

# PRACTICE EXAM 6: A7 SIMULATION

## — HEATING AND AIR CONDITIONING

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1. A vehicle has been brought in with the following findings: complaint of multiple HVAC system warning lights illuminated, stored DTCs across multiple modules, and the climate control module is not communicating on the CAN bus. The MOST likely cause is:

- A. A worn power steering pulley
- B. A CAN bus communication fault, climate control module fault, or open circuit in the module power or ground
- C. A worn ball joint
- D. Air in the clutch hydraulic system

2. The proper procedure for diagnosing a climate control module CAN bus communication fault is to:

- A. Apply compressed air to the system
- B. Replace the climate control module as the most direct repair
- C. Replace the brake fluid as the only step
- D. Use a scan tool to verify CAN bus communication, check for network DTCs, inspect bus wiring, and verify module power and ground

3. A vehicle equipped with hybrid electric A/C technology has been brought in for diagnosis. The proper purpose of an electric A/C compressor is to:

- A. Operate without engine drive, allowing A/C function during engine-off conditions and providing efficient operation
- B. Apply compressed air to the system

- C. Replace the compressor as a precaution
- D. Filter contaminants from the system

4. The proper procedure for servicing an electric A/C compressor is to:

- A. Apply compressed air to the system
- B. Replace the compressor as a precaution
- C. Follow the manufacturer-specified high-voltage isolation procedure, use POE oil, perform the manufacturer-specified service procedure, and verify proper operation
- D. Replace the brake fluid as the only step

5. A vehicle equipped with hybrid technology has been brought in with a complaint that the A/C system does not operate when the engine stops at a stop light. The MOST likely cause is:

- A. Apply compressed air to the system
- B. A failed electric compressor, fault in the high-voltage system, or fault in the hybrid HVAC control
- C. Replace the compressor as a precaution
- D. Replace the brake fluid as the only step

6. The proper procedure for diagnosing electric A/C compressor faults is to:

- A. Apply compressed air to the compressor
- B. Replace the compressor as the most direct repair
- C. Replace the brake fluid as the only step
- D. Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause

7. A vehicle equipped with EV (electric vehicle) heat pump system has been brought in for diagnosis. The proper purpose of a heat pump system is to:

- A. Provide both heating and cooling using the same refrigerant cycle, transferring heat from one location to another
- B. Apply compressed air to the system
- C. Replace the system as a precaution
- D. Filter contaminants from the system

8. The proper purpose of a heat pump in EV applications is to:

- A. Apply compressed air to the system
- B. Replace the system as a precaution
- C. Replace the refrigerant as a precaution
- D. Provide cabin heating without the engine waste heat available in conventional vehicles, using ambient air or battery heat

9. The proper procedure for diagnosing EV heat pump system faults is to:

- A. Apply compressed air to the system
- B. Replace the heat pump as a precaution
- C. Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause
- D. Replace the brake fluid as the only step

10. A vehicle equipped with EV technology has been brought in with a complaint of inadequate cabin heating in cold weather. The MOST likely cause is:

- A. Apply compressed air to the system

B. Heat pump efficiency issue at low ambient temperatures, fault in the heat pump system, or fault in supplemental heating (PTC heater)

C. Replace the heat pump as a precaution

D. Replace the brake fluid as the only step

11. The proper procedure for diagnosing PTC (positive temperature coefficient) heater operation in EVs is to:

A. Apply compressed air to the heater

B. Replace the heater as a precaution

C. Verify the customer concern, retrieve stored DTCs, verify the heater operation per manufacturer's procedure, and identify the cause

D. Replace the brake fluid as the only step

12. A vehicle equipped with hybrid technology has been brought in with a complaint of A/C system not engaging when the engine starts. The MOST likely cause is:

A. The hybrid system is in a mode that delays A/C engagement, fault in the hybrid HVAC integration, or fault in the compressor control

B. Apply compressed air to the system

C. Replace the compressor as a precaution

D. Replace the brake fluid as the only step

13. The proper procedure for diagnosing hybrid HVAC integration faults is to:

A. Apply compressed air to the system

B. Replace the climate control module as the most direct repair

C. Replace the brake fluid as the only step

D. Verify the customer concern, retrieve stored DTCs from all relevant modules, monitor scan tool data, and identify the specific cause

14. A vehicle has been brought in with a complaint of A/C performance issues in extreme heat conditions only. The MOST likely cause is:

A. Apply compressed air to the system

B. Marginal system charge, marginal condenser airflow, or component limits being approached at extreme temperatures

C. Replace the system as a precaution

D. Replace the brake fluid as the only step

15. The proper procedure for diagnosing extreme heat A/C performance issues is to:

A. Apply compressed air to the system

B. Replace the system as a precaution

C. Replace the brake fluid as the only step

D. Verify the symptom under matching heat conditions, monitor system pressures and operation, identify the specific cause

16. A vehicle has been brought in with a complaint of A/C performance issues in extreme cold conditions. The MOST likely cause is:

A. Refrigerant charge issues at low temperature, oil viscosity issues, or system component sensitivity to cold

B. Apply compressed air to the system

C. Replace the system as a precaution

D. Replace the brake fluid as the only step

17. The proper procedure for diagnosing extreme cold A/C performance issues is to:

- A. Apply compressed air to the system
- B. Replace the system as a precaution
- C. Verify the symptom under matching cold conditions, monitor system operation, and identify the specific cause
- D. Replace the brake fluid as the only step

18. A vehicle equipped with EV battery thermal management system has been brought in for diagnosis. The proper purpose of EV battery thermal management is to:

- A. Apply compressed air to the system
- B. Maintain the high-voltage battery within optimal temperature range for performance and longevity
- C. Replace the system as a precaution
- D. Filter contaminants from the system

19. The proper procedure for diagnosing EV battery thermal management faults is to:

- A. Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause
- B. Apply compressed air to the system
- C. Replace the battery thermal management system as a precaution
- D. Replace the brake fluid as the only step

20. A vehicle equipped with hybrid technology has been brought in with a complaint that battery temperature is exceeding specification. The MOST likely cause is:

- A. Apply compressed air to the system

- B. Replace the battery as a precaution
- C. Replace the high-voltage battery as a precaution
- D. A failed battery cooling system, fault in the thermal management module, or fault in the related cooling components

21. The proper procedure for verifying EV battery thermal management service is to:

- A. Apply compressed air to the system
- B. Replace the system as a precaution
- C. Verify all repairs, verify proper battery temperature control, monitor scan tool data, and verify proper operation
- D. Replace the brake fluid as the only step

22. A vehicle has been brought in with a complaint of A/C system noise that is not present in conventional A/C operation but appears in some operating modes. The MOST likely cause is:

- A. Apply compressed air to the system
- B. Variable displacement compressor noise during certain modes, normal operation of advanced features, or actual component issue
- C. Replace the compressor as a precaution
- D. Replace the brake fluid as the only step

23. The proper procedure for diagnosing modern A/C system noises is to:

- A. Apply compressed air to the system
- B. Replace the compressor as a precaution
- C. Replace the brake fluid as the only step
- D. Verify the customer concern, identify when the noise occurs, monitor scan tool data, and identify normal versus abnormal sounds

24. A vehicle equipped with telematics integration has been brought in with a complaint of HVAC remote control function not working. The MOST likely cause is:

- A. A failed telematics module, fault in the HVAC integration, fault in cellular connectivity, or service connectivity issue
- B. Apply compressed air to the system
- C. Replace the climate control module as a precaution
- D. Replace the brake fluid as the only step

25. The proper procedure for diagnosing HVAC telematics integration faults is to:

- A. Apply compressed air to the system
- B. Replace the telematics module as the most direct repair
- C. Verify the customer concern, retrieve stored DTCs, verify telematics operation, verify HVAC operation, and identify the cause
- D. Replace the brake fluid as the only step

26. A vehicle equipped with remote start has been brought in with a complaint that HVAC functions do not activate during remote start. The MOST likely cause is:

- A. Apply compressed air to the system
- B. A failed remote start integration with HVAC, fault in the climate control module, or HVAC functions not configured for remote start
- C. Replace the remote start system as a precaution
- D. Replace the brake fluid as the only step

