Automotive Electrical and Engine Performance 9th Edition
Chapter 9 – Magnetism and Electromagnetism
Multiple Choice Questions Quiz B

1. What is the primary principle that allows an ignition coil to generate high voltage?

a) Counter electromotive force

b) Self-induction

c) Mutual induction

d) Electromagnetic interference

2. What happens when a magnet is cracked?

a) It loses all magnetic properties.

b) It creates two weaker magnets, each with its own poles.

c) The flux lines become misaligned.

d) The residual magnetism is doubled.

3. Which material property determines how easily magnetic flux lines pass through it?

a) Reluctance

b) Permeability

c) Magnetic induction

d) Flux density

4. What is the purpose of the left-hand rule in electromagnetism?

a) To determine the direction of magnetic flux in a coil

b) To predict the current flow in a DC circuit

c) To identify the orientation of poles in a permanent magnet

d) To determine the magnetic field direction around a conductor

5. When using an electromagnetic relay, what enables the movable arm to complete the circuit?

a) The arm is pushed by mechanical pressure.

b) The coil generates a magnetic field that attracts the arm.

c) The relay uses residual magnetism to close the gap.

d) The current through the armature creates an electromagnetic loop.

6. Which of the following components can reduce electromagnetic interference in automotive circuits?

a) A resistance suppression cable

b) A suppression capacitor

c) A coil acting as an EMI filter

d) All of the above

7. In a bar magnet, magnetic flux lines:

a) Originate from the south pole and terminate at the north pole

b) Form parallel loops within the magnet

c) Exit from the north pole and return to the south pole

d) Spread randomly in all directions around the magnet

8. What role does Lenz’s law play in electromagnetic induction?

a) It explains why flux lines concentrate in permeable materials.

b) It describes how induced currents oppose the motion that creates them.

c) It ensures that magnetic poles always align with Earth's poles.

d) It predicts the behavior of alternating current in a transformer.

9. How can the magnetic field strength of an electromagnet be increased?

a) By using a plastic core instead of iron

b) By decreasing the number of turns in the coil

c) By increasing the current flow and the number of coil turns

d) By creating gaps in the coil winding

10. Which of the following best describes the operation of a solenoid in an automotive system?

a) It uses a magnetic field to open and close contacts.

b) It reduces voltage spikes caused by the alternator.

c) It creates AC voltage in the primary winding of an ignition coil.

d) It generates electromagnetic radiation to power electronic devices.

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Answer Key Quiz B

Correct Answers:

1. c

2. b

3. b

4. a

5. b

6. d

7. c

8. b

9. c

10. a