Electricity – 2019 Nov

1. 0625/11/O/N/19/No.30

A teacher asks her class “What quantity can be recorded in volts?”.

Student 1 says “The potential difference across a resistor”.

Student 2 says “The rating of a fuse”.

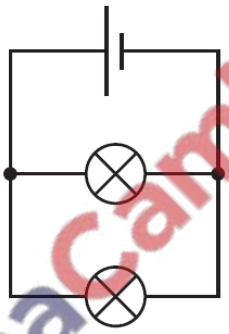
Student 3 says “The electromotive force of a battery”.

Which students are correct?

A 1 only **B** 1 and 2 **C** 1 and 3 **D** 2 and 3

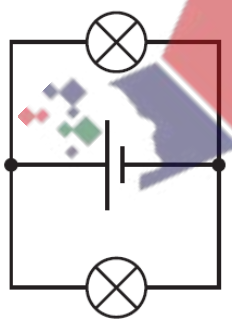
2. 0625/11/O/N/19/No.31

The circuit shows two lamps connected to a d.c. supply.

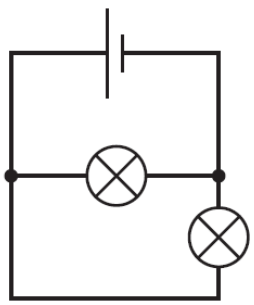


The same lamps and power supply are arranged in different ways, as shown.

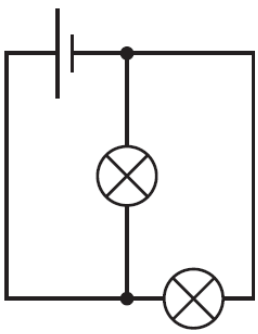
P



Q



R

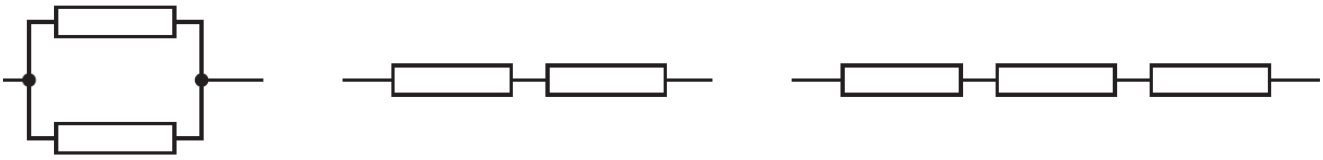


In which circuits will the lamps be the same brightness as in the original circuit?

A Q only **B** P and Q only **C** P and R only **D** P, Q and R

3. 0625/11,12,13.21,22,23/O/N/19/No.32,30,29

Identical resistors are connected together to form arrangements X, Y and Z.



X Y Z

What is the correct order of the resistances of the arrangements from the largest to the smallest?

A X → Y → Z

B Y → X → Z

C Z → X → Y

D Z → Y → X

4. 0625/11,12,21,22,23/O/N/19/No.34,33,34,33

Where must a fuse be connected in a mains electric circuit?

A the earth wire only

B the live wire only

C the neutral wire only

D the live wire and the earth wire

5. 0625/12/O/N/19/No.30

Which quantity has the same unit as potential difference (p.d.)?

A current

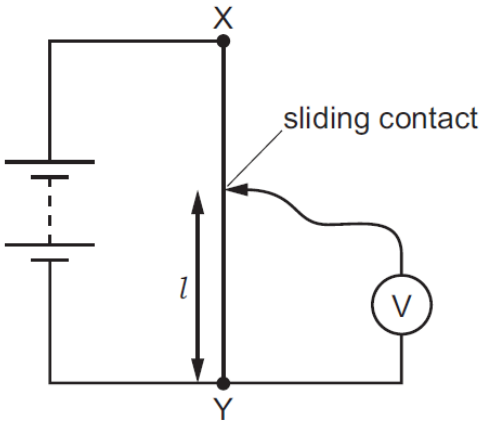
B electromotive force (e.m.f.)

C resistance

D moment of a force

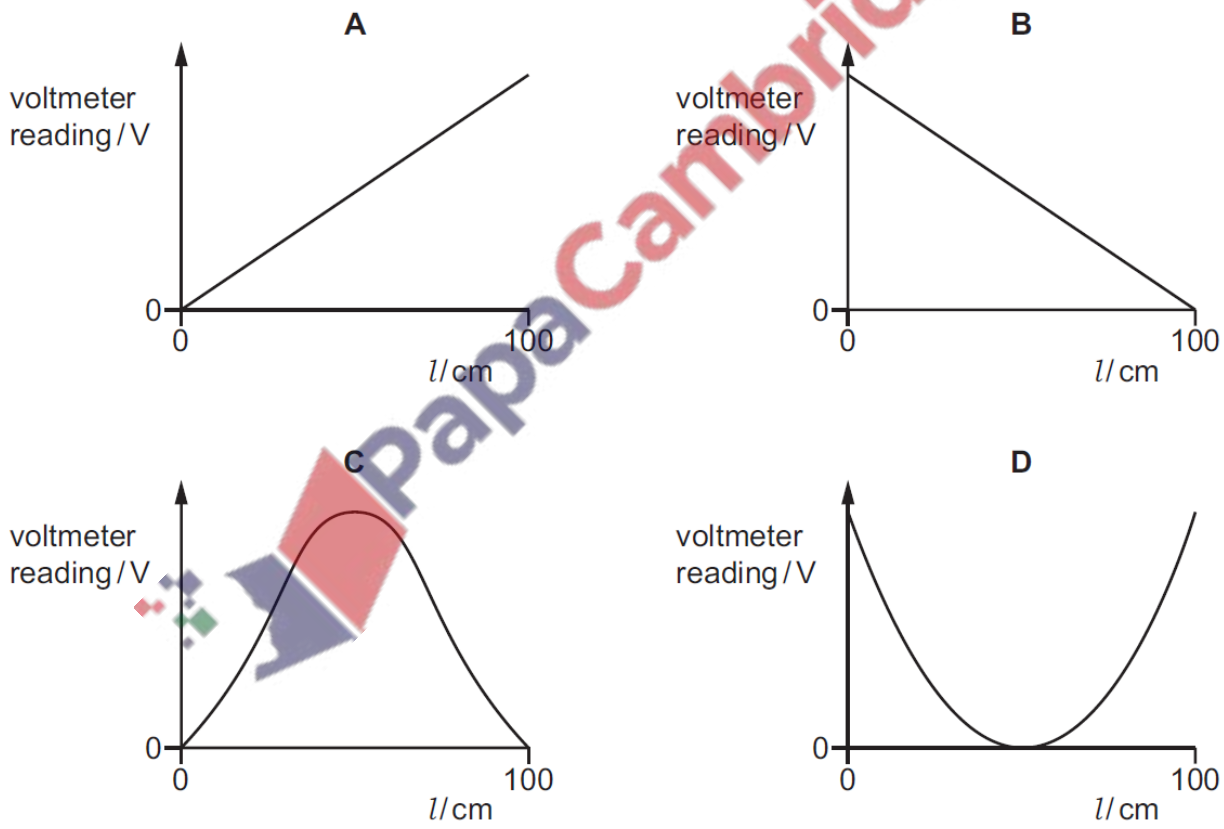
6. 0625/11/O/N/19/No.33

A student uses 100 cm of resistance wire XY in a circuit to make a potential divider.



He changes the length of wire l by moving the sliding contact along the resistance wire.

Which graph shows how the voltmeter reading changes as the length of wire l is increased from zero to 100 cm?



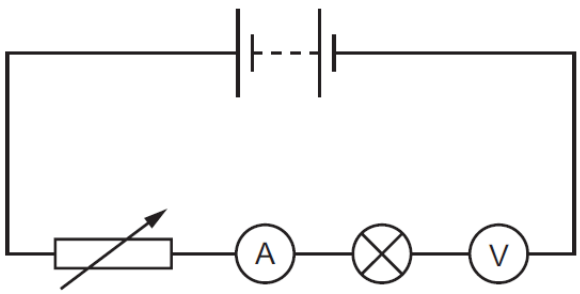
7. 0625/12/O/N/19/No.31

A student determines the resistance of an electric lamp.

