

P2 Electricity Quiz

1. What is the frequency of the mains electricity supply in the UK?

50Hz

2. Give an advantage of using a RCCB to switch off a circuit rather than a fuse.

Faster acting, can be reset

3. How does an increase in temperature affect a thermistor?

Increase in temperature decreases resistance of thermistor

4. What is the difference between ac and dc current?

The dc flows in one direction, the ac changes direction twice per cycle

5. How do a fuse and the earth wire protect against an electric shock in a faulty metal kettle where the metal casing becomes live?

A current flows from the live wire to the earth wire and this current causes the fuse to melt

6. Describe the structure of a cable that is used to connect a hob to the mains electricity supply.

The cable must contain a live, neutral and earth wire and should be insulated with plastic

7. Define electric current.

Flow of charge/ electrons

8. Define potential difference.

Work done or energy transferred per coulomb of charge $V = W/Q$

9. Why does the resistance of a light bulb increase with p.d.?

Metals contain ions and free electrons. As temperature increases, ions vibrate faster and the electrons collide more often with the ions so their velocity decreases

10. Why is it dangerous to use a piece of aluminium as a fuse?

A large current will flow through aluminium metal but the aluminium will not melt so the wiring in the appliance might overheat and cause a fire.

11. Why do your hairs stand on end when you are connected to the Van de Graaff generator?

Because each hair has the same negative charge and negative charges repel

12. What name is given to the rate of flow of charge?

Current

13. Explain why it is a good idea for electricians to wear boots with rubber soles.

Rubber is a good insulator and it increases the overall resistance so gives a smaller shock

14. Fine powders poured through a pipe can become negatively charged. How?

Friction between powder and pipes causes electrons to transfer from the pipe to the powder

15. Place a charged rod on an insulated balance. Take a second charged rod and hold it above the rod on the balance. The reading on the balance increases. Why?

The two rods repel, creating a downwards force on the rod that is placed on the balance

16. Define double insulated.

The case of an appliance is made of plastic and there is no connection between the inner and outer insulated parts of the appliance.

17. How do you calculate the total resistance of two resistors in series?

Addition of both resistance values

18. What is the mains p.d. in the UK?

230V

19. What are the colours of the live, earth and neutral wire inside a 3 pin plug?

Live is brown, earth is yellow and green and neutral is blue

20. An appliance requires 5A. What size fuse do you use - 1, 3, 5 or 13A?

13A

21. How does the resistance of an LDR change with light intensity?

The higher the light intensity the lower the resistance

22. How does a spray gun work which is used to cover car panels in paint?

Each paint droplet is given the same charge so the droplets repel. The car panels are given the opposite charge. The droplets are attracted to the panels and cover the panels evenly

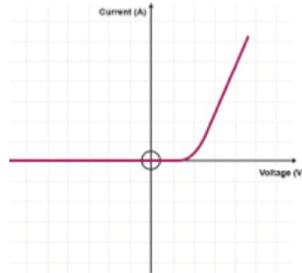
23. In a parallel circuit the potential difference across each component is.....

The same

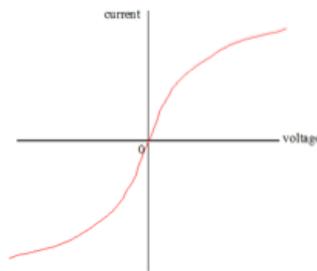
24. In a series circuit the potential difference of the power supply is....

Shared by the components

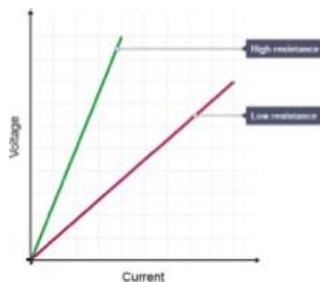
25. Draw a current-voltage graph for a diode.



26. Draw a current-voltage graph for a filament lamp.



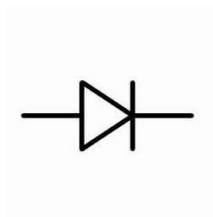
27. Draw a current-voltage graph for a metal wire.



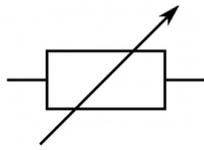
28. People working with computer chips are required to wear a special bracelet that is attached to a wire that joins to earth. Why?

So that any negative charge that builds up on the person can flow through the wire to earth.

29. What is the circuit symbol for a diode?



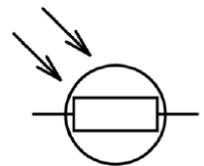
30. What is the circuit symbol for a variable resistor?



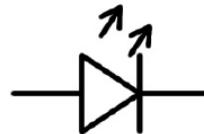
31. What is the circuit symbol for a thermistor?



32. What is the circuit symbol for an LDR?



33. What is the circuit symbol for an LED?



34. Where would you find a thermistor inside your home?

Inside a thermostat to control the heating

35. Which type of resistor is found in a circuit that automatically switches on lights when it gets dark?

An LDR