Military Tactical Wheeled Vehicle Technician Certification Program

Test Guide  June 2021
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>3</td>
</tr>
<tr>
<td>Tactical Wheeled Vehicles Covered by the Tests</td>
<td>7</td>
</tr>
<tr>
<td>Diesel Engines Test (MIL2)</td>
<td>8</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>8</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>13</td>
</tr>
<tr>
<td>Drive Train Test (MIL3)</td>
<td>15</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>15</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>18</td>
</tr>
<tr>
<td>Chassis Test (MIL4)</td>
<td>20</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>20</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>25</td>
</tr>
<tr>
<td>Suspension, Steering &amp; Hydraulics Test (MIL5)</td>
<td>27</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>27</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>31</td>
</tr>
<tr>
<td>Electrical/Electronics Test (MIL6)</td>
<td>33</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>33</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>37</td>
</tr>
<tr>
<td>Heating, Ventilation, &amp; Air Conditioning (HVAC) Test (MIL7)</td>
<td>39</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>39</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>43</td>
</tr>
<tr>
<td>Preventive Maintenance Checks &amp; Services (PMCS) Test (MIL8)</td>
<td>45</td>
</tr>
<tr>
<td>Specifications &amp; Task List</td>
<td>45</td>
</tr>
<tr>
<td>Sample Questions</td>
<td>52</td>
</tr>
</tbody>
</table>
OVERVIEW

Introduction

This test guide is designed to help tactical wheeled vehicle technicians prepare for tests in the ASE Military Tactical Wheeled Vehicle Technician Certification Program. It includes detailed information for each test offered and should help you identify weak areas in your technical knowledge, making it easier to identify resources that will help you prepare.

ASE voluntary certification helps technicians prove their abilities to themselves, to their employers, and to their peers. By passing the tests and submitting appropriate work experience, you will earn a valuable credential targeted to tactical wheeled vehicle technicians. Because the tests are challenging, you’ll have the satisfaction of knowing you are among the elite in your profession. What’s more, these credentials are nationally recognized.

Certified technicians promote trust and improve the image of those who work on tactical wheeled vehicles. ASE encourages you to take the tests and to join the proven pros who wear the ASE Seal of Excellence®.

Tactical Wheeled Vehicles Tests

The tests in this series are open to any technician who wishes to take them. Test candidates who pass one or more tests and have at least two years of experience in vehicular service and repair will be an ASE Certified Military Technician.

The tests described in this guide cover technical service and repair topics in the context of the tactical wheeled vehicle program. Certain technologies will differ from those used on civilian...
vehicles and key terms may also differ. The tests are offered at Pro-metric and ASE satellite test centers and are open to both military and civilian test candidates.

Tests that are offered for the first time in July, 2021 (MIL3, MIL4, MIL5, MIL7, MIL8) will initially be twice as long as regular tests and results will be delayed until ASE confirms the pass score. Pre-existing tests (MIL2, MIL6) will feature 40 questions (plus 10 unscored research questions) and immediate results. See the chart on page 5 for details.

Who Writes the Questions?

Although ASE produces the tests and administers the testing program, the test questions are written by military and civilian personnel with expert-level knowledge of tactical wheeled vehicles. Questions are written in working meetings where military instructors, working technicians, and civilian OEM training staff collaborate to ensure that each question accurately covers the tasks that wheeled vehicle technicians do in their day-to-day job.

Getting Started

Registration information is available at www.ase.com. This site shows testing locations and provides other important information, including electronic versions of all ASE Study Guides.

While on the ASE website, create your own myASE account (if you do not already have one), which will allow you to register for tests, make test appointments, and have direct access to all your personal ASE certification information. Please let us know if you have questions. Reach out to our helpful customer service staff at contactus@ase.com or 800-390-6789.
### Military Tactical Wheeled Vehicles Technician Certification Program Tests

<table>
<thead>
<tr>
<th>Test Code</th>
<th>Test Description</th>
<th>Number of Questions</th>
<th>Testing Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIL2</td>
<td>Diesel Engines</td>
<td>40†</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL3</td>
<td>Drive Train</td>
<td>40*</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL4</td>
<td>Chassis</td>
<td>40*</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL5</td>
<td>Suspension, Steering, and Hydraulics</td>
<td>40*</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL6</td>
<td>Electrical/Electronics</td>
<td>40†</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL7</td>
<td>Heating, Ventilation, and Air Conditioning</td>
<td>40*</td>
<td>1 hour</td>
</tr>
<tr>
<td>MIL8</td>
<td>Preventive Maintenance Checks and Services (PMCS)</td>
<td>40*</td>
<td>1 hour</td>
</tr>
</tbody>
</table>

*Tests MIL3, MIL 4, MIL 5, MIL 7 and MIL 8 will be offered starting in July 2021. These tests will initially contain 80 questions with a testing time of 120 minutes and results will not be available until ASE confirms the pass score for each test (late 2021). Tests will then revert to the length shown in the chart.

