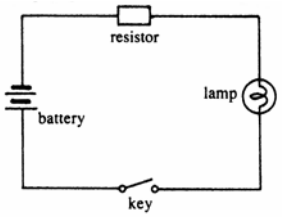
8 Which one of the following is a conductor of electricity ?

A Bakelite B Carbon C Porcelain D Mica

9 A bicycle lamp gets its source of electricity from a

A dry cell B accumulator C battery D dynamo

10 The following figure shows an electrical circuit. The lamp lights up when switch is closed. What drives the current through the circuit ?



A Switch B Cell C Electrons D Atoms

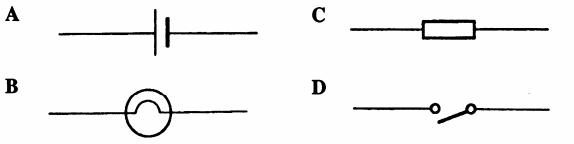
11 Answer: A

5.2 Simple electrical circuits

1 At home, electric bulbs are usually connected

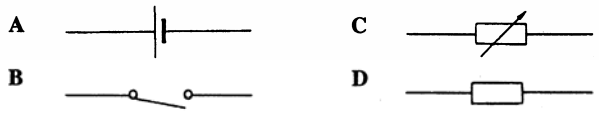
A in series B in parallel C to a battery D to a resistor

2 What is the symbol for resistor?



2 Answer: C

3 The correct symbol for a switch is

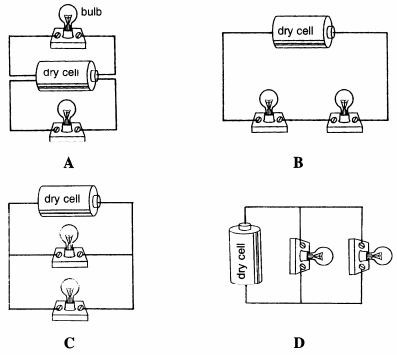


3 Answer: B

4 A series circuit has

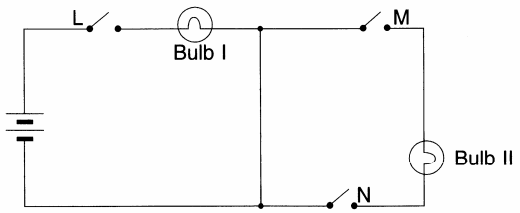
A no paths for the current to flow
B only one path for the current to flow
C only two paths for the current to flow
D one or more paths for the current to flow

5 In which of these circuits are the bulbs connected in series?



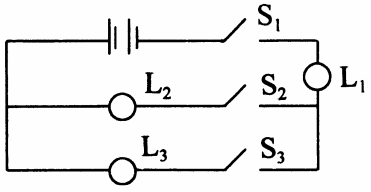
5 Answer: B

6 In the circuit below which switches L, M or N must be closed for bulb 1 only to light up?



A Switch L only B Switch L and M C Switch L and N D Switch L, M and N

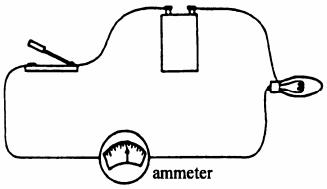
7 The diagram shows a circuit consisting of three lamps and three switches. Which of the following switches should be closed to light L_1 and L_3 but not L_2 ?



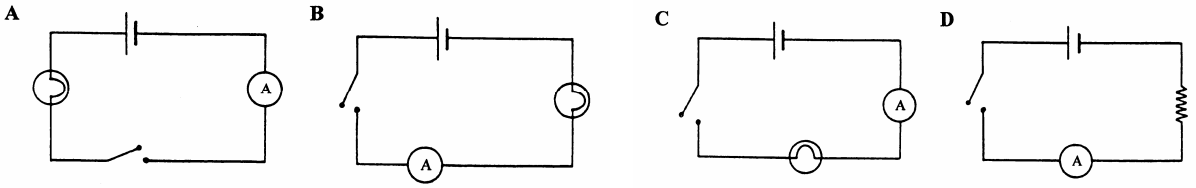
A S_1 and S_2 only B S_1 and S_3 only C S_2 and S_3 only D S_1, S_2 and S_3

5.2 Simple electrical circuits

8 An electric circuit is connected as shown in the diagram.

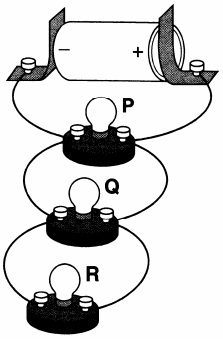


Which circuit diagram shows the correct representation of the above circuit?