27. The proper procedure for diagnosing HVAC remote start integration is to:

- A. Apply compressed air to the system

- B. Replace the remote start system as a precaution
- C. Verify the customer concern, verify HVAC settings for remote start, retrieve any DTCs, verify proper integration, and identify the cause
- D. Replace the brake fluid as the only step

28. A vehicle equipped with over-the-air (OTA) software updates has been brought in with a complaint that an HVAC-related OTA update has failed. The MOST likely cause is:

- A. Cellular signal interruption during the update, vehicle battery voltage drop during the update, or fault in the OTA process
- B. Apply compressed air to the system
- C. Replace the climate control module as a precaution
- D. Replace the brake fluid as the only step

29. The proper procedure for completing a failed HVAC OTA update is to:

- A. Apply compressed air to the system
- B. Replace the climate control module as a precaution
- C. Replace the brake fluid as the only step
- D. Verify cellular signal, ensure stable battery voltage, follow the manufacturer-specified update procedure, and verify successful update

30. A vehicle has been brought in with a complaint of multiple HVAC issues that began after a software update. The MOST likely cause is:

- A. Apply compressed air to the system
- B. Replace the climate control module as a precaution
- C. Replace the brake fluid as the only step

D. The update may have introduced an issue requiring rollback or further update, or the update was incomplete

31. The proper procedure for addressing post-update HVAC issues is to:

A. Apply compressed air to the system

B. Verify the update was completed successfully, contact the manufacturer if issues persist, and follow recommended procedure

C. Replace the affected modules as a precaution

D. Replace the brake fluid as the only step

32. A vehicle has been brought in with a complaint of HVAC issues that occur only at certain altitudes. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the system as a precaution

C. Altitude-related operating condition affecting refrigerant pressure, system performance, or component sensitivity

D. Replace the brake fluid as the only step

33. The proper procedure for diagnosing altitude-related HVAC issues is to:

A. Verify the symptom under matching altitude conditions, monitor system operation, and identify the specific cause

B. Apply compressed air to the system

C. Replace the system as a precaution

D. Replace the brake fluid as the only step

34. A vehicle has been brought in with a complaint of HVAC issues that occur only after extended operation. The MOST likely cause is:

- A. Apply compressed air to the system
- B. Replace the system as a precaution
- C. Heat-related component sensitivity, oil viscosity issues at temperature, or thermal expansion-related issue
- D. Replace the brake fluid as the only step

35. The proper procedure for diagnosing extended-operation HVAC issues is to:

- A. Apply compressed air to the system
- B. Verify the symptom under matching extended operation conditions, monitor system operation, and identify the specific cause
- C. Replace the system as a precaution
- D. Replace the brake fluid as the only step

36. A vehicle has been brought in with a complaint of multiple HVAC issues following a major service. The MOST likely cause is:

- A. Apply compressed air to the system
- B. Replace the system as a precaution
- C. Replace the brake fluid as the only step
- D. Service-related issue (improper installation, oil contamination, debris, or service procedure error)

37. The proper procedure for diagnosing post-service HVAC issues is to:

- A. Verify the customer concern, retrieve any stored DTCs, identify potential service-related causes, address the cause, and verify proper operation

- B. Apply compressed air to the system
- C. Replace the affected components as a precaution
- D. Replace the brake fluid as the only step

38. A vehicle has been brought in with a complaint of HVAC issues that occur only when the vehicle is in motion. The MOST likely cause is:

- A. Apply compressed air to the system
- B. A vibration-related issue, marginal connection, or component movement during operation
- C. Replace the affected components as a precaution
- D. Replace the brake fluid as the only step

39. The proper procedure for diagnosing motion-related HVAC issues is to:

- A. Apply compressed air to the system
- B. Replace the affected components as a precaution
- C. Verify the symptom during motion, perform wiggle testing during operation, identify the marginal connection or movement issue, and address accordingly
- D. Replace the brake fluid as the only step

40. A vehicle has been brought in with a complaint of HVAC issues that occur intermittently. The MOST likely cause is:

- A. An intermittent issue (marginal connection, intermittent component fault, or condition-specific issue)
- B. Apply compressed air to the system
- C. Replace the affected components as a precaution
- D. Replace the brake fluid as the only step