†MIL2 and MIL6 will include 10 research questions that are not scored, so test takers will answer a total of 50 questions.

---

### At the Test Center: Some Tips

- Arrive early to find parking and the Test Center office. Late arrivals may be turned away and may forfeit test fees.
- Bring your Admission Ticket and unexpired, government-issued photo ID. You will be assigned a locker to store personal items.
- You will start with a short tutorial on using the testing platform. You can preview the platform at [www.ase.com/asedemo](http://www.ase.com/asedemo) before you arrive.
- During your test, the computer screen will display the amount of time left. If you finish early, either review your answers or end the test. **Once you end the test, you cannot go back.** Then, continue to the next test or to the survey, if you are finished with all tests.
- If you are taking several tests and need a short break, take it between tests, when you reach the screen that asks if you are taking additional tests.
- If you are unsure of an answer, mark your best guess and flag the question using the on-screen button. You may have time to review the question at the end. Don’t leave questions blank--your score is based on the number of correct answers.
How To Use This Guide

The material in this booklet is designed to help technicians prepare for the Military Tactical Wheeled Vehicle Program tests.

Each section focuses on one test and begins with the Test Specifications page, which lists the major content areas covered and the number of test questions in those areas, as well as the percentage of the test devoted to each topic. Some tests include sub-content areas.

The Task List describes in detail the work activities a tactical wheeled vehicle technician should be able to perform. This list was developed by military instructors, practicing technicians, and civilian OEM training staff dedicated to tactical wheeled vehicles. The test candidate should use it as a valuable checklist covering knowledge required for test success.

The number of tasks listed does not equal the number of questions. Every question relates to at least one listed task, but some tasks may not appear on the test. The main goal of the list is to describe what is done on the job; any task on it may be covered on the test.

Sample questions follow the Task List. These specific questions will not appear on tests, but they are in the same format as actual test questions. The test candidate should become familiar with all the question types illustrated. The Military Tactical Wheeled Vehicle Program tests employ several types of multiple-choice questions. ■
TACTICAL WHEELED VEHICLES COVERED BY THE TESTS

The High Mobility Multipurpose Wheeled Vehicle (HMMWV) is a family of light, four-wheel drive, military trucks and utility vehicles produced by AM General.

The Joint Light Tactical Vehicle (JLTV) is a four-wheel drive vehicle manufactured by Oshkosh and designed in-part to replace the HMMWV with a family of more survivable vehicles with a greater payload.

The Family of Medium Tactical Vehicles (FMTV) is a series of vehicles, built by Oshkosh and based on a common chassis, that vary by payload and mission requirements. The FMTV family consists of the LMTV (with a single rear axle) and MTV (with dual rear axles).

The Mine-Resistant Ambush Protected (MRAP) is a US Military light tactical vehicle produced by Navistar Defense that is designed specifically to withstand improvised explosive device (IED) attacks and ambushes. The MRAP is no longer in production. Technology specific to these vehicles will eventually be phased out of the ASE Tests.

The Heavy Expanded Mobility Tactical Truck (HEMTT) is an eight-wheel drive, diesel-powered, 10-short-ton (9,100 kg), tactical truck manufactured by Oshkosh.

The Palletized Load System (PLS) is a truck-based logistics system that performs long and short distance freight transport, unit resupply, and other missions in the tactical environment to support modernized and highly mobile combat units.
SPECIFICATIONS & TASK LIST
DIESEL ENGINES TEST (MIL2)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Questions in Test</th>
<th>Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. General Engine Diagnosis</td>
<td>9</td>
<td>22%</td>
</tr>
<tr>
<td>B. Cylinder Head and Valve Train Diagnosis and Repair</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td>C. Engine Block Inspection, Diagnosis, and Repair</td>
<td>3</td>
<td>8%</td>
</tr>
<tr>
<td>D. Lubrication and Cooling Systems Diagnosis and Repair</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>E. Air Induction and Exhaust Systems Diagnosis and Repair</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>F. Fuel System Diagnosis and Repair</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>G. Starting and Charging Systems Diagnosis and Repair</td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td>H. Engine Brakes</td>
<td>1</td>
<td>3%</td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>100%</td>
</tr>
</tbody>
</table>

