

Name _____

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

1) What is a DC-DC converter, and why is it needed in a hybrid electric vehicle?

2) How is an electrical current induced in a wire?

3) How does an AC synchronous motor work?

4) How does an AC induction motor work?

5) How is the operation of a brushless DC motor controlled?

Answer Key

Testname: HYBRID4_SHORT9

- 1) A DC-DC converter is used to convert the DC voltage from one level to another. A DC-DC converter is used to charge the 12-volt auxiliary battery from the high-voltage (HV) batteries.
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- 2) Whenever a magnetic field is moving near a conductor, such as a wire, a difference in voltage potential is created between the ends of the wire. If the wire is connected to a complete circuit, current will flow.
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- 3) The AC synchronous motor rotates exactly at the supply frequency or a submultiple of the supply frequency. The speed is controlled by varying the frequency of the AC supply and the number of poles in the stator winding.
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- 4) An AC induction motor works by using electromagnetic induction to create a magnetic field in the rotor which is wire wound.
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- 5) The operation of a brushless DC or AC motor is controlled by an electronic controller using input from the rotor position sensor or resolver to pulse the current through the stator windings. The speed is controlled by varying the frequency and the power is controlled by varying the voltage and the pulse width.
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