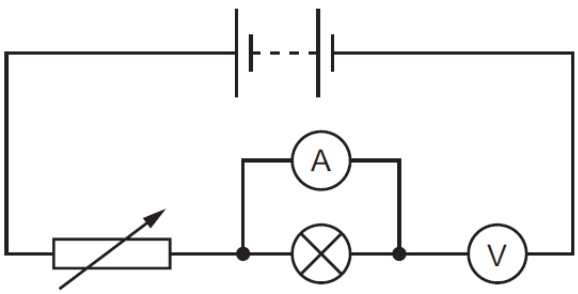
He measures the current in the lamp and the potential difference (p.d.) across it.

Which circuit did he use?

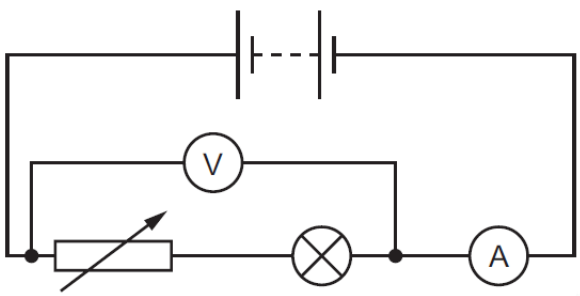
A



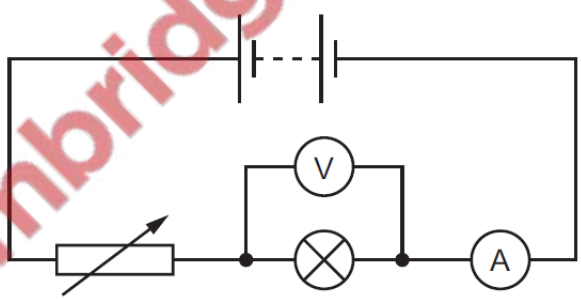
B



C

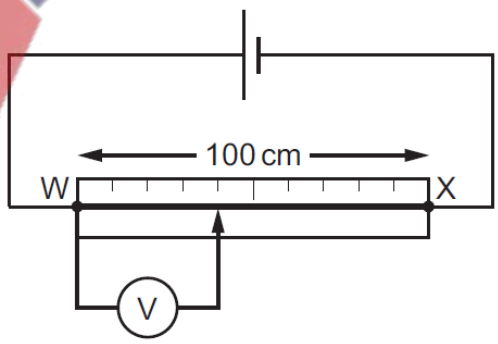


D



8. 0625/12/O/N/19/No.33

The circuit shows a wire WX connected to a cell.



The potential difference (p.d.) between W and X is 1.5 V.

What is the reading on the voltmeter?

A 0.4 V **B** 0.6 V **C** 0.9 V **D** 4.0 V

9. 0625/12/O/N/19/No.34

Where must a fuse be connected in a mains electric circuit?

A the earth wire only

B the live wire only

C the neutral wire only

D the live wire and the earth wire

10. 0625/13/O/N/19/No.30

A resistor is connected to a battery. There is a current in the resistor.

What is the main energy change?

A Chemical energy is converted into thermal energy.

B Chemical energy is converted into gravitational potential energy.

C Nuclear energy is converted into thermal energy.

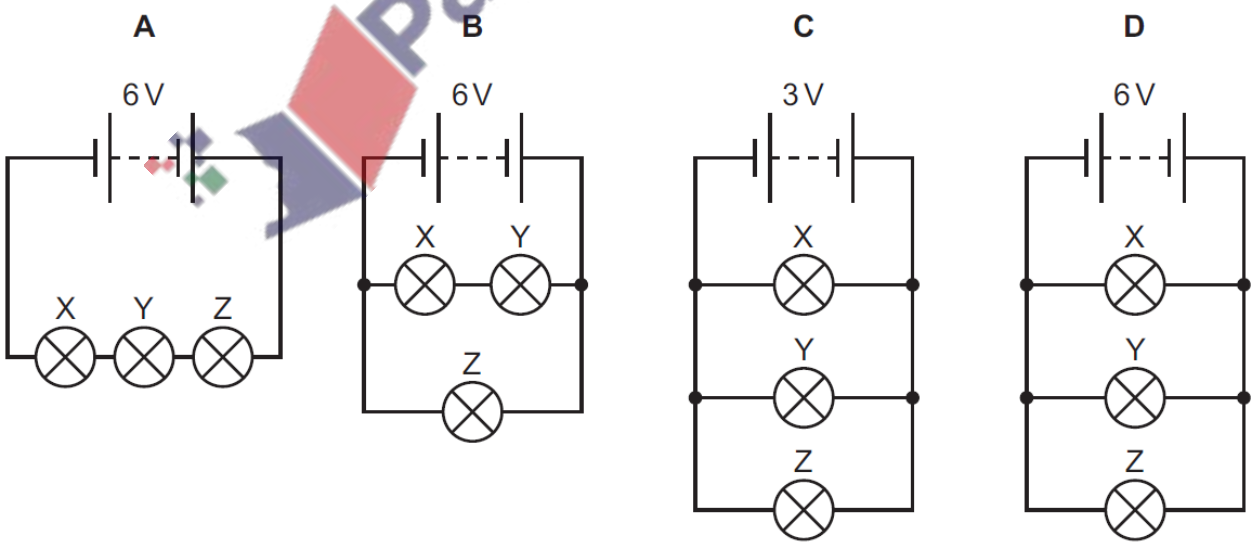
D Nuclear energy is converted into gravitational potential energy.

11. 0625/13/O/N/19/No.31

Lamps X and Y are designed to operate at normal brightness when each are connected to a 3.0 V supply.

Lamp Z is designed to operate at normal brightness when connected to a 6.0 V supply.

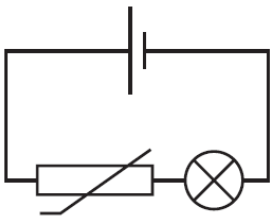
In which circuit do all three lamps operate at normal brightness?



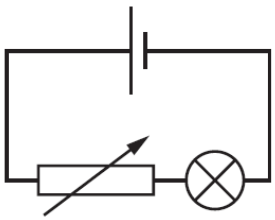
12. 0625/13/O/N/19/No.33

Which circuit shows a variable resistor used to control the brightness of a lamp?

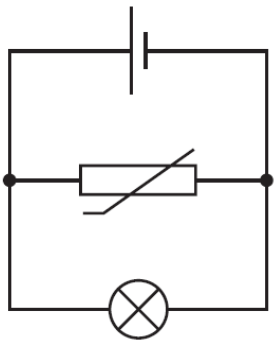
A



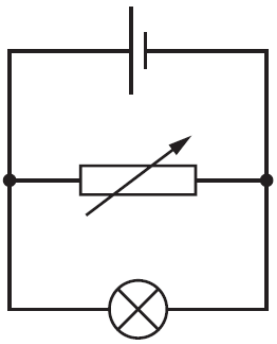
B



C



D



13. 0625/21/O/N/19/No.28

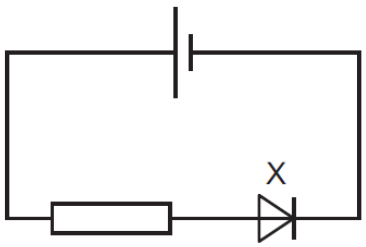
A circuit contains a cell of electromotive force (e.m.f.) of 2.0 V. The current in the circuit is 2.0 A.

How much energy is converted by the cell in 2.0 minutes?

A 2.0 J **B** 4.0 J **C** 8.0 J **D** 480 J

14. 0625/21/O/N/19/No.29

The circuit diagram shows a cell connected in series to a resistor and a component X.



What is component X?