A. General Engine Diagnosis (9 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Inspect engine assembly and compartment for fuel, oil, coolant, exhaust, or other leaks; identify and classify leaks; determine needed action.
3. Inspect engine compartment wiring harness, connectors, seals, and locks; check for proper routing and condition; determine needed action.
4. Isolate and diagnose engine noises; determine needed action.
5. Check engine exhaust for odor, smoke color, and density; determine needed action.
6. Perform fuel supply and return system tests; check fuel for contamination, quality, and consumption; determine needed action.
7. Perform air intake system restriction and leakage tests; determine needed action.
8. Perform intake manifold and system pressure tests; determine needed action.
9. Visually inspect for crankcase ventilation/blow-by; determine needed action.
10. Diagnose no-cranking, cranks but fails to start, hard starting, and starts but does not continue to run problems; determine needed action.
11. Diagnose surging, rough operation, misfiring, low power, slow deceleration, slow acceleration, and shutdown problems; determine needed action.
12. Isolate and diagnose engine-related vibration problems; determine needed action.
13. Check engine coolant system for freeze point, level, contamination, coolant type, temperature, pressure, circulation, conditioner concentration, filtration, and fan operation; determine needed action.
14. Check lubrication system for contamination, oil level, temperature, pressure, filtration, and oil consumption; determine needed action.
15. Check and record electronic diagnostic codes and trip/operational data; monitor electronic data; verify programmable parameters; clear diagnostic trouble codes; verify the repair; determine if further diagnosis is needed.
16. Perform visual inspection for physical damage and missing, modified, or tampered with components; determine needed action.

B. Cylinder Head and Valve Train Diagnosis and Repair (4 questions)
1. Remove, inspect, disassemble, and clean cylinder head assembly(s).
2. Inspect threaded holes, studs, and bolts for serviceability; service/ replace as needed.
3. Visually inspect cylinder head and check mating surfaces for warpage and surface finish; visually inspect for cracks/damage; check condition of passages; inspect core and gallery plugs; determine serviceability and needed action.
4. Visually inspect valves, guides, seats, springs, retainers, rotators, locks, and seals; determine serviceability and needed actions.
5. Inspect and/or replace injector sleeves and seals; pressure test to verify repair (if applicable); measure injector tip or nozzle protrusion where specified by manufacturer.
6. Inspect, and/or replace valve bridges (crossheads) and guides; adjust bridges (crossheads) if applicable.
7. Clean components; reassemble, check, and install cylinder head assembly.
8. Inspect pushrods, rocker arms, rocker arm shafts, electronic wiring harness, and brackets for wear, bending, cracks, looseness, and blocked oil passages; repair/replace as needed.
9. Inspect, install, and adjust cam followers and retainers.
10. Adjust valve clearance and injector settings.
11. Inspect, measure, and replace/reinstall overhead camshaft and bearings; measure and adjust endplay and backlash.
C. Engine Block Inspection, Diagnosis, and Repair (3 questions)
1. Remove, inspect, service, and install pans, covers, ventilation systems, gaskets, seals, and wear rings.
2. Visually inspect engine block for cracks or damage; check mating surfaces and related components for damage or warpage and surface finish; check condition of passages, core, and gallery plugs; inspect threaded holes, studs, dowel pins and bolts for serviceability; service/replace as needed.
3. Visually inspect cylinder walls or liners for wear and damage; determine needed action.
4. Inspect, reinstall, and time the drive gear train (includes checking engine position and speed indicator components; gear wear; backlash of crankshaft, camshaft, auxiliary, drive, and idler gears; and servicing shafts, bushings, and bearings); determine needed action.
5. Clean, inspect and measure crankshaft vibration damper; replace as needed.
6. Inspect, install, and align flywheel housing.
7. Inspect flywheel/flexplate (including ring gear) and mounting surfaces for cracks, wear, and runout; determine needed action.

D. Lubrication and Cooling Systems Diagnosis and Repair (6 questions)
1. Verify engine oil pressure and check operation of pressure sensor/switch and pressure gauge; verify engine oil temperature and check operation of temperature sensor.
2. Inspect, measure, and repair/replace oil pump, housing, drives, pipes, and screens.
3. Inspect and repair/replace oil pressure regulator valve(s) and bypass valve(s).
4. Inspect, clean, test, and reinstall/replace oil cooler, bypass valve, oil thermostat, lines and hoses.
5. Inspect turbocharger lubrication and cooling systems; determine needed action.
6. Perform engine oil and filter service; add proper type and quantity of oil.
7. Inspect and reinstall/replace pulleys, tensioners and drive belts; adjust drive belts and check alignment.
8. Verify coolant temperature, check operation of temperature and level sensors/switch, and temperature gauge.
9. Inspect and replace thermostat(s), bypasses, housing(s), seals, and coolant restrictors.
10. Flush and refill cooling system; bleed air from system; recover/recycle coolant.
11. Inspect and repair/replace coolant conditioner/filter, valves, lines, fittings, and housing (if applicable).
12. Inspect and repair/replace water pump, housing, hoses, and idler pulley or drive gear.
13. Inspect radiator, pressure cap(s), and tank(s); determine needed action.
14. Inspect and repair/replace fan, fan hub, fan clutch, fan controls, fan thermostat, fan shroud, and airflow management systems.
15. Pressure test cooling system and pressure cap(s); determine needed repairs.

