PRACTICE EXAM 2: A8 SIMULATION — ENGINE PERFORMANCE

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1. The proper purpose of the four-stroke combustion cycle is to:

A. Apply compressed air to the engine

B. Convert fuel energy to mechanical motion through intake, compression, power, and exhaust strokes

C. Replace the engine as a precaution

D. Filter contaminants from the system

2. The proper sequence of the four engine strokes is:

A. Apply compressed air to the system

B. Replace the engine as a precaution

C. Visually inspect for visible damage only

D. Intake, compression, power, exhaust

3. The proper purpose of the intake stroke is to:

A. Draw the air-fuel mixture into the cylinder as the piston moves down

B. Apply compressed air to the system

C. Replace the intake valve as a precaution

D. Filter contaminants from the system

4. The proper purpose of the compression stroke is to:

A. Apply compressed air to the cylinder

B. Replace the engine as a precaution

C. Compress the air-fuel mixture as the piston moves up, increasing temperature and pressure

D. Filter contaminants from the system

5. The proper purpose of the power stroke is to:

A. Apply compressed air to the system

B. Replace the engine as a precaution

C. Replace the spark plugs as a precaution

D. Generate force on the piston from combustion as the piston moves down

6. The proper purpose of the exhaust stroke is to:

A. Apply compressed air to the system

B. Expel combustion gases from the cylinder as the piston moves up

C. Replace the exhaust valve as a precaution

D. Filter contaminants from the system

7. The proper purpose of volumetric efficiency in an engine is to:

A. Apply compressed air to the system

B. Replace the engine as a precaution

C. Measure how completely a cylinder fills with air-fuel mixture during the intake stroke

D. Filter contaminants from the system

8. A vehicle has been brought in with a complaint of reduced engine performance. The MOST likely cause of reduced volumetric efficiency is:

A. Restricted air intake, restricted exhaust, valve timing issues, or compression issues

B. Apply compressed air to the system

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

9. The proper procedure for diagnosing reduced engine breathing is to:

A. Apply compressed air to the system

B. Replace the engine as a precaution

C. Replace the spark plugs as a precaution

D. Verify the concern, inspect intake and exhaust restrictions, verify proper valve operation

10. A vehicle equipped with VVT (variable valve timing) has been brought in for diagnosis. The proper purpose of VVT is to:

A. Apply compressed air to the system

B. Adjust valve timing based on engine conditions to optimize performance, fuel economy, and emissions

C. Replace the system as a precaution

D. Filter contaminants from the system

11. The proper procedure for diagnosing VVT system faults is to:

A. Apply compressed air to the system

B. Replace the VVT system as a precaution

C. Verify the concern, retrieve DTCs, monitor scan data for cam position, identify the cause

D. Replace the brake fluid as the only step

12. A vehicle equipped with cam phasing has been brought in for diagnosis. The proper purpose of cam phasing is to:

A. Vary cam timing to optimize valve opening and closing relative to piston position

B. Apply compressed air to the system

C. Replace the cam phaser as a precaution

D. Filter contaminants from the system

13. The proper procedure for diagnosing cam phaser faults is to:

A. Apply compressed air to the cam phaser

B. Replace the cam phaser as a precaution

C. Replace the engine as a precaution

D. Verify the concern, retrieve DTCs, monitor cam position scan data, identify the cause

14. A vehicle equipped with cylinder deactivation has been brought in for diagnosis. The proper purpose of cylinder deactivation is to:

A. Apply compressed air to the system

B. Disable selected cylinders during light loads to improve fuel economy

C. Replace the system as a precaution

D. Filter contaminants from the system

15. The proper procedure for diagnosing cylinder deactivation faults is to:

A. Verify the concern, retrieve DTCs, monitor scan data for cylinder operation, identify the cause

B. Apply compressed air to the system

C. Replace the cylinder deactivation system as a precaution

D. Replace the brake fluid as the only step

16. A vehicle equipped with a turbocharger has been brought in for diagnosis. The proper purpose of a turbocharger is to:

A. Apply compressed air to the system

B. Replace the turbocharger as a precaution

C. Use exhaust energy to drive a compressor that increases intake air pressure for power

D. Filter contaminants from the system

17. The proper procedure for diagnosing turbocharger faults is to:

A. Apply compressed air to the turbocharger

B. Replace the turbocharger as a precaution

C. Replace the engine as a precaution

D. Verify the concern, retrieve DTCs, monitor boost pressure, inspect for leaks, identify the cause

18. A vehicle equipped with a supercharger has been brought in for diagnosis. The proper purpose of a supercharger is to:

A. Apply compressed air to the system

B. Use mechanical drive from the engine to compress intake air for power

C. Replace the supercharger as a precaution

D. Filter contaminants from the system

19. The proper procedure for diagnosing supercharger faults is to:

A. Verify the concern, monitor boost pressure, inspect drive system, identify the cause

B. Apply compressed air to the supercharger

C. Replace the supercharger as a precaution

D. Replace the brake fluid as the only step

20. A vehicle equipped with an intercooler has been brought in for diagnosis. The proper purpose of an intercooler is to:

A. Apply compressed air to the intercooler

B. Replace the intercooler as a precaution

C. Cool compressed intake air to increase density and reduce detonation risk

D. Filter contaminants from the system

21. The proper procedure for diagnosing intercooler faults is to:

A. Apply compressed air to the intercooler

B. Replace the intercooler as a precaution

C. Replace the engine as a precaution

D. Verify the concern, inspect for leaks, verify proper airflow, identify the cause

22. A vehicle has been brought in with a complaint of low boost pressure. The MOST likely cause is:

A. Apply compressed air to the system

B. Boost leak, faulty wastegate, faulty turbocharger, or sensor fault

C. Replace the turbocharger as a precaution

D. Replace the brake fluid as the only step

23. The proper procedure for diagnosing low boost pressure is to:

A. Verify the concern, monitor boost pressure, inspect for leaks, identify the cause

B. Apply compressed air to the system

C. Replace the turbocharger as a precaution

D. Replace the brake fluid as the only step

24. A vehicle has been brought in with a complaint of overboost. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the turbocharger as a precaution

C. Faulty wastegate, faulty boost control solenoid, or PCM control issue

D. Replace the brake fluid as the only step

25. The proper procedure for diagnosing overboost is to:

A. Apply compressed air to the system

B. Replace the wastegate as a precaution

C. Replace the turbocharger as a precaution

D. Verify the concern, monitor boost pressure and wastegate operation, identify the cause

26. A vehicle has been brought in with a complaint of detonation/knock. The MOST likely cause is:

A. Apply compressed air to the system

B. Excessive compression ratio, ignition timing advance, lean mixture, low octane fuel, or carbon buildup

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

27. The proper procedure for diagnosing engine knock is to:

A. Verify the concern, retrieve DTCs, monitor knock sensor activity, identify the cause

B. Apply compressed air to the system

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

28. A vehicle's knock sensor has been brought in for diagnosis. The proper purpose of a knock sensor is to:

A. Apply compressed air to the sensor

B. Replace the sensor as a precaution

C. Detect engine knock vibrations and signal the PCM to retard timing

D. Filter contaminants from the system

29. The proper procedure for testing a knock sensor is to:

A. Apply compressed air to the sensor

B. Monitor scan data for knock sensor activity, induce light tapping near the sensor, observe response

C. Replace the sensor as a precaution

D. Visually inspect for visible damage only

30. A vehicle has been brought in with a complaint of pre-ignition. The MOST likely cause is:

A. Apply compressed air to the system

B. Carbon buildup, hot spots in the cylinder, incorrect spark plug heat range, or cooling system issues

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

31. The proper procedure for diagnosing pre-ignition is to:

A. Apply compressed air to the system

B. Replace the spark plugs as a precaution

C. Replace the engine as a precaution

D. Verify the concern, identify hot spots and carbon buildup, identify the cause

32. A vehicle has been brought in with a complaint of dieseling (engine continues to run after key off). The MOST likely cause is:

A. Carbon buildup, hot spots in cylinders, or fuel system issue

B. Apply compressed air to the system

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

33. The proper purpose of an engine air filter is to:

A. Apply compressed air to the system

B. Replace the filter as a precaution

C. Filter incoming air to prevent debris from entering the engine

D. Filter contaminants from the brake fluid

34. The proper procedure for testing engine air filter condition is to:

A. Apply compressed air to the filter

B. Visually inspect for restrictions, measure pressure drop if applicable, replace per spec

C. Replace the filter as a precaution

D. Visually inspect for visible damage only

35. A vehicle has been brought in with a complaint of restricted intake airflow. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the air intake as a precaution

