PRACTICE EXAM 2: A7 SIMULATION — HEATING AND AIR CONDITIONING

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1. The proper purpose of the refrigeration cycle is to:

A. Apply compressed air to the system

B. Transfer heat from the cabin to the outside air using a refrigerant that changes between liquid and vapor states

C. Replace the refrigerant as a precaution

D. Filter contaminants from the system

2. The four primary components of the refrigeration cycle are:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Visually inspect for visible damage only

D. Compressor, condenser, metering device (orifice or TXV), and evaporator

3. The proper relationship between refrigerant pressure and temperature is:

A. As pressure increases, the boiling/condensing temperature of the refrigerant increases

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Pressure and temperature are unrelated

4. A vehicle's A/C system has a low-side pressure of 30 psi with R-134a refrigerant. The corresponding saturation temperature is approximately:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Approximately 35 degrees Fahrenheit (using the R-134a P-T relationship)

D. Visually inspect for visible damage only

5. The proper purpose of superheat in an A/C system is to:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Filter contaminants from the system

D. Ensure all refrigerant has vaporized before entering the compressor, preventing liquid slugging

6. The proper purpose of subcooling in an A/C system is to:

A. Apply compressed air to the system

B. Ensure all refrigerant has condensed before entering the metering device

C. Replace the refrigerant as a precaution

D. Filter contaminants from the system

7. A vehicle's A/C system shows insufficient subcooling at the condenser outlet. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Low refrigerant charge or insufficient condenser airflow

D. Replace the brake fluid as the only step

8. The proper procedure for measuring superheat is to:

A. Measure the temperature at the evaporator outlet, measure the corresponding pressure, find the saturation temperature, and calculate the difference

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Visually inspect for visible damage only

9. A vehicle equipped with a reciprocating piston compressor has been brought in for diagnosis. The proper purpose of a reciprocating piston compressor is to:

A. Apply compressed air to the system

B. Replace the compressor as a precaution

C. Replace the refrigerant as a precaution

D. Use pistons to compress refrigerant vapor through cylinders, similar to an internal combustion engine

10. A vehicle equipped with a scroll compressor has been brought in for diagnosis. The proper purpose of a scroll compressor is to:

A. Apply compressed air to the compressor

B. Use intermeshing scrolls (one fixed, one orbiting) to compress refrigerant smoothly

C. Replace the compressor as a precaution

D. Filter contaminants from the system

11. A vehicle equipped with a rotary vane compressor has been brought in for diagnosis. The proper purpose of a rotary vane compressor is to:

A. Apply compressed air to the compressor

B. Replace the compressor as a precaution

C. Use vanes in a rotor to trap and compress refrigerant in chambers as the rotor turns

D. Filter contaminants from the system

12. A vehicle equipped with a swashplate compressor has been brought in for diagnosis. The proper purpose of a swashplate compressor is to:

A. Use an angled plate to convert rotary motion into reciprocating piston motion for compression

B. Apply compressed air to the compressor

C. Replace the compressor as a precaution

D. Filter contaminants from the system

13. A vehicle's A/C compressor has failed catastrophically with metal debris in the system. The MOST appropriate action is:

A. Apply compressed air to the system

B. Replace only the compressor as the most direct repair

C. Replace the refrigerant as a precaution

D. Replace the compressor, flush the system to remove debris, replace the receiver-drier or accumulator, evacuate, recharge, and verify operation

14. The proper purpose of A/C system flushing is to:

A. Apply compressed air to the system

B. Remove debris and contaminated oil from the system after compressor failure or contamination

C. Replace the system as a precaution

D. Filter contaminants from the brake fluid

15. A vehicle's A/C system uses PAG (polyalkylene glycol) oil. The proper purpose of PAG oil is to:

A. Lubricate the compressor and other moving parts in the refrigerant circulation

B. Apply compressed air to the system

C. Replace the oil as a precaution

D. Filter contaminants from the system

16. The proper procedure for adding oil to an A/C system after service is to:

A. Apply compressed air to the system

B. Replace the oil as a precaution

C. Add the manufacturer-specified oil type and amount based on the components replaced and per the service manual

D. Visually inspect for visible damage only

17. A vehicle's A/C system uses POE (polyol ester) oil. POE oil is typically used in:

A. Apply compressed air to the system

B. Replace the oil as a precaution

C. Replace the refrigerant as a precaution

D. Some hybrid and electric vehicle A/C systems with electric compressors

18. A vehicle has been brought in with a complaint of A/C oil contamination from previous service. The MOST appropriate action is:

A. Apply compressed air to the system

B. Recover refrigerant, flush the system, replace the receiver-drier or accumulator, replace contaminated oil, recharge, and verify operation

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

19. The proper procedure for evacuating an A/C system to remove moisture is to:

A. Operate a vacuum pump for the manufacturer-specified time, deep enough to boil moisture into vapor for removal

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Visually inspect for visible damage only

20. The proper minimum vacuum level for proper A/C system evacuation is:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Approximately 500 microns or lower, ensuring proper moisture removal

D. Visually inspect for visible damage only

21. A vehicle's A/C system shows moisture contamination after recharge. The MOST likely cause is:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Replace the compressor as a precaution

D. Insufficient evacuation time, leak in the system during evacuation, or inadequate vacuum depth

22. The proper purpose of moisture in an A/C system being removed is to:

A. Apply compressed air to the system

B. Prevent acid formation, ice in the metering device, and damage to internal components

C. Replace the refrigerant as a precaution

D. Filter contaminants from the system

23. A vehicle's A/C system has been brought in for compressor replacement. The proper procedure is to:

A. Replace the compressor, replace the receiver-drier or accumulator, flush if needed, evacuate, recharge with proper oil and refrigerant, and verify operation

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

24. The proper procedure for verifying compressor operation after replacement is to:

A. Apply compressed air to the compressor

B. Replace the compressor as a precaution

C. Verify proper installation, verify clutch engagement, verify proper system pressures and temperatures, and verify proper operation

D. Replace the brake fluid as the only step

25. A vehicle's A/C system has been brought in with a noisy compressor. The MOST likely cause is:

A. Apply compressed air to the compressor

B. Replace the compressor as a precaution

C. Replace the refrigerant as a precaution

D. Internal compressor wear, low refrigerant or oil affecting lubrication, or compressor mounting issues

26. The proper procedure for diagnosing compressor noise is to:

A. Apply compressed air to the compressor

B. Verify the customer concern, listen to the noise location and characteristics, verify proper system charge, and identify the specific cause

C. Replace the compressor as a precaution

D. Replace the brake fluid as the only step

27. A vehicle has been brought in with a complaint that the A/C system cycles on and off rapidly. The MOST likely cause is:

A. Low refrigerant charge causing low-pressure cutoff cycling, or fault in the cycling switch

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

28. The proper purpose of an A/C cycling switch is to:

A. Apply compressed air to the system

B. Replace the switch as a precaution

C. Cycle the compressor on and off based on system pressure to prevent evaporator freezing

D. Filter contaminants from the system

29. A vehicle's A/C cycling switch has failed open. The MOST likely effect is:

A. Apply compressed air to the system

B. Replace the switch as a precaution

C. Replace the refrigerant as a precaution

D. The compressor will not engage because the cycling circuit is open

30. The proper procedure for testing an A/C cycling switch is to:

A. Apply compressed air to the switch

B. Verify proper switch operation at varied pressures, comparing to specification

C. Replace the switch as a precaution

D. Visually inspect for visible damage only

31. A vehicle equipped with a high-pressure cutout switch has been brought in for diagnosis. The proper purpose of this switch is to:

A. Apply compressed air to the system

B. Replace the switch as a precaution

C. Replace the refrigerant as a precaution

D. Disengage the compressor when system pressure exceeds safe limits, protecting the system

32. A vehicle's A/C system shows the compressor not engaging due to high pressure cutoff activation. The MOST likely cause is:

A. Excessive system pressure from overcharge, restricted condenser, or condenser cooling issue

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

33. The proper procedure for diagnosing high-pressure cutoff activation is to:

A. Apply compressed air to the system

B. Replace the switch as a precaution

C. Verify proper system charge, inspect condenser airflow, verify cooling fan operation, identify the cause

D. Replace the brake fluid as the only step

34. A vehicle equipped with electronic A/C control has been brought in with a complaint of A/C system not engaging. Scan tool data shows the A/C request signal is being sent but the compressor is not commanded on. The MOST likely cause is:

A. Apply compressed air to the system

B. A protection signal preventing compressor engagement (low charge, high temperature, low pressure, or other protection logic)

C. Replace the compressor as a precaution

D. Replace the brake fluid as the only step

35. The proper procedure for diagnosing electronic A/C compressor control faults is to:

A. Apply compressed air to the system

B. Replace the A/C control module as the most direct repair

C. Replace the refrigerant as a precaution

D. Verify the customer concern, retrieve stored DTCs, monitor scan tool data for A/C request and compressor command, and identify the specific cause

36. A vehicle has been brought in with a complaint that the A/C system produces moderate cooling, but performance is below specification. The MOST likely cause is:

A. Marginal refrigerant charge (slightly low or slightly high), restriction, or component issue

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

37. The proper procedure for verifying A/C system performance is to:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Measure the discharge air temperature at varied conditions, comparing to manufacturer's specification

D. Replace the brake fluid as the only step

38. A vehicle's A/C system measures 75 degrees Fahrenheit at the dash vent with the system commanded to maximum cooling. The ambient temperature is 95 degrees Fahrenheit. The MOST likely cause is:

A. Apply compressed air to the system

B. The discharge temperature is high relative to specification, indicating an A/C system issue requiring diagnosis

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

39. The proper procedure for measuring A/C discharge air temperature is to:

A. Apply compressed air to the system

B. Replace the refrigerant as a precaution

C. Replace the compressor as a precaution

D. Use a thermometer at the dash vent with the system at maximum cold setting and high blower speed, after several minutes of operation

40. A vehicle has been brought in with a complaint of A/C system that produces cold air initially but warms up over time. The MOST likely cause is:

A. Compressor cycling issue, low refrigerant charge, or evaporator icing from system control issue

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

41. The proper procedure for diagnosing A/C systems that warm up over time is to:

A. Apply compressed air to the system

B. Replace the compressor as a precaution

C. Verify system pressures during operation, monitor compressor cycling, check for evaporator icing, and identify the cause

D. Replace the brake fluid as the only step

42. A vehicle's A/C evaporator has been brought in for inspection. The technician finds visible ice formation on the evaporator. The MOST likely cause is:

A. Apply compressed air to the evaporator

B. Insufficient airflow over the evaporator, cycling switch issue, or low refrigerant causing low evaporator temperatures

C. Replace the evaporator as a precaution

D. Replace the brake fluid as the only step

43. The proper procedure for addressing evaporator ice formation is to:

A. Apply compressed air to the evaporator

B. Replace the evaporator as a precaution

C. Replace the refrigerant as a precaution

D. Identify the cause of low evaporator temperature, address the cause, allow ice to melt, and verify proper operation

44. A vehicle has been brought in with a complaint of A/C system that produces a hissing sound when the system is turned off. The MOST likely cause is:

A. Normal refrigerant equalization between high and low sides as the compressor stops

B. Apply compressed air to the system

C. Replace the refrigerant as a precaution

D. Replace the brake fluid as the only step

45. The proper procedure for explaining normal A/C system sounds is to:

A. Apply compressed air to the system

B. Replace the system as a precaution

C. Inform the customer about normal operational sounds (compressor cycling, refrigerant flow, equalization)

D. Replace the brake fluid as the only step

46. A vehicle equipped with multiple A/C zones has been brought in with a complaint of one zone not cooling properly. The MOST likely cause is:

A. Apply compressed air to the system

B. A failed blend door actuator for that zone, fault in the zone control wiring, or fault in the multi-zone HVAC module

C. Replace the multi-zone module as a precaution

D. Replace the brake fluid as the only step

47. The proper procedure for diagnosing multi-zone A/C system faults is to:

A. Apply compressed air to the system

B. Replace the multi-zone module as the most direct repair

C. Replace the refrigerant as a precaution

D. Verify the customer concern, retrieve stored DTCs, check zone-specific actuator operation, and identify the specific cause

48. A vehicle equipped with rear A/C has been brought in with a complaint that the rear A/C does not function. The MOST appropriate diagnostic action is:

A. Apply compressed air to the rear A/C

B. Replace the rear evaporator as a precaution

C. Verify the customer concern, check rear A/C controls, verify proper refrigerant flow to the rear unit, and identify the specific cause

D. Replace the brake fluid as the only step

49. The proper procedure for verifying rear A/C system service is to:

A. Verify all repairs, verify proper refrigerant flow to the rear unit, verify proper cooling at rear vents, and verify proper operation

B. Apply compressed air to the rear A/C

C. Replace the rear A/C system as a precaution

D. Replace the brake fluid as the only step

50. A vehicle equipped with an electric A/C compressor (hybrid/EV) has been brought in for service. The proper procedure for electric A/C compressor service is to:

A. Apply compressed air to the compressor

B. Follow the manufacturer-specified high-voltage isolation procedure, use only the proper compressor oil (typically POE), perform the manufacturer-specified service procedure, and verify proper operation

C. Replace the compressor as a precaution

D. Replace the brake fluid as the only step

PRACTICE EXAM 2: A7 SIMULATION — ANSWER KEY, EXPLANATIONS, AND TASK REMEDIATION

1. B — Transfer heat from the cabin to the outside air using a refrigerant that changes between liquid and vapor states. The refrigeration cycle is the heat transfer mechanism for A/C cooling. Phase changes between liquid and vapor enable efficient heat transfer. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
2. D — Compressor, condenser, metering device (orifice or TXV), and evaporator. The four primary refrigeration components form the closed cycle. Each performs a specific function in the heat transfer process. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*
3. A — As pressure increases, the boiling/condensing temperature of the refrigerant increases. The pressure-temperature relationship is fundamental to refrigeration. This relationship is used to interpret system pressures and diagnose performance. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
4. C — Approximately 35 degrees Fahrenheit (using the R-134a P-T relationship). 30 psi corresponds to roughly 35 degrees Fahrenheit on the R-134a saturation chart. This relationship is used for diagnostic interpretation. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
5. D — Ensure all refrigerant has vaporized before entering the compressor, preventing liquid slugging. Superheat protects the compressor from liquid refrigerant. Liquid in the compressor causes severe damage. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
6. B — Ensure all refrigerant has condensed before entering the metering device. Subcooling ensures only liquid enters the metering device. Vapor in the metering device produces inefficient operation. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*
7. C — Low refrigerant charge or insufficient condenser airflow. Insufficient subcooling indicates the refrigerant is not fully condensed. Low charge or airflow restriction prevent complete condensation. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

8. A — Measure the temperature at the evaporator outlet, measure the corresponding pressure, find the saturation temperature, and calculate the difference. Superheat measurement requires both temperature and pressure data. The difference reveals the system's superheat condition. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

9. D — Use pistons to compress refrigerant vapor through cylinders, similar to an internal combustion engine. Reciprocating piston compressors operate similarly to engine pistons. They were common in older vehicles. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

10. B — Use intermeshing scrolls (one fixed, one orbiting) to compress refrigerant smoothly. Scroll compressors provide efficient, smooth operation with fewer moving parts than reciprocating types. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

11. C — Use vanes in a rotor to trap and compress refrigerant in chambers as the rotor turns. Rotary vane compressors are compact and provide good efficiency. They are common in some vehicle applications. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

12. A — Use an angled plate to convert rotary motion into reciprocating piston motion for compression. Swashplate compressors combine rotary input with piston compression. They are common in many vehicle applications. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