E. Air Induction and Exhaust Systems Diagnosis and Repair (6 questions)
1. Inspect and service/replace air induction piping, air cleaner, and element; check for inlet air restriction.
2. Inspect, test, and replace fixed and variable turbocharger(s), pneumatic, hydraulic, and electronic controls and actuators.
3. Inspect and repair/replace intake manifold, gaskets, temperature and pressure sensors, and connections.
4. Inspect, test, clean, or replace charge air cooler and piping system.
5. Inspect, repair/replace, and service exhaust manifold, gaskets, piping, mufflers, and mounting hardware.
6. Inspect, test, and repair/replace preheater/inlet air heater, or glow plug system and controls.

F. Fuel System Diagnosis and Repair (6 questions)
1. Inspect, test, and repair/replace fuel system tanks, vents, caps, mounts, valves, single/dual supply and return lines, and fittings.
2. Inspect, clean, test, and repair/replace fuel transfer (supply) pump, pump drives, strainers and fuel/water separators, sensors, filters, heaters, coolers, ECM cooling plates, and mounting hardware.
3. Check fuel supply system for air; determine needed repairs; prime and bleed fuel system; check and repair/replace primer pump.
4. Inspect, test, and repair/replace low-pressure regulator systems (check valves, pressure regulator valves and restrictive fittings).
5. Inspect high-pressure injection lines, fittings, transfer tubes, seals and mounting hardware; determine needed action.
6. Perform on-engine inspections and tests, and replace high-pressure common rail (HPCR) fuel system components and electronic controls; determine needed action.
7. Perform on-engine inspections and tests on hydraulic electronic unit injectors (HEUI) and electronic controls (rail pressure control).
8. Perform on-engine inspections, tests, and adjustments on electronic unit injectors (EUI) and electronic controls.
10. Inspect, test, and repair/replace engine protection and automatic shutdown system components.
11. Inspect, test, and repair/replace electrical connector terminals, pins, harnesses, seals, and locks.

12. Connect Maintenance Support Device (MSD)/electronic service tool to vehicle/engine; access, verify, and update software calibration settings, injector calibration codes, programmable parameters; perform module re-learn procedures; determine needed action.

13. Connect Maintenance Support Device (MSD)/electronic service tool to vehicle; inspect and test electronic engine control system, sensors, actuators, electronic control modules, and circuits; determine needed action.

14. Measure and interpret voltage, voltage drop, amperage, and resistance readings using a digital multimeter (DMM) or appropriate test equipment.

G. Starting and Charging Systems Diagnosis and Repair
(5 questions)
1. Perform battery state-of-charge and load or capacitance tests; determine needed action.
2. Charge battery using correct method for application.
3. Start a vehicle using jumper cables or a booster battery.
4. Inspect, clean, and repair/replace batteries, battery cables, and terminal connections.
5. Inspect, test, and reinstall/replace starter, relays, safety switch(s), and solenoids.
6. Perform alternator voltage and amperage output tests; determine needed action.
7. Perform starting and charging circuit voltage drop tests; determine needed action.

H. Engine Brakes (1 question)
1. Inspect, test, and adjust engine compression and exhaust brakes.
2. Inspect, test, adjust, and repair/replace engine compression and exhaust brake control circuits, switches, actuators, and solenoids; adjust control parameter settings.
3. Inspect and repair/replace engine compression and exhaust brake housing(s), valves, seals, springs, lines, and fittings.
SAMPLE QUESTIONS
DIESEL ENGINES TEST (MIL2)

1. A military tactical wheeled vehicle equipped with a high-pressure common rail (HPCR) fuel system is being diagnosed for a crank/no-start condition. During testing the fuel rail pressure is 225 psi. The cranking fuel pressure specification is 5000 psi. All other pressures and voltages are normal. Which of these could be the cause?

