Automotive Steering, Suspension, and Alignment, 8th Edition
Chapter 10

Name_____

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

1) How does a Honda two motor/generator system work?

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2) What are the purposes of MG1 and MG2 in a Toyota hybrid system?

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3) What is the difference between a mild and full hybrid?

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4) How does a two-mode hybrid work?

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5) What are the differences in the operation of an automatic transmission that has been modified for use in a hybrid electric vehicle?

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1) The primary motor/generator propels the vehicle and recharges the high-voltage battery during deceleration. The secondary motor/generator is used to start the gasoline engine and supply electrical energy to the primary motor/generator or charge the high-voltage battery.
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2) In the power-split transaxle, a large electric motor/generator (MG2) is directly attached to the transaxle final drive and to the planetary ring gear. The ICE is connected to the planet carrier, and the small electric motor/generator (MG1) is connected to the sun gear. Each performs two functions: MG1- Starts the ICE and charges the HV battery. MG2- Propels the vehicle and recharges the HV battery (regen braking).
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3) A medium hybrid uses 144 to 158-volt batteries that provide for engine stop/start, regenerative braking, and power assist whereas a full hybrid is able to propel the vehicle using electrical power alone.
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4) The first mode is for accelerating from standstill to second gear. At low speed and light load, the vehicle can be propelled by:
• Either electric motor alone
• The internal combustion engine (ICE) alone
• Or a combination of the two (electric motor and/or ICE)
The second mode takes the vehicle from second gear through to overdrive. At higher loads and speeds, the ICE always runs. In the second mode, the motor/generators and planetary gear sets are used to keep torque and horsepower at a maximum.
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5) In order to adapt a conventional automatic transmission to a hybrid power train, an electric auxiliary pump is used to maintain fluid pressure in the transmission during internal combustion engine (ICE) idle stop.
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