41. The proper procedure for diagnosing intermittent HVAC faults is to:

- A. Apply compressed air to the system
- B. Replace the affected components as a precaution
- C. Replace the brake fluid as the only step
- D. Verify the symptom under matching conditions, monitor scan data, perform wiggle testing, and identify the specific cause

42. A vehicle equipped with active grille shutters has been brought in for diagnosis. The proper purpose of active grille shutters is to:

- A. Apply compressed air to the system
- B. Open and close airflow to the radiator and condenser based on conditions, optimizing aerodynamics and cooling
- C. Replace the shutters as a precaution
- D. Filter contaminants from the system

43. The proper procedure for diagnosing active grille shutter faults is to:

- A. Apply compressed air to the shutters
- B. Replace the shutters as a precaution
- C. Verify the customer concern, retrieve stored DTCs, monitor scan tool data for shutter operation, and identify the specific cause
- D. Replace the brake fluid as the only step

44. A vehicle equipped with active grille shutters has been brought in with a complaint of A/C performance issues. Scan tool data shows the active grille shutters are stuck closed. The MOST likely effect is:

- A. Reduced airflow through the condenser, affecting A/C performance

- B. Apply compressed air to the system
- C. Replace the shutters as a precaution
- D. Replace the brake fluid as the only step

45. The proper procedure for verifying active grille shutter service is to:

- A. Apply compressed air to the system
- B. Replace the shutters as a precaution
- C. Replace the brake fluid as the only step
- D. Verify proper installation, verify proper shutter operation, monitor scan tool data, and verify proper operation

46. A vehicle has been brought in with a complaint of HVAC issues that affect engine performance. The MOST likely cause is:

- A. Apply compressed air to the system
- B. HVAC system protection issues affecting engine load (compressor protection, cooling fan operation), or HVAC fault affecting related sensors
- C. Replace the affected systems as a precaution
- D. Replace the brake fluid as the only step

47. The proper procedure for diagnosing HVAC issues affecting engine performance is to:

- A. Apply compressed air to the system
- B. Replace the affected systems as a precaution
- C. Verify the customer concern, retrieve stored DTCs from both engine and HVAC modules, identify common causes, and address accordingly
- D. Replace the brake fluid as the only step

48. A vehicle has been brought in with a complaint of HVAC issues that affect fuel economy. The MOST likely cause is:

- A. Apply compressed air to the system
- B. Replace the affected systems as a precaution
- C. Replace the brake fluid as the only step
- D. Increased compressor load from overcharge or restriction, increased cooling fan operation, or HVAC fault affecting engine load

49. The proper procedure for diagnosing HVAC issues affecting fuel economy is to:

- A. Verify the customer concern, retrieve stored DTCs, monitor scan tool data for system load, identify the specific cause, and address accordingly
- B. Apply compressed air to the system
- C. Replace the affected systems as a precaution
- D. Replace the brake fluid as the only step

50. The proper procedure for verifying complete modern HVAC system service is to:

- A. Apply compressed air to the system
- B. Verify all repairs, verify proper operation of conventional and advanced features, road test, clear DTCs, and verify proper operation
- C. Replace the system as a precaution
- D. Replace the brake fluid as the only step

# PRACTICE EXAM 6: A7 SIMULATION

## — ANSWER KEY, EXPLANATIONS, AND TASK REMEDIATION

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1. B — A CAN bus communication fault, climate control module fault, or open circuit in the module power or ground. Multiple HVAC warnings with module not communicating is the diagnostic signature of major communication or module issue. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
2. D — Use a scan tool to verify CAN bus communication, check for network DTCs, inspect bus wiring, and verify module power and ground. Climate control module CAN bus diagnosis requires comprehensive systematic approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
3. A — Operate without engine drive, allowing A/C function during engine-off conditions and providing efficient operation. Electric A/C compressors enable hybrid operation. They support A/C function during stop-start and EV mode. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
4. C — Follow the manufacturer-specified high-voltage isolation procedure, use POE oil, perform the manufacturer-specified service procedure, and verify proper operation. Electric A/C compressor service requires high-voltage safety and proper oil. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
5. B — A failed electric compressor, fault in the high-voltage system, or fault in the hybrid HVAC control. Stop-light A/C operation depends on the electric compressor. Each cause prevents operation. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
6. D — Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause. Electric A/C diagnosis requires PPE and manufacturer specifications. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
7. A — Provide both heating and cooling using the same refrigerant cycle, transferring heat from one location to another. Heat pumps reverse the refrigeration cycle for heating mode. They provide efficient cabin heating in EVs. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

8. D — Provide cabin heating without the engine waste heat available in conventional vehicles, using ambient air or battery heat. EV heating requires non-engine sources. Heat pumps efficiently extract heat from ambient air or battery thermal management. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
9. C — Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause. Heat pump diagnosis requires PPE and manufacturer-specific approach. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
10. B — Heat pump efficiency issue at low ambient temperatures, fault in the heat pump system, or fault in supplemental heating (PTC heater). Cold weather EV heating challenges heat pump efficiency. PTC heaters provide supplemental heating. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
11. C — Verify the customer concern, retrieve stored DTCs, verify the heater operation per manufacturer's procedure, and identify the cause. PTC heater diagnosis requires manufacturer-specific approach. *ASE Task Reference: A7 Domain C — Heating, Ventilation, Engine Cooling, and A/C Air Distribution. Review subsection 7.3.*
12. A — The hybrid system is in a mode that delays A/C engagement, fault in the hybrid HVAC integration, or fault in the compressor control. Hybrid HVAC integration may delay A/C for various reasons. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
13. D — Verify the customer concern, retrieve stored DTCs from all relevant modules, monitor scan tool data, and identify the specific cause. Hybrid HVAC integration diagnosis requires multi-module approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
14. B — Marginal system charge, marginal condenser airflow, or component limits being approached at extreme temperatures. Extreme heat tests system limits. Marginal conditions become problematic at extreme temperatures. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
15. D — Verify the symptom under matching heat conditions, monitor system pressures and operation, identify the specific cause. Extreme heat diagnosis requires matching conditions. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
16. A — Refrigerant charge issues at low temperature, oil viscosity issues, or system component sensitivity to cold. Extreme cold affects refrigerant and oil properties. Component sensitivity adds to potential causes. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

17. C — Verify the symptom under matching cold conditions, monitor system operation, and identify the specific cause. Extreme cold diagnosis requires matching conditions. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
18. B — Maintain the high-voltage battery within optimal temperature range for performance and longevity. Battery thermal management is critical for EV operation. Both heating and cooling are required. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
19. A — Verify the customer concern, retrieve stored DTCs, follow manufacturer-specified diagnostic procedure with proper PPE, and identify the specific cause. Battery thermal management diagnosis requires PPE and manufacturer specifications. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
20. D — A failed battery cooling system, fault in the thermal management module, or fault in the related cooling components. Battery overtemperature has multiple potential causes. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
21. C — Verify all repairs, verify proper battery temperature control, monitor scan tool data, and verify proper operation. Battery thermal service verification requires comprehensive approach. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
22. B — Variable displacement compressor noise during certain modes, normal operation of advanced features, or actual component issue. Modern A/C systems may produce sounds that are normal for their advanced features. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
23. D — Verify the customer concern, identify when the noise occurs, monitor scan tool data, and identify normal versus abnormal sounds. Modern A/C noise diagnosis requires distinguishing normal from abnormal. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
24. A — A failed telematics module, fault in the HVAC integration, fault in cellular connectivity, or service connectivity issue. HVAC remote control depends on multiple components. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
25. C — Verify the customer concern, retrieve stored DTCs, verify telematics operation, verify HVAC operation, and identify the cause. HVAC telematics diagnosis requires comprehensive approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
26. B — A failed remote start integration with HVAC, fault in the climate control module, or HVAC functions not configured for remote start. Remote start HVAC integration has multiple potential

causes. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

27. C — Verify the customer concern, verify HVAC settings for remote start, retrieve any DTCs, verify proper integration, and identify the cause. Remote start HVAC diagnosis requires comprehensive approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
28. A — Cellular signal interruption during the update, vehicle battery voltage drop during the update, or fault in the OTA process. OTA updates require stable conditions throughout. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
29. D — Verify cellular signal, ensure stable battery voltage, follow the manufacturer-specified update procedure, and verify successful update. Failed OTA recovery requires stable conditions. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
30. D — The update may have introduced an issue requiring rollback or further update, or the update was incomplete. Post-update HVAC issues may require manufacturer guidance. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
31. B — Verify the update was completed successfully, contact the manufacturer if issues persist, and follow recommended procedure. Post-update HVAC issues require manufacturer guidance. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
32. C — Altitude-related operating condition affecting refrigerant pressure, system performance, or component sensitivity. Altitude affects refrigerant behavior and component performance. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
33. A — Verify the symptom under matching altitude conditions, monitor system operation, and identify the specific cause. Altitude-related diagnosis requires matching conditions. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
34. C — Heat-related component sensitivity, oil viscosity issues at temperature, or thermal expansion-related issue. Extended operation produces heat that affects components. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
35. B — Verify the symptom under matching extended operation conditions, monitor system operation, and identify the specific cause. Extended-operation diagnosis requires matching conditions. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
36. D — Service-related issue (improper installation, oil contamination, debris, or service procedure error). Post-service issues often relate to the recent service. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

37. A — Verify the customer concern, retrieve any stored DTCs, identify potential service-related causes, address the cause, and verify proper operation. Post-service diagnosis requires consideration of the recent service. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
38. B — A vibration-related issue, marginal connection, or component movement during operation. Motion-related issues indicate vibration sensitivity. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
39. C — Verify the symptom during motion, perform wiggle testing during operation, identify the marginal connection or movement issue, and address accordingly. Motion-related diagnosis requires testing during motion. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
40. A — An intermittent issue (marginal connection, intermittent component fault, or condition-specific issue). Intermittent HVAC faults indicate subtle issues. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
41. D — Verify the symptom under matching conditions, monitor scan data, perform wiggle testing, and identify the specific cause. Intermittent diagnosis requires symptom-matching and physical testing. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
42. B — Open and close airflow to the radiator and condenser based on conditions, optimizing aerodynamics and cooling. Active grille shutters provide variable airflow control. *ASE Task Reference: A7 Domain C — Heating, Ventilation, Engine Cooling, and A/C Air Distribution. Review subsection 7.3.*
43. C — Verify the customer concern, retrieve stored DTCs, monitor scan tool data for shutter operation, and identify the specific cause. Active grille shutter diagnosis requires scan tool integration. *ASE Task Reference: A7 Domain C — Heating, Ventilation, Engine Cooling, and A/C Air Distribution. Review subsection 7.3.*
44. A — Reduced airflow through the condenser, affecting A/C performance. Stuck-closed shutters reduce condenser cooling. The reduced airflow affects A/C performance. *ASE Task Reference: A7 Domain C — Heating, Ventilation, Engine Cooling, and A/C Air Distribution. Review subsection 7.3.*
45. D — Verify proper installation, verify proper shutter operation, monitor scan tool data, and verify proper operation. Active grille shutter service verification requires comprehensive approach. *ASE Task Reference: A7 Domain C — Heating, Ventilation, Engine Cooling, and A/C Air Distribution. Review subsection 7.3.*
46. B — HVAC system protection issues affecting engine load (compressor protection, cooling fan operation), or HVAC fault affecting related sensors. HVAC and engine integration creates potential

interaction issues. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

47. C — Verify the customer concern, retrieve stored DTCs from both engine and HVAC modules, identify common causes, and address accordingly. HVAC-engine interaction diagnosis requires multi-module approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
48. D — Increased compressor load from overcharge or restriction, increased cooling fan operation, or HVAC fault affecting engine load. HVAC issues affecting fuel economy have multiple potential causes. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
49. A — Verify the customer concern, retrieve stored DTCs, monitor scan tool data for system load, identify the specific cause, and address accordingly. HVAC fuel economy diagnosis requires comprehensive approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*
50. B — Verify all repairs, verify proper operation of conventional and advanced features, road test, clear DTCs, and verify proper operation. Modern HVAC service verification requires comprehensive approach. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*