13. D — Replace the compressor, flush the system to remove debris, replace the receiver-drier or accumulator, evacuate, recharge, and verify operation. Catastrophic compressor failure with debris contamination requires comprehensive system service. Each step is required to prevent recurring damage. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

14. B — Remove debris and contaminated oil from the system after compressor failure or contamination. System flushing is required after major contamination. Debris and contaminated oil cause repeat failures if not removed. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

15. A — Lubricate the compressor and other moving parts in the refrigerant circulation. PAG oil is the standard lubricant for R-134a systems. The oil circulates with the refrigerant to provide lubrication. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

16. C — Add the manufacturer-specified oil type and amount based on the components replaced and per the service manual. Oil addition follows manufacturer specifications. Proper oil quantity and

type are critical for compressor longevity. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

17. D — Some hybrid and electric vehicle A/C systems with electric compressors. POE oil is required for electric compressors due to electrical isolation requirements. PAG oil is electrically conductive and unsuitable. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

18. B — Recover refrigerant, flush the system, replace the receiver-drier or accumulator, replace contaminated oil, recharge, and verify operation. Oil contamination requires comprehensive system service. Without complete contamination removal, issues will recur. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

19. A — Operate a vacuum pump for the manufacturer-specified time, deep enough to boil moisture into vapor for removal. Evacuation removes moisture by lowering pressure to boil water at low temperatures. The vacuum depth determines moisture removal effectiveness. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

20. C — Approximately 500 microns or lower, ensuring proper moisture removal. Deep vacuum is required for proper moisture removal. 500 microns is a common minimum specification; some specifications are deeper. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

21. D — Insufficient evacuation time, leak in the system during evacuation, or inadequate vacuum depth. Moisture after recharge indicates evacuation issues. Insufficient time, system leaks, or inadequate vacuum each leave moisture in the system. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

22. B — Prevent acid formation, ice in the metering device, and damage to internal components. Moisture in the system causes multiple problems. Acid formation, freezing, and component damage all result from moisture contamination. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

23. A — Replace the compressor, replace the receiver-drier or accumulator, flush if needed, evacuate, recharge with proper oil and refrigerant, and verify operation. Compressor replacement requires comprehensive service. Each step ensures proper post-service operation. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

24. C — Verify proper installation, verify clutch engagement, verify proper system pressures and temperatures, and verify proper operation. Compressor replacement verification requires comprehensive checks. Each step confirms a different aspect. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

25. D — Internal compressor wear, low refrigerant or oil affecting lubrication, or compressor mounting issues. Compressor noise has multiple potential causes. Each cause produces noise

during operation. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

26. B — Verify the customer concern, listen to the noise location and characteristics, verify proper system charge, and identify the specific cause. Compressor noise diagnosis requires systematic approach. Each step provides different diagnostic information. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

27. A — Low refrigerant charge causing low-pressure cutoff cycling, or fault in the cycling switch. Rapid cycling indicates the system is hitting protection limits frequently. Low charge or switch faults each produce this symptom. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

28. C — Cycle the compressor on and off based on system pressure to prevent evaporator freezing. The cycling switch protects the evaporator from freezing. It cycles the compressor based on suction pressure or evaporator temperature. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

29. D — The compressor will not engage because the cycling circuit is open. Open cycling switch breaks the compressor control circuit. Without circuit completion, the compressor cannot engage. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

30. B — Verify proper switch operation at varied pressures, comparing to specification. Cycling switch testing requires verification under varied conditions. The switch must close at the proper pressure points. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

31. D — Disengage the compressor when system pressure exceeds safe limits, protecting the system. The high-pressure cutout protects against overpressure. It disengages the compressor when high-side pressure exceeds the safe operating range. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

32. A — Excessive system pressure from overcharge, restricted condenser, or condenser cooling issue. High-pressure cutoff activation indicates the system pressure has exceeded safe limits. Overcharge, restriction, or cooling issues each cause this. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

33. C — Verify proper system charge, inspect condenser airflow, verify cooling fan operation, identify the cause. High-pressure cutoff diagnosis requires systematic verification of the heat rejection system. Each step provides different diagnostic information. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

34. B — A protection signal preventing compressor engagement (low charge, high temperature, low pressure, or other protection logic). A/C request without compressor command indicates protection

logic is preventing engagement. Multiple conditions can trigger protection. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

35. D — Verify the customer concern, retrieve stored DTCs, monitor scan tool data for A/C request and compressor command, and identify the specific cause. Electronic A/C diagnosis requires scan tool integration. Each step provides different diagnostic information. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

36. A — Marginal refrigerant charge (slightly low or slightly high), restriction, or component issue. Below-specification performance indicates subtle issues. Each cause reduces performance without causing complete failure. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

37. C — Measure the discharge air temperature at varied conditions, comparing to manufacturer's specification. Performance verification requires temperature measurement. Comparison to specification reveals system performance. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

38. B — The discharge temperature is high relative to specification, indicating an A/C system issue requiring diagnosis. 75°F discharge with 95°F ambient is poor performance. Typical A/C should produce significantly cooler discharge. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

39. D — Use a thermometer at the dash vent with the system at maximum cold setting and high blower speed, after several minutes of operation. Discharge temperature measurement requires standardized conditions. Maximum cold and high blower with stabilized operation produces comparable results. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

40. A — Compressor cycling issue, low refrigerant charge, or evaporator icing from system control issue. Cooling that warms over time indicates progressive issue during operation. Each cause produces this pattern. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

41. C — Verify system pressures during operation, monitor compressor cycling, check for evaporator icing, and identify the cause. Progressive warming diagnosis requires monitoring during operation. Each method reveals different aspects. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

42. B — Insufficient airflow over the evaporator, cycling switch issue, or low refrigerant causing low evaporator temperatures. Evaporator icing is the diagnostic signature of below-freezing evaporator temperatures. Each cause produces this condition. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

43. D — Identify the cause of low evaporator temperature, address the cause, allow ice to melt, and verify proper operation. Evaporator ice repair requires cause identification and addressing. Without addressing the cause, icing will recur. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*

44. A — Normal refrigerant equalization between high and low sides as the compressor stops. Hissing at shutdown is normal as the system pressures equalize. The sound indicates proper system operation. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

45. C — Inform the customer about normal operational sounds (compressor cycling, refrigerant flow, equalization). Customer education is appropriate when sounds are normal. The customer needs to distinguish normal operation from faults. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

46. B — A failed blend door actuator for that zone, fault in the zone control wiring, or fault in the multi-zone HVAC module. Single zone failure isolates to that zone's specific components. Each component contributes to potential causes. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

47. D — Verify the customer concern, retrieve stored DTCs, check zone-specific actuator operation, and identify the specific cause. Multi-zone diagnosis requires scan tool integration to identify the affected zone. Each zone has independent components. *ASE Task Reference: A7 Domain D — Operating Systems and Related Controls. Review subsection 7.4.*

48. C — Verify the customer concern, check rear A/C controls, verify proper refrigerant flow to the rear unit, and identify the specific cause. Rear A/C diagnosis requires verification of the rear-specific components. Refrigerant flow and controls each contribute to potential causes. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

49. A — Verify all repairs, verify proper refrigerant flow to the rear unit, verify proper cooling at rear vents, and verify proper operation. Rear A/C service verification requires comprehensive approach. Each step verifies different aspects. *ASE Task Reference: A7 Domain A — A/C System Diagnosis and Repair. Review subsection 7.1.*

50. B — Follow the manufacturer-specified high-voltage isolation procedure, use only the proper compressor oil (typically POE), perform the manufacturer-specified service procedure, and verify proper operation. Electric A/C compressor service requires high-voltage safety and proper oil. POE is required due to electrical isolation needs. *ASE Task Reference: A7 Domain B — Refrigeration System Component Diagnosis and Repair. Review subsection 7.2.*