C. Replace the engine as a precaution

D. Restricted air filter, intake duct restriction, or throttle body issue

36. The proper procedure for diagnosing intake restriction is to:

A. Verify the concern, inspect air filter and intake ducting, verify throttle body operation

B. Apply compressed air to the system

C. Replace the air intake system as a precaution

D. Replace the brake fluid as the only step

37. A vehicle's throttle body has been brought in for service. The proper purpose of the throttle body is to:

A. Apply compressed air to the throttle body

B. Replace the throttle body as a precaution

C. Control airflow into the engine based on driver input or PCM control

D. Filter contaminants from the system

38. The proper procedure for diagnosing throttle body issues is to:

A. Apply compressed air to the throttle body

B. Verify the concern, retrieve DTCs, monitor TPS data, identify the cause

C. Replace the throttle body as a precaution

D. Replace the brake fluid as the only step

39. A vehicle equipped with electronic throttle control (ETC) has been brought in for diagnosis. The proper purpose of ETC is to:

A. Apply compressed air to the throttle body

B. Replace the ETC as a precaution

C. Replace the engine as a precaution

D. Use a sensor and motor to control throttle position based on PCM commands

40. The proper procedure for diagnosing ETC faults is to:

A. Verify the concern, retrieve DTCs, monitor scan data for throttle position, identify the cause

B. Apply compressed air to the throttle body

C. Replace the ETC as a precaution

D. Replace the brake fluid as the only step

41. A vehicle has been brought in with a complaint that the throttle does not respond properly to driver input. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the throttle body as a precaution

C. Faulty TPS, faulty accelerator pedal sensor, ETC fault, or PCM control issue

D. Replace the brake fluid as the only step

42. A vehicle's intake manifold has been brought in for inspection. The proper purpose of the intake manifold is to:

A. Apply compressed air to the manifold

B. Distribute air or air-fuel mixture from the throttle body to the cylinders

C. Replace the manifold as a precaution

D. Filter contaminants from the system

43. The proper procedure for diagnosing intake manifold leaks is to:

A. Apply compressed air to the manifold

B. Replace the manifold as a precaution

C. Replace the engine as a precaution

D. Use smoke testing or vacuum gauge to identify leak sources

44. A vehicle has been brought in with a complaint of high HC emissions. The MOST likely cause is:

A. Misfire, rich fuel mixture, oil consumption, or catalyst issue

B. Apply compressed air to the system

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

45. The proper procedure for diagnosing high HC emissions is to:

A. Apply compressed air to the system

B. Replace the affected components as a precaution

C. Verify the concern, retrieve DTCs, identify the source, address the cause

D. Replace the brake fluid as the only step

46. A vehicle has been brought in with a complaint of high CO emissions. The MOST likely cause is:

A. Apply compressed air to the system

B. Rich fuel mixture from sensor failure, fuel pressure issue, or injector issue

C. Replace the engine as a precaution

D. Replace the brake fluid as the only step

47. The proper procedure for diagnosing high CO emissions is to:

A. Apply compressed air to the system

B. Replace the affected components as a precaution

C. Replace the engine as a precaution

D. Verify the concern, monitor fuel trims, identify rich mixture cause, address the cause

48. A vehicle has been brought in with a complaint of high NOx emissions. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the engine as a precaution

C. EGR system fault, lean mixture, or engine cooling issue

D. Replace the brake fluid as the only step

49. The proper procedure for diagnosing high NOx emissions is to:

A. Verify the concern, monitor EGR operation, identify the cause, address the cause

B. Apply compressed air to the system

C. Replace the affected components as a precaution

D. Replace the brake fluid as the only step

50. The proper purpose of OBD-II monitor readiness is to:

A. Apply compressed air to the system

B. Indicate which OBD-II monitors have completed their diagnostic tests

C. Replace the PCM as a precaution

D. Filter contaminants from the system

PRACTICE EXAM 2: A8 SIMULATION — ANSWER KEY, EXPLANATIONS, AND TASK REMEDIATION

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1. B — Convert fuel energy to mechanical motion through intake, compression, power, and exhaust strokes. The four-stroke cycle is the foundation of internal combustion. Each stroke performs a specific function in the energy conversion process. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
2. D — Intake, compression, power, exhaust. The four strokes occur in this fixed sequence. Each stroke depends on the previous one for proper engine operation. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
3. A — Draw the air-fuel mixture into the cylinder as the piston moves down. The intake stroke fills the cylinder with combustible mixture. The intake valve opens as the piston creates negative pressure. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
4. C — Compress the air-fuel mixture as the piston moves up, increasing temperature and pressure. Compression prepares the mixture for combustion. Both valves are closed during this stroke. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
5. D — Generate force on the piston from combustion as the piston moves down. The power stroke produces the engine's mechanical output. Combustion forces the piston down with significant force. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
6. B — Expel combustion gases from the cylinder as the piston moves up. The exhaust stroke clears the cylinder for the next cycle. The exhaust valve opens to release combustion products. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
7. C — Measure how completely a cylinder fills with air-fuel mixture during the intake stroke. Volumetric efficiency reflects engine breathing capability. Higher efficiency produces more power. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
8. A — Restricted air intake, restricted exhaust, valve timing issues, or compression issues. Reduced volumetric efficiency has multiple potential causes. Each affects the cylinder's ability to fill properly. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*
9. D — Verify the concern, inspect intake and exhaust restrictions, verify proper valve operation. Engine breathing diagnosis requires systematic verification of all flow paths. Each potential

restriction must be evaluated. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

10. B — Adjust valve timing based on engine conditions to optimize performance, fuel economy, and emissions. VVT provides condition-specific valve timing optimization. The system operates differently based on engine load and RPM. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

11. C — Verify the concern, retrieve DTCs, monitor scan data for cam position, identify the cause. VVT diagnosis requires scan tool integration. Cam position data reveals proper or improper operation. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

12. A — Vary cam timing to optimize valve opening and closing relative to piston position. Cam phasing provides timing flexibility. The phaser advances or retards cam position based on PCM commands. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

13. D — Verify the concern, retrieve DTCs, monitor cam position scan data, identify the cause. Cam phaser diagnosis requires scan tool integration. Position data reveals proper or improper operation. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

14. B — Disable selected cylinders during light loads to improve fuel economy. Cylinder deactivation reduces fuel consumption under light loads. The system operates only specified cylinders during light load conditions. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

15. A — Verify the concern, retrieve DTCs, monitor scan data for cylinder operation, identify the cause. Cylinder deactivation diagnosis requires scan tool integration. Cylinder activation status reveals proper or improper operation. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

16. C — Use exhaust energy to drive a compressor that increases intake air pressure for power. The turbocharger uses waste exhaust energy. The compressor side increases intake density for additional power. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

17. D — Verify the concern, retrieve DTCs, monitor boost pressure, inspect for leaks, identify the cause. Turbocharger diagnosis requires scan tool integration and physical inspection. Boost pressure data reveals system function. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

18. B — Use mechanical drive from the engine to compress intake air for power. Superchargers are belt-driven by the engine. The mechanical drive provides immediate boost without exhaust

dependence. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

19. A — Verify the concern, monitor boost pressure, inspect drive system, identify the cause. Supercharger diagnosis requires monitoring and physical inspection. The drive system is unique to superchargers. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

20. C — Cool compressed intake air to increase density and reduce detonation risk. Intercoolers improve forced induction efficiency. Cooler air is denser and reduces knock potential. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

21. D — Verify the concern, inspect for leaks, verify proper airflow, identify the cause. Intercooler diagnosis requires inspection and verification. Each step provides different diagnostic information. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

22. B — Boost leak, faulty wastegate, faulty turbocharger, or sensor fault. Low boost has multiple potential causes. Each affects the system's ability to develop proper boost. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

23. A — Verify the concern, monitor boost pressure, inspect for leaks, identify the cause. Low boost diagnosis requires systematic approach. Each step provides different diagnostic information. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

24. C — Faulty wastegate, faulty boost control solenoid, or PCM control issue. Overboost indicates the wastegate or boost control is not limiting boost. Multiple potential causes affect proper limiting. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

25. D — Verify the concern, monitor boost pressure and wastegate operation, identify the cause. Overboost diagnosis requires monitoring of both boost and control systems. Each step provides different diagnostic information. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

26. B — Excessive compression ratio, ignition timing advance, lean mixture, low octane fuel, or carbon buildup. Knock has multiple potential causes. Each can produce abnormal combustion under specific conditions. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

27. A — Verify the concern, retrieve DTCs, monitor knock sensor activity, identify the cause. Knock diagnosis requires scan tool integration. Knock sensor data reveals when knock is occurring. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

28. C — Detect engine knock vibrations and signal the PCM to retard timing. The knock sensor protects the engine from damage. The PCM responds to knock sensor signals by retarding timing. *ASE Task Reference: A8 Domain B — Computerized Engine Controls. Review subsection 8.2.*

29. B — Monitor scan data for knock sensor activity, induce light tapping near the sensor, observe response. Knock sensor testing requires controlled vibration testing. The response indicates proper sensor function. *ASE Task Reference: A8 Domain B — Computerized Engine Controls. Review subsection 8.2.*

30. B — Carbon buildup, hot spots in the cylinder, incorrect spark plug heat range, or cooling system issues. Pre-ignition occurs before spark. Multiple potential causes can produce premature ignition. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

31. D — Verify the concern, identify hot spots and carbon buildup, identify the cause. Pre-ignition diagnosis requires identification of the heat source. Each potential cause produces premature ignition through different mechanisms. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

32. A — Carbon buildup, hot spots in cylinders, or fuel system issue. Dieseling is engine continuation after key off. Multiple potential causes can produce this condition. *ASE Task Reference: A8 Domain A — General Engine Diagnosis. Review subsection 8.1.*

33. C — Filter incoming air to prevent debris from entering the engine. The air filter protects the engine from debris ingestion. Without filtration, debris would damage internal components. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

34. B — Visually inspect for restrictions, measure pressure drop if applicable, replace per spec. Air filter testing requires inspection and measurement. Restricted filters reduce engine breathing. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

35. D — Restricted air filter, intake duct restriction, or throttle body issue. Intake restriction has multiple potential causes. Each affects the engine's ability to breathe properly. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

36. A — Verify the concern, inspect air filter and intake ducting, verify throttle body operation. Intake restriction diagnosis requires systematic inspection. Each component contributes to potential restriction. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

37. C — Control airflow into the engine based on driver input or PCM control. The throttle body manages engine airflow. Modern throttle bodies use electronic control for precise operation. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

38. B — Verify the concern, retrieve DTCs, monitor TPS data, identify the cause. Throttle body diagnosis requires scan tool integration. TPS data reveals proper or improper operation. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

39. D — Use a sensor and motor to control throttle position based on PCM commands. ETC replaces mechanical throttle linkage with electronic control. The system provides precise throttle response. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

40. A — Verify the concern, retrieve DTCs, monitor scan data for throttle position, identify the cause. ETC diagnosis requires scan tool integration. Position data reveals proper or improper operation. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

41. C — Faulty TPS, faulty accelerator pedal sensor, ETC fault, or PCM control issue. Improper throttle response has multiple potential causes. Each affects the system's ability to respond properly. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

42. B — Distribute air or air-fuel mixture from the throttle body to the cylinders. The intake manifold distributes air to all cylinders. Proper distribution ensures uniform engine operation. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

43. D — Use smoke testing or vacuum gauge to identify leak sources. Manifold leak diagnosis requires methods that reveal leak locations. Each method provides a different way to identify the source. *ASE Task Reference: A8 Domain D — Fuel, Air Induction, and Exhaust. Review subsection 8.4.*

44. A — Misfire, rich fuel mixture, oil consumption, or catalyst issue. High HC has multiple potential causes. Each can produce unburned hydrocarbons in exhaust. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

45. C — Verify the concern, retrieve DTCs, identify the source, address the cause. HC diagnosis requires source identification. Each cause produces high HC through different mechanisms. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

46. B — Rich fuel mixture from sensor failure, fuel pressure issue, or injector issue. High CO indicates incomplete combustion of rich mixture. Multiple potential causes can produce rich mixture. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

47. D — Verify the concern, monitor fuel trims, identify rich mixture cause, address the cause. CO diagnosis requires fuel trim analysis. The trims reveal which side of the system is at fault. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

48. C — EGR system fault, lean mixture, or engine cooling issue. High NOx indicates excessive combustion temperature. Multiple potential causes elevate combustion temperatures. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

49. A — Verify the concern, monitor EGR operation, identify the cause, address the cause. NOx diagnosis requires EGR system analysis. EGR is the primary NOx control device. *ASE Task Reference: A8 Domain E — Emissions Control Systems. Review subsection 8.5.*

50. B — Indicate which OBD-II monitors have completed their diagnostic tests. Monitor readiness shows test completion. State emissions tests require all monitors to be ready. *ASE Task Reference: A8 Domain B — Computerized Engine Controls. Review subsection 8.2.*