> (A) A stuck-open fuel rail pressure relief valve
(B) A stuck-closed fuel injector
(C) A leaking fuel tank vent
(D) A leaking fuel injector return line

2. Technician A says that debris in the cylinder head bolt holes can affect final head bolt torque.

   Technician B says that using over-stretched cylinder bolts can lead to under-torqued cylinder heads.

   Who is right?

   (A) A only
   (B) B only
   > (C) Both A and B
   (D) Neither A nor B
3. A tactical wheeled vehicle has low engine power. A diagnostic trouble code (DTC) “Intake Manifold Sensor Out of Range” was retrieved. During testing, the digital multimeter (DMM) reading shown was measured.

Technician A says that an open sensor 5V reference circuit could be the cause.

Technician B says that an open sensor ground circuit could be the cause.

Who is right?

(A) A only    (C) Both A and B
(B) B only    (D) Neither A nor B

4. A JLTV has low power and produces a loud whistling sound while being driven. This could be caused by a:

(A) restricted engine air filter.
(B) leaking exhaust manifold gasket.
(C) restricted engine oil filter.
(D) ruptured charge air cooler hose.
### SPECIFICATIONS & TASK LIST

#### DRIVE TRAIN TEST (MIL3)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Questions in Test</th>
<th>Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>18</td>
<td>45%</td>
</tr>
<tr>
<td>B.</td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td>C.</td>
<td>9</td>
<td>22%</td>
</tr>
<tr>
<td>D.</td>
<td>7</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

**A. Automatic Transmission Diagnosis and Repair (18 questions)**

1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Diagnose fluid usage; check fluid level and condition; determine needed service.
3. Perform pressure tests; determine needed repairs.
4. Diagnose noise, vibration, and shifting problems; determine needed repairs.
5. Perform lock-up converter system tests; determine needed repairs.
6. Diagnose mechanically and electrically controlled systems; determine needed repairs.
7. Inspect, adjust, and replace manual valve shift linkage and cables.
8. Replace fluid and filter(s); check and adjust fluid level.
9. Inspect and replace external seals and gaskets.
10. Inspect, test, flush, and/or replace cooler(s), lines, filters, and fittings.
11. Inspect, test, or replace speed sensor(s); visually inspect tone/exciter ring(s).
12. Inspect, test operation, and repair or replace electronic shift controls, indicators, temperature sensors, electronic transmission control module (TCM), neutral/in-gear and reverse switches, warning devices, and wiring harnesses.
13. Inspect, test operation, and repair or replace electronic shift selectors (operator controls), switches, displays, indicators, and wiring harnesses.
14. Use appropriate diagnostic tools and software, procedures, and service information/flow charts to diagnose automatic transmission problems; check and record diagnostic codes, clear codes, and interpret digital multimeter (DMM) readings; determine needed repairs.

15. Diagnose automatic transmission problems caused by data link/bus interfaces with related electronic control systems.

16. Inspect, replace, and align transmission mounts.

17. Remove and replace transmission; inspect flexplate.

18. Remove, inspect, and replace transmission torque converter.

19. Inspect engine block, flywheel housing, transmission mating surfaces, and flexplate; determine needed repairs.

20. Perform adaptive memory reset procedure(s).

21. Identify transmission type. Research applicable vehicle and service information; vehicle service history; service warnings, cautions, and notes; safety messages and alerts.

B. Driveshaft/Propeller Shaft and Universal Joint Diagnosis and Repair (6 questions)

1. Diagnose driveshaft/propeller shaft and universal joint noise, vibration, and runout problems; determine cause of failure and needed repairs.

2. Inspect, service, or replace driveshaft/propeller shaft, slip joints/yokes, drive flanges, universal joints, driveshaft boots and seals, and retaining hardware; properly phase yokes; if applicable.

3. Inspect and replace driveshaft center support bearings, fasteners, and mounts.

C. Axle Diagnosis and Repair (9 questions)

1. Diagnose drive axle unit noise and overheating problems; determine needed repairs.

2. Check and repair fluid leaks; inspect and replace drive axle housing cover plates, gaskets, sealants, vents, magnetic plugs, and seals.

3. Check drive axle fluid level and condition; determine needed service, (service filter, fluid); add proper type and amount of lubricant using correct fill procedure.

4. Inspect, remove, and replace differential assembly.

5. Inspect and replace components of locking differential case assembly.

6. Inspect, service, or replace drive axle lubrication and cooling system components.

7. Inspect and replace drive axle shafts, half-shaft assemblies, and boots.

8. Remove, inspect, and replace wheel hub assembly; inspect antilock brake system (ABS) tone/exciter ring and wheel speed