A bell

B diode

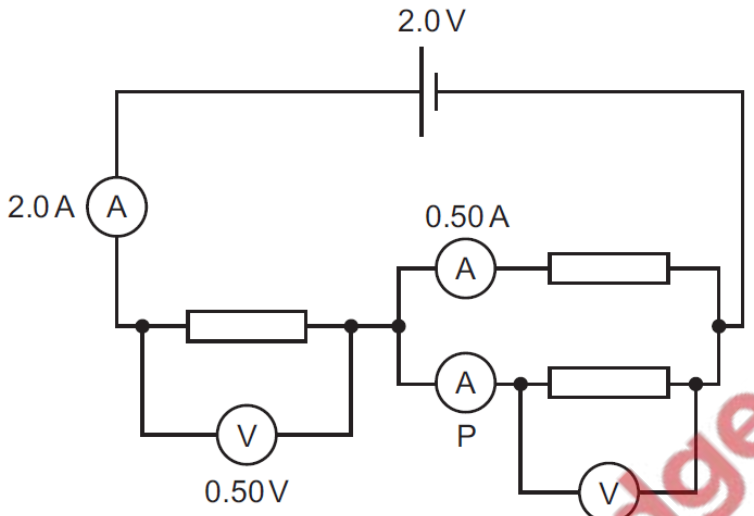
C heater

D thermistor

15. 0625/21/O/N/19/No.31

A circuit contains a cell of electromotive force (e.m.f.) 2.0 V, three resistors, three ammeters and two voltmeters. One ammeter is labelled P and one voltmeter is labelled Q.

The readings on the other two ammeters and on the other voltmeter are shown.



What is the reading on ammeter P and what is the reading on voltmeter Q?

	reading on P / A	reading on Q / V
A	1.5	1.5
B	1.5	2.5
C	2.5	1.5
D	2.5	2.5

16. 0625/21/O/N/19/No.34

A student investigates the output voltage induced across a coil of wire by a bar magnet.

When will the induced voltage have the greatest value?

A The student slowly moves the bar magnet into the coil of wire.

B The student leaves the bar magnet stationary in the coil of wire.

C The student quickly removes the bar magnet from the coil of wire.

D The student places the bar magnet at rest outside the coil of wire.

17. 0625/22/O/N/19/No.29

There is a current of 2.0 A in a resistor for 30 s. The potential difference (p.d.) across the resistor is 12 V.

How much energy is transferred in the resistor?

A 1.25 J **B** 5.0 J **C** 180 J **D** 720 J

18. 0625/22/O/N/19/No.31

Resistors of 1.0 Ω, 2.0 Ω and 3.0 Ω are connected in parallel with a cell.

Which statement is correct?

A The current in each resistor is different but the potential difference (p.d.) across each resistor is the same.

B The current in each resistor is the same but the potential difference across each resistor is different.

C The potential difference across the 3.0 Ω is greater than the potential difference across the 1.0 Ω resistor.

D The sum of the potential differences across each resistor is equal to the electromotive force (e.m.f.) of the cell.

19. 0625/22/O/N/19/No.32

The diagram shows a circuit component.

What is it used for?

A to allow current in one direction only

B to change the direction of the current

C to emit light when there is a current

D to increase the size of the current

20. 0625/23/O/N/19/No.28

There is a current of 3.0 A in a resistor for time t. During time t, a charge of 120 C flows through the resistor.

What is time t?

A 0.025 minutes

B 0.025 s

C 40 minutes

D 40 s

21. 0625/23/O/N/19/No.30

Resistors of resistance 1.0 Ω, 2.0 Ω and 3.0 Ω are connected in parallel across the terminals of a cell.

Which statement is correct?

A The currents in the resistors are equal.

B The sum of the currents in the three resistors is equal to the current in the cell.

C The sum of the potential differences (p.d.'s) across the resistors is equal to the electromotive force (e.m.f.) of the cell.

D The potential difference across the 3.0 Ω resistor is greater than the potential difference across the other two resistors.

22. 0625/23/O/N/19/No.31

Diagram 1 shows a circuit containing an a.c. power supply, an unknown component X and a fixed resistor.

The graph in diagram 2 shows how the potential difference (p.d.) across the resistor varies with time.

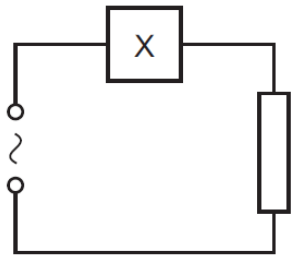


diagram 1

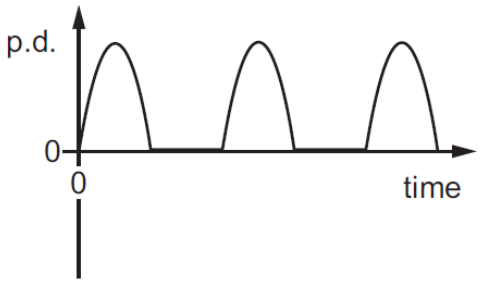


diagram 2

What is component X?

A thermistor

B relay coil

C diode

D light-dependent resistor