Computerized Engine Controls 10th edition Hatch Test Bank

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Name:_____ Class:_____ Date:_____

Chapter 2
Computers in Cars

1. What decimal (base 10) value is represented by the binary code "10110011"?
   a. 14 b. 115
   c. 179 d. 243

ANSWER: c
POINTS: 1

2. What does a "baud rate" of 41,600 mean?
   a. 41,600 **bits** are communicated per **second** b. 41,600 **bits** are communicated per **minute**
   c. 41,600 **bytes** are communicated per **second** d. 41,600 **bytes** are communicated per **minute**

ANSWER: a
POINTS: 1

3. A scan tool is displaying the hexadecimal value for the binary code "1010000100111110". Which hex value is displayed on the scan tool?
   a. $A13E b. $1010
   c. $B2CF d. $A690

ANSWER: a
POINTS: 1

4. Which component is a memory type that allows the microprocessor to change the information that is stored in it?
   a. ROM b. PROM
   c. RAM d. CPU

ANSWER: b
POINTS: 1

5. Which component in an engine computer is a volatile memory and stores sensor input values until updated, strategy results, fuel trim data, and memory type fault codes?

   a. ROM b. PROM
   c. RAM d. CPU

ANSWER: c
POINTS: 1

6. Which of the following defines a computer input?
   a. Voltage & ground supplied to power up the computer
   b. A signal from a sensor that measures various conditions
   c. Stored information in memory that the computer uses in making decisions
   d. A command signal to a relay, a motor, or a solenoid

ANSWER: b
POINTS: 1

7. Technician A says that a PCM uses an output actuator to keep itself informed of engine operating conditions. Technician B says that a PCM uses an output actuator to cause a change in the performance of a

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circuit or system. Who is correct?

a. Technician A only b. Technician B only
c. Both A and B d. Neither A nor B

ANSWER: b
POINTS: 1

8. *Figure 3*



Concerning the logic gate pictured in Figure 3 above, which condition would produce binary "one" for "C" (the output)?

a. "A" is a "zero" and "B" is a "one" b. "A" is a "one" and "B" is a "zero"
c. "A" and "B" are both "ones" d. All of the above

ANSWER: c
POINTS: 1

9. A vehicle's engine computer does not operate properly. The vehicle's battery is checked with a DVOM and has an open circuit voltage of 8.3 volts.

Technician A says that the PCM is probably defective and should be replaced. Technician B says that, before condemning the PCM, the battery should be charged and retested. Then the appropriate voltage drop tests of the PCM's power and ground circuits should be performed. Who is correct?

a. Technician A only b. Technician B only
c. Both technicians d. Neither technician

ANSWER: b
POINTS: 1

10. Which of the following is NOT required in order for an engine computer to enter closed loop operation?

a. The oxygen sensor must be up to operating temperature.
b. The engine's coolant temperature must be at or above a specified temperature.
c. The vehicle must be at or above a designated speed as measured by the vehicle speed sensor.
d. A specified time period must have passed since the engine was started.

ANSWER: c
POINTS: 1

11. In addition to providing voltage to the computer's internal circuits, what is the purpose of the reference voltage regulator within a modern PCM?

a. To provide 5 volts to the sensors on the input side of the PCM
b. To provide 5 volts to the actuators on the output side of the PCM
c. To provide 12 volts to the sensors on the input side of the PCM
d. To provide 12 volts to the actuators on the output side of the PCM

ANSWER: a
POINTS: 1

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12. "Closed loop" is defined as a system operating mode:
a. in which the computer becomes part of a communications loop with other computers
b. in which the computer **ignores** the input from the oxygen sensor
c. in which the computer monitors the results of its own control
d. that the computer enters **only** when the throttle is **closed**

ANSWER: c
POINTS: 1

13. Which gas is naturally produced within the engine's cylinders through combining the hydrogen atom of the HC molecule with atmospheric oxygen?
a. CO
b. CO_2
c. NO_X
d. H_2O

ANSWER: d
POINTS: 1

14. Technician A says that closed loop is the most efficient operating mode and allows the engine computer to control the air-fuel ratio with the most precision. Technician B says that open loop operation is used to improve performance during cold engine warm-up and is also used under heavy load or during wide open throttle operation. Who is correct?
a. Technician A only
b. Technician B only
c. Both technicians
d. Neither technician

ANSWER: c
POINTS: 1

15. What is indicated if the oxygen sensor voltage is cycling back and forth across the stoichiometric value several times per second?
a. The air-fuel ratio is too lean and the voltage cannot stabilize
b. The air-fuel ratio is too rich and the voltage cannot stabilize
c. The computer is properly controlling the air-fuel ratio
d. The computer is malfunctioning

ANSWER: c
POINTS: 1

16. Which operating condition(s) has/have the programmed goal of _____ maintaining a stoichiometric air-fuel ratio?
a. open loop operation only
b. closed loop operation only
c. both closed loop and open loop operation
d. limp-in mode only

ANSWER: b
POINTS: 1

17. What is the advantage of controlling the air-fuel ratio to a stoichiometric ratio?
a. A stoichiometric ratio reduces the production of
b. A stoichiometric ratio helps the three-way

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toxic emissions within the engine's cylinders

c. A stoichiometric ratio increases the potential for performance when the engine is under heavy load

catalytic converter perform at its peak efficiency

d. Both A and B

ANSWER: d
POINTS: 1

18. Which air-fuel ratio would provide the most power?
a. 14.4:1 b. 12.5:1
c. 14.7:1 d. 16:1
ANSWER: b
POINTS: 1

19. Which designation is NOT one of the three basic logic gates from which all of the more complex gates are built?
a. AND gate b. OR gate
c. NOR gate d. NOT gate
ANSWER: c
POINTS: 1

20. Exhaust gasses are being discussed. Technician A says nitrogen (N) is considered a harmful gas. Technician B says carbon monoxide (CO) is considered a harmful gas. Who is correct?
a. Technician A only b. Technician B only
c. Both A and B d. Neither A nor B
ANSWER: b
POINTS: 1

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