ASM TUITION ACADEMY

PHYSICS

YEAR 8

TOPIC: How Can Electromagnets Be Used?

TEST QUESTIONS

TOTAL MARKS: 55

TIME: 45 MINUTES

Section A: Multiple-Choice Questions

Choose the correct answer. (10 × 1 = 10 marks)

Q1. What is an electromagnet? [1]

A. A magnet that cannot be switched off
B. A magnet produced by an electric current
C. A magnet made only from plastic
D. A magnet that does not produce a magnetic field

Q2. What is usually found inside the coil of a useful electromagnet? [1]

A. A wooden core
B. A plastic core
C. A soft iron core
D. A glass core

Q3. What happens when the battery is disconnected from an electromagnet? [1]

A. The magnetic field can be switched off
B. The magnetic field always becomes stronger
C. The coil becomes a permanent magnet
D. The current increases

Q4. How can the strength of an electromagnet be controlled? [1]

A. By changing the size of the electric current
B. By changing the colour of the wire
C. By adding plastic to the coil
D. By removing the battery permanently

Q5. How can the direction of an electromagnet's magnetic field be reversed? [1]

A. By changing the shape of the battery
B. By swapping the battery connections

C. By removing the iron core only
D. By switching off the room lights

Q6. What does a scrap yard crane use an electromagnet to lift? [1]

A. Paper and cardboard only
B. Iron and steel waste
C. Plastic bottles only
D. Wooden blocks

Q7. What happens when current flows through the coil in a scrap yard crane? [1]

A. The iron disc becomes magnetised
B. The iron disc melts immediately
C. The crane loses its magnetic field
D. The coil stops conducting electricity

Q8. What causes the hammer in an electric bell to hit the gong? [1]

A. The iron core attracts the iron hammer when magnetised
B. The battery pushes the gong directly
C. The switch produces sound by itself
D. The coil becomes permanently magnetised

Q9. What causes sound in headphones, according to the notes? [1]

A. The interaction between a permanent magnet and an electromagnet causes vibration
B. The battery produces sound without any moving parts
C. The plastic earpiece vibrates because of sunlight
D. The permanent magnet switches off the current

Q10. Which of the following is an application of electromagnets? [1]

A. Electric bells
B. Wooden rulers
C. Glass windows
D. Plastic cups

Section B: Fill in the Blanks

Complete each sentence. (10 × 1 = 10 marks)

Q11. An electromagnet produces a magnetic field when an electric _____ flows through its coil. [1]

Q12. Most useful electromagnets consist of a coil and sometimes a soft _____ core. [1]

Q13. An electromagnet can be switched on or _____ by connecting or disconnecting the battery. [1]

Q14. The strength of an electromagnet can be controlled by varying the electric _____. [1]

Q15. Swapping the battery connections reverses the direction of the magnetic _____. [1]

Q16. A scrap yard crane uses an electromagnet to lift iron and _____ waste. [1]

Q17. In an electric bell, the iron hammer strikes the _____ to produce sound. [1]

Q18. Each earpiece in a set of headphones contains a permanent magnet and an _____. [1]

Q19. An electric bell contains a coil wrapped around a _____-shaped iron core. [1]

Q20. Electromagnets are used in loudspeakers, headphones and magnetic _____. [1]

Section C: Short-Answer Questions

Answer all questions. (35 marks)

Q21. What is an electromagnet? Describe how it produces a magnetic field. [4]

Q22. State and explain three advantages of electromagnets compared with permanent magnets. [4]

Q23. Explain how the strength of an electromagnet can be increased or decreased. [4]

Q24. Explain how a scrap yard crane uses an electromagnet to lift and release iron and steel waste. [4]

Q25. Describe how an electric bell works when its switch is pressed. [4]

Q26. Explain how the interaction between magnets in headphones helps produce sound. [4]

Q27. Name three applications of electromagnets other than scrap yard cranes. [3]

Q28. Explain how an electromagnet can be switched off and how its magnetic field can be reversed. [4]

Q29. A student connects a coil wrapped around a soft iron core to a battery. Answer the following questions. [4]

a) What happens to the iron core when current flows through the coil? [1]

b) What happens to the magnetic field when the battery is disconnected? [1]

c) What change can the student make to reverse the direction of the magnetic field? [2]