

Unit 8 Making use of electricity

A Multiple-choice questions

1. A
2. D
3. C
4. A
5. D
6. C
7. D
8. B
9. C
10. D
11. D
12. A
13. C
14. C
15. A
16. B
17. D
18. B
19. A
20. A

B True or false questions

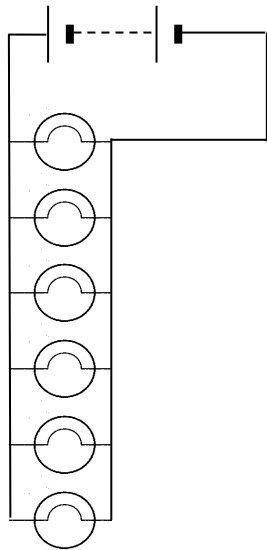
1. T
2. F
3. T
4. F
5. T
6. T
7. T
8. T
9. F
10. T

C Fill-in-the-blanks

1. conductors
2. Insulators
3. current
4. rheostat
5. filament
6. fuse
7. Circuit breaker
8. voltage, current
9. electric shock
10. magnetic effect / magnetic force

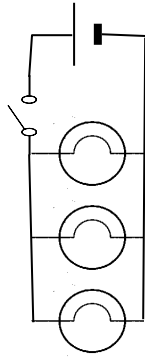
D**Short questions**

1. $458 / 60 \times \$0.86 = \6.56
2. TV set: $1 \text{ kW h} / 0.15 \text{ kW} = 6.67 \text{ hours}$
Air-conditioner: $1 \text{ kW h} / 1.8 \text{ kW} = 0.556 \text{ hours}$
3. Bulbs X and Y will still light up and their brightness will be the same.
4. The whole series of light bulbs will go out if a bulb is blown out. Such problem can be avoided by connecting the bulbs in parallel.



5. a) Bulbs X and Y will light up.
b) No bulbs will light up.
6. When there is an electric current passing through the coil, a magnetic force is generated which can attract scrape cars since they are made of metal iron.

7.



8. Position A.

We can connect a rheostat in series to the circuit to change the brightness of the bulb continuously.

9. The socket may be overloaded. It may cause fire.

The rubber of a cable is damaged. The person may get an electric shock.

The hand is wet when the person touches the plug. The person may get an electric shock.

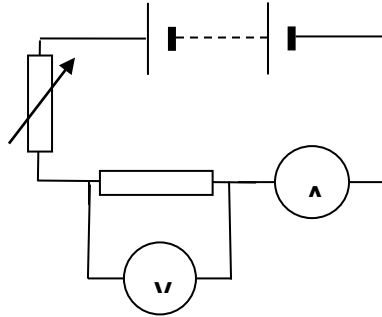
10. Heater, water boiler, light bulb, rice cooker, hot plate

(any THREE)

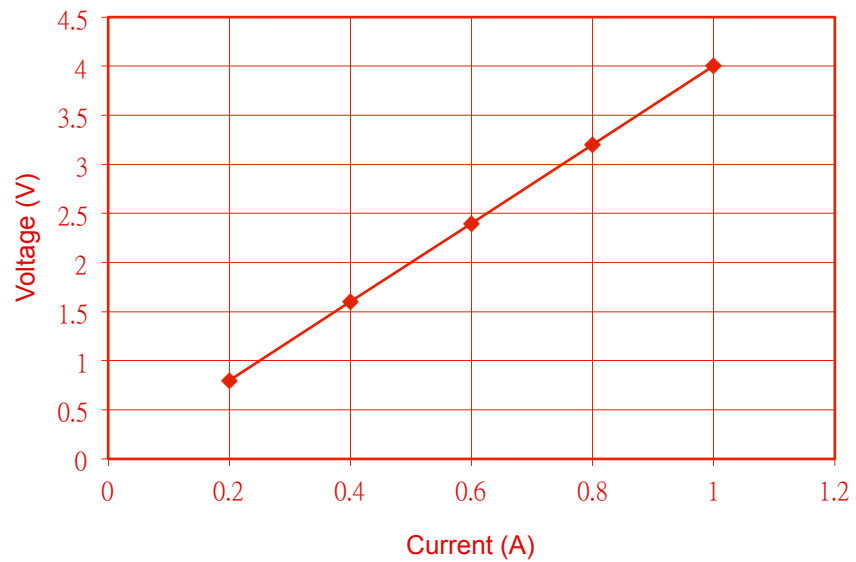
E Long questions

1.

a



b



c The voltage across the resistor increases when the current passing through the resistor increases.

d 2.75 V

2.

- a Series circuit
- b Parallel circuit
- c It is because the electric current can flow through the resistor in bulb Y and the circuit does not break.
- d Bulb X will not light up because the metal wire forms a short circuit in bulb X and hence no electric current flows through the filament of bulb X.
- e Advantage: If one bulb is blown out, other bulbs in the circuit will not be affected.

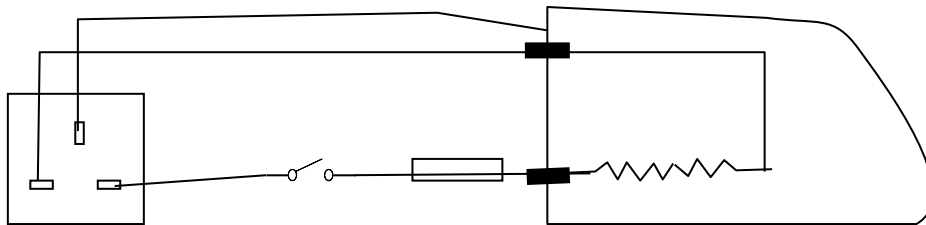
Disadvantage: It wastes more energy as some current passes through the resistor.

3.

- a Operating current of the iron = $10000 \text{ W} / 220 \text{ V}$
= 4.55 A

Hence the rating of the fuse is 5 A.

- b Earth wire: green and yellow
Live wire: brown
Neutral wire: blue
- c If the insulation at X and Y are worn out, current may flow between the wires through the metal case. It may cause electric shock.
- d



4.

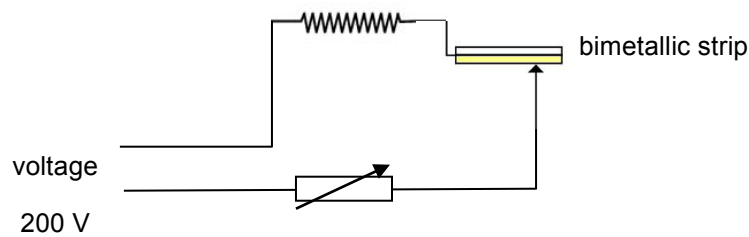
a Electrical energy is changed to heat energy.

b $1200 \text{ W} / 200 \text{ V} = 6 \text{ A}$

c To change the resistance of a circuit.

d To change the resistance of the circuit so as to change the magnitude of the current and hence the temperature of the hot plate.

e



5.

a Ring circuit / parallel circuit

b Advantage: If one electrical device is blown out, other devices will not be affected. / The live wire and neutral wire are branched so that the current passes along each path is smaller. Hence, the cables can be thinner and cheaper.

c Live wire – wire X

Neutral wire – wire Y

d The operating current of the device

$$= 1200 \text{ W} / 220 \text{ V}$$

$$= 5.45 \text{ A}$$

Hence, the rating of the fuse is 6 A.