8 Answer: B

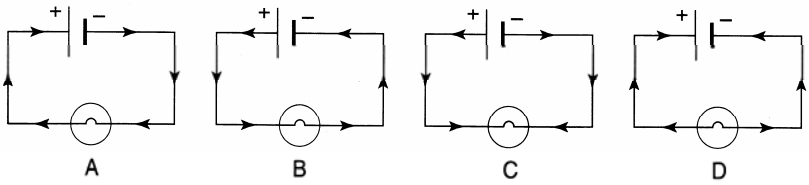
9 The diagram shows an electrical circuit (98)



If bulb **P** is removed, then

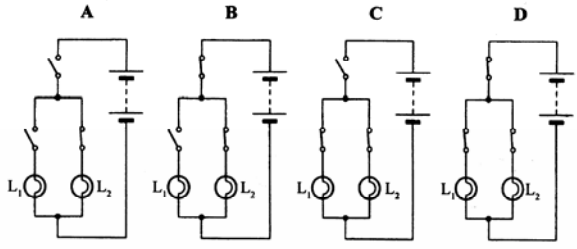
A bulb **Q** will not light up
B bulb **R** will not light up
C both bulb **Q** and bulb **R** will not light up
D both bulb **Q** and bulb **R** stay bright

10 Which of the following circuit diagrams shows the **correct** direction of the flow of **electrons**? (99)



10 Answer: A

11 In which of the following circuits does only lamp L_2 light?



11 Answer: B

12 Three bulbs are connected in series with a battery. One of the bulbs is removed. What would happen ?

A The two remaining bulbs light up
B Only one of the bulbs lights up
C The two remaining bulbs do not light up
D One of the bulbs is brighter than the other

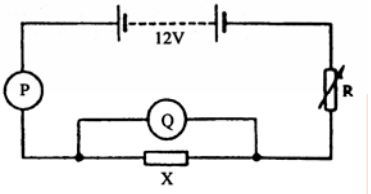
13 Answer: C

14 No Answer: incomplete info

15 Answer: A

5.3 Use of ammeters and voltmeters

Questions 1 and 2 refer to the following circuit diagram.



1 Which one is the ammeter?

A P B Q C R D X

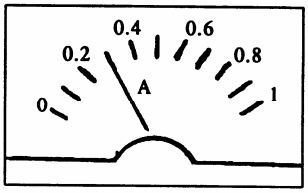
2 Which one is the voltmeter?

A P B Q C R D X

3 Which one of the following shows the correct units for current, voltage and resistance?

	Current	Voltage	Resistance
A	volt	ampere	ohm
B	ohm	volt	ampere
C	volt	ohm	ampere
D	ampere	volt	ohm

4 The diagram below shows an ammeter.

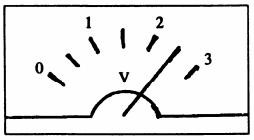


What quantity is measured using an ammeter?

A voltage B current C resistance D power

5.3 Use of ammeters and voltmeters

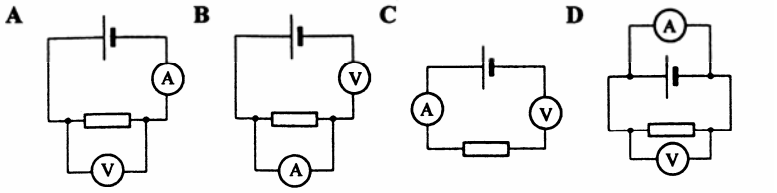
5 The diagram below shows a voltmeter.



What is the reading of the voltmeter and what is the quantity measured?

