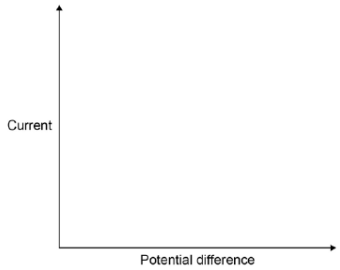
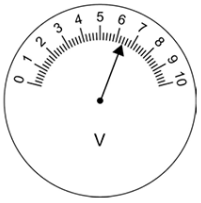
1 Mark Questions

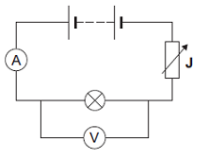
1. Write down the equation that links current, potential difference and resistance.
2. Sketch a current-potential graph for a filament bulb.



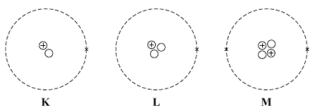
3. Metals are good conductors of electricity because electrical charge is transferred by?
4. What is the purpose of a step-down transformer?
5. Write down the equation that links efficiency, useful input energy transfer and useful output energy transfer.
6. Why must the total input energy into an appliance equal the output energy?
7. What is the reading on the voltmeter?



8. What happens to wasted energy from a lightbulb?
9. Why are wind turbines not reliable?
10. When the resistance in a circuit increases the current…….?
11. What is the function of component J?



12. What colour is the insulation around the wire connected to the live pin inside the plug?
13. Why does a hairdryer not need an Earth wire?
14. What is an electric current?
15. Write down the equation that links kinetic energy, mass and speed.
16. What is the unit for radiation?
17. The release of radiation is not constant. How should it be described?
18. If eaten, which type of radiation would not be detectable outside the body?
19. Which of the two atoms below are isotopes of the same element?



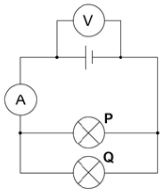
20. What type of radiation is being emitted?

$$^{230}_{90}\text{Th} \longrightarrow {}^{226}_{88}\text{Ra} + \boxed{\text{Radiation}}$$

21. How can radioactivity harm our bodies?

2 Mark Questions

1. If the resistance of a variable resistor in a series circuit is increased, what will happen to the bulb in the circuit? Explain why.
2. The reading on the ammeter is 186mA.
   a) What is the current flowing through P?
   b) What is the current flowing through Q?



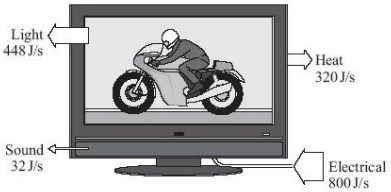
3. Why are step-up transformers used in the national grid?

4. In a power station 900 MJ of thermal energy were released by burning natural gas. Only 405 MJ was generated. Calculate the efficiency of this energy transfer.

5. When the potential difference across the lamp is 3.3 V the current is 0.15 A. Calculate the resistance of the lamp in the student's experiment.
   V=IR rearranged R = V/I

6. Give one advantages and one disadvantage of using nuclear power rather than gas fired power stations.
7. Why does leaving appliances on standby damage the environment?

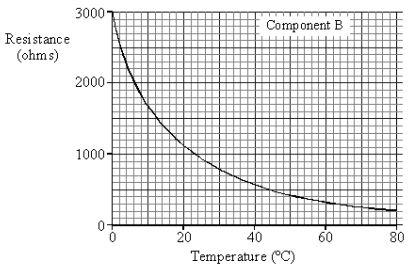
8. Calculate the efficiency of the TV using the diagram



9. The car has a top speed of 12 m / s and a mass of 800g. Calculate the maximum velocity of the car.

3 Mark Questions

1. The graph shows how the resistance through a component changes as the temperature changes.



Describe in as much detail as possible what happens to resistance when the temperature changes.

4 Mark Questions

1. Describe the difference between the solid and gas states, in terms of their arrangement and movement of their particles.

2. The graph shows how the temperature varies with time for a substance as it is heated.
   Describe what is happening between:
   A-B:

   B-C: