

Physics - Key stage 4 - Magnetism

Electromagnetic Devices

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Understanding the Alternator

1. What type of electricity, **alternating current or direct current**, is generated by an alternator?
2. How many slip ring commutators are there and why?
3. How will the coil be lined up with the magnetic field when the potential difference is *highest* - **parallel** or **perpendicular**?
4. Explain you previous answer.
5. How will the coil be lined up with the magnetic field when the potential difference is *zero* - **parallel** or **perpendicular**?
6. Explain you previous answer.
7. Why does the potential difference reverse?
8. Draw a graph of the potential difference against time for the alternator



Understanding the Dynamo

1. What type of electricity, **alternating current or direct current**, is generated by an alternator?
2. What type of commutator does a dynamo have?
3. Why is the direction of the potential difference not reversed?
4. Draw a graph of the potential difference against time for the dynamo.
5. How many peaks shows a full rotation of the coil?



Understanding Loudspeakers

1. Which effect causes the movement of the cone?

Motor effect / generator effect

1. What causes the cone to vibrate?

2. What sort of magnet must be used - a permanent or induced magnet?

3. How will the frequency of the sound and the frequency of the alternating current be related?

4. If a louder sound is played, what can be said about the size of the alternating current that makes the cone move?



Understanding Microphones

1. Which effect causes an alternating current to be induced in the coil?

Motor effect / generator effect

1. What causes the cone to vibrate?

2. What sort of magnet must be used - a permanent or induced magnet?

3. How will the frequency of the sound and the frequency of the alternating current be related?

4. If a quieter sound is picked up by the microphone, what can be said about the size of the alternating current induced in the coil?



Exam question

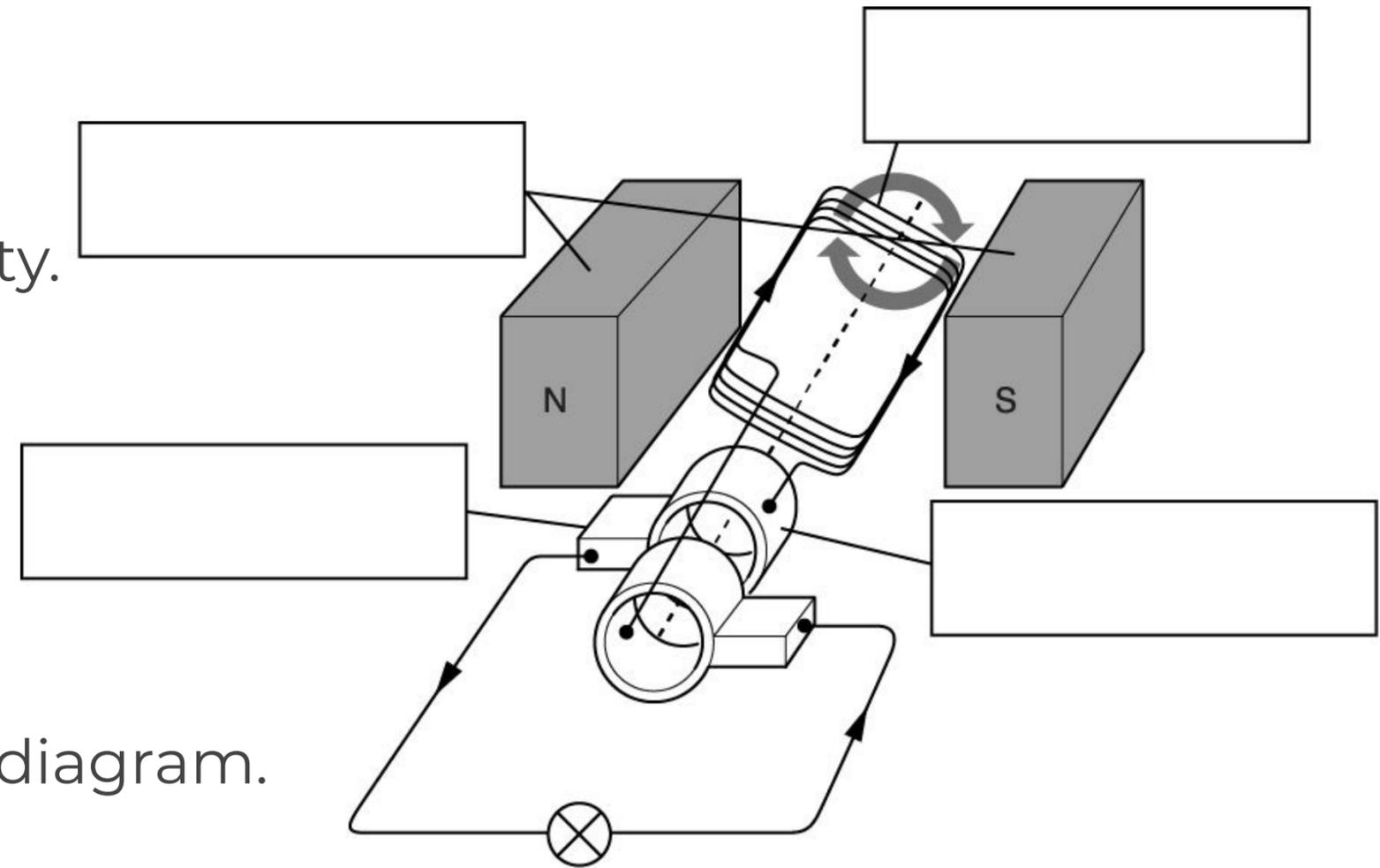
AC generators are used to generate electricity.

Here is a diagram of a small AC generator.

Label the four parts of the generator on the diagram.

Use the words

brush **coil** **magnet** **slip ring**



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Additional answers and guidance not checked by OCR



Exam question

Describe how a microphone works.

[2 marks]

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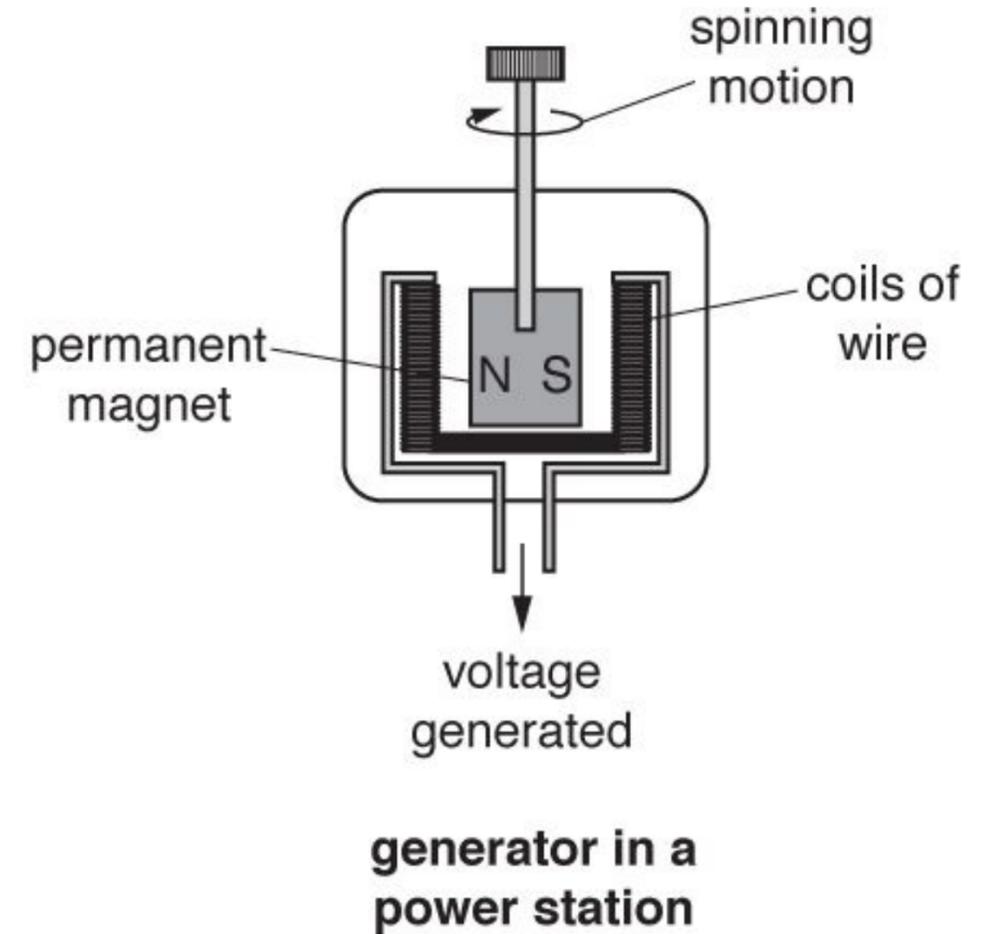
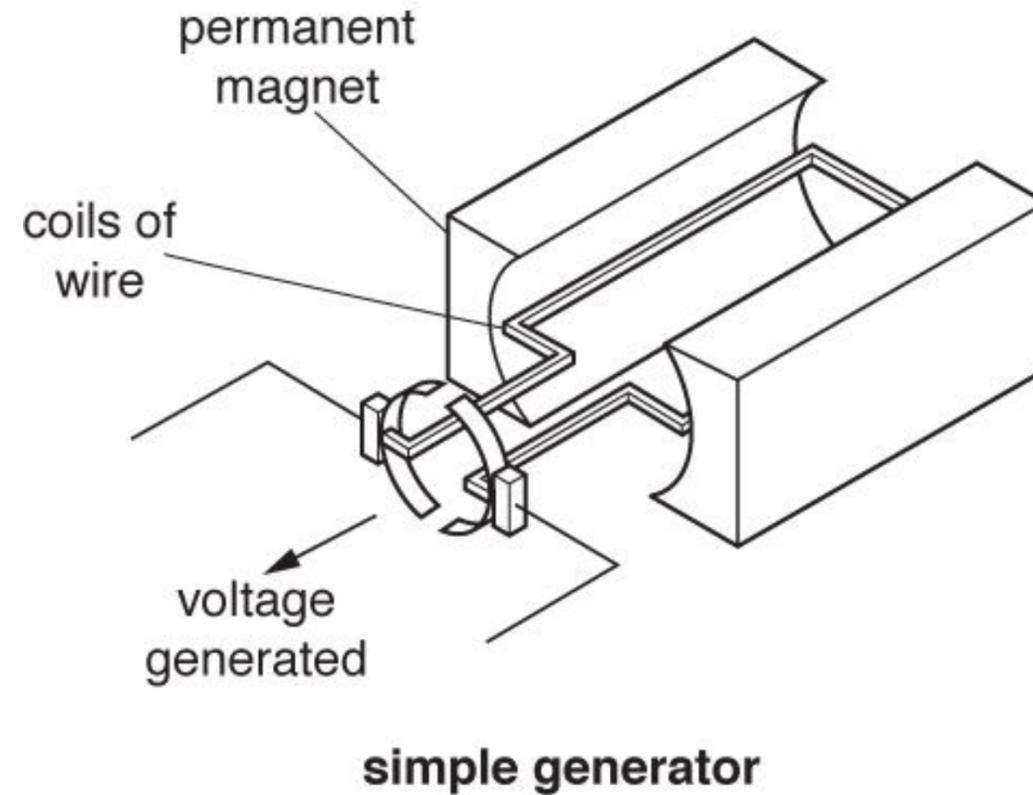
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Exam question

Tanya compares two generators

- a simple generator
- a generator in a power station.



Write about the similarities and differences in the way the two generators work.

Describe how the size of the voltage generated can be changed in the two generators.

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Additional answers and guidance not checked by OCR