	Voltmeter reading	Quantity measured
A	2.5V	current
B	2.5V	voltage
C	5.0V	current
D	5.0V	voltage

6 Which circuit diagram shows the correct connection for ammeter and voltmeter?



6 Answer: A

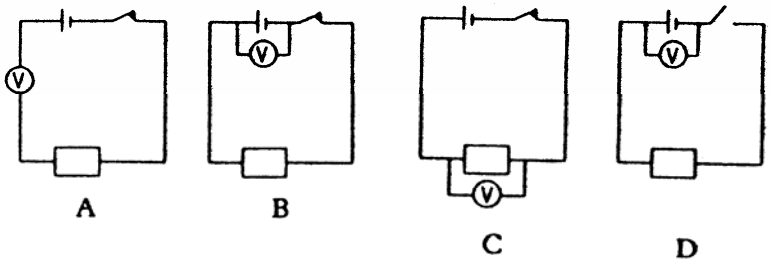
7 To measure the current in an electrical component, an ammeter is connected

A in parallel to the component
B in series to the component
C in series to the electrical source
D in parallel to the electrical source

8 To measure the voltage across an electrical component, a voltmeter is connected

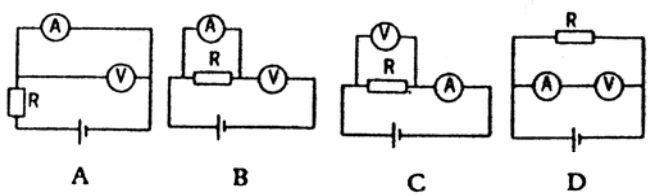
A in parallel to the component
B in series with the component
C in series with the electrical source
D in parallel to the electrical source

9 In which one of the following circuits is the voltmeter showing the voltage of the cell ?



9 Answer: B

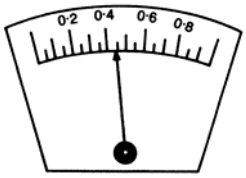
10 Ahmad wants to measure the current and voltage across the resistor R. Which one of the following is the correct circuit for the above measurement?



10 Answer: C

5.3 Use of ammeters and voltmeters

11 The figure shows an ammeter scale. What is the amount of current passing through the meter?



A 0.4A B 0.5A C 0.45A D 0.6A

12 In Brunei, electrical energy is supplied to our homes at a voltage of

A 50V B 230V C 110V D 500V

13 Answer: D

14 Answer: A

5 Basic ideas of electricity

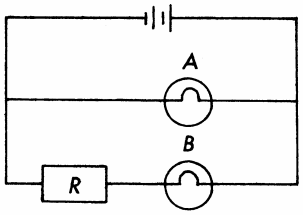
1 Complete the following table by drawing the appropriate circuit symbols.

(a)	(b)	(c)
Two bulbs in parallel	Three cells in series	A switch

2 Draw the appropriate circuit symbols in the following table.

(a)	(b)	(c)	(d)
An ammeter	A voltmeter	A resistor	Two bulbs in series

3 Two identical bulbs A and B are connected as shown.



(a) Which bulb, A or B, is brighter ? Explain.

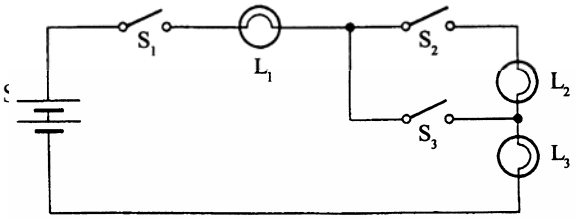
……..

(b) State the type of connection between

(i) bulb A and bulb B …….

(ii) resistor R and bulb B …….

4 The following circuit diagram shows three similar lamps, L_1, L_2, L_3 and three switches, S_1, S_2, S_3

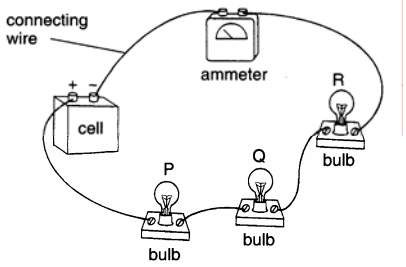


In the following table, state which lamps, if any, will be lit for each of the following conditions

switch S_1	switch S_2	switch S_3		lamps on
closed	Open	Closed		
closed	Open	Open		
open	Closed	Closed		
closed	Closed	Open		

5 Basic ideas of electricity

5 (a) Draw a circuit diagram for the following circuit. Label the bulbs P, Q and R.



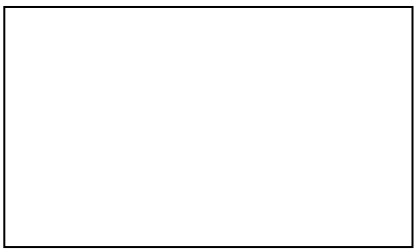
(i) How are the bulbs arranged in this circuit? …….. …

(ii) If bulb P is removed and circuit reconnected, how would this affect the brightness of bulb Q and R ?

Brightness of bulb Q ……. Brightness of bulb R ……..

(b) Draw a circuit diagram for the following circuit. Label the bulbs P, Q and R.

science 2 federal test papers
presscott pg 84Q 5b



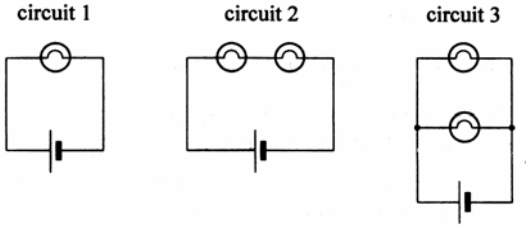
(i) How are the bulbs arranged in this circuit? …….. …

(ii) If bulb R is removed, how would this affect the brightness of bulb Q and P ?

Brightness of bulb Q ……. Brightness of bulb P ……..

5 Basic ideas of electricity

6 The following diagrams show three electrical circuits. The battery has the same voltage in each circuit.



(a) In which circuit will the lamp or lamps be brightest? ……..……

(b) State the type of connection of electric bulbs in

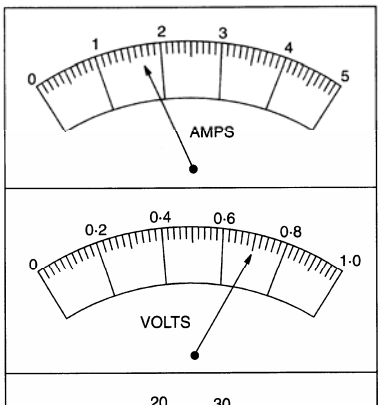
(i) circuit 2 …… (ii) circuit 3 …….

(c) On circuit 3, show by writing an X , where a switch could be placed to switch both lamps on and off at the same time.

7 (a) What are the readings on the following meters?

(i) The ammeter reading is …….. A

(ii) The voltmeter reading is ……. V



8

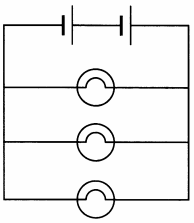
(iii) The milliammeter reading is …….. mA

8 Complete the table

Electrical Quantity		Unit	
Name	Symbol	Name	Symbol
(a)	I	ampere	
(b) voltage			V
(c)	R		Ω

Section C

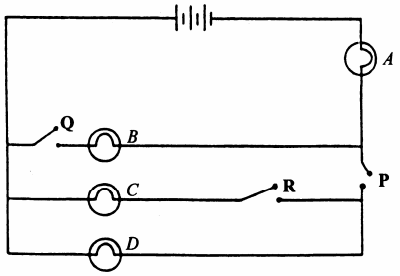
1 Look at the circuit diagram below.



(a) Show, on the diagram, using symbols, how you would connect,
(i) an ammeter to measure the total current through the cells,
(ii) a voltmeter to measure the voltage across one of the 3 bulbs.
(b) State the type of connection with reference to
(i) the cells, (ii) bulbs

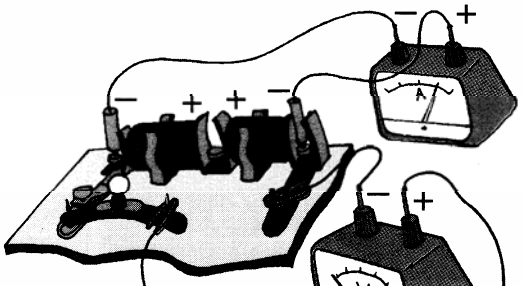
5 Basic ideas of electricity

2 Study the following circuit diagram.



(a) From the above diagram, state which bulbs will light up when
(i) switches Q and P are closed,
(ii) switches R and P are closed,
(iii) only P is closed
(b) If the three lamps in the above circuit are identical, state the brightness on the three bulbs when all are lit.

3 A student set up the circuit shown in the diagram. She wanted to measure: (i) the current through the bulb, and (ii) the voltage across the cells. But the circuit is wrong.



(a) List the four mistakes.
(b) Draw the correct circuit diagram.

4 Draw a circuit diagram to show how two dry cells, a switch and a bulb are connected in series.In the diagram include an ammeter to measure the current and a voltmeter to measure the voltage across the bulb.

5 Draw a circuit diagram to represent the electrical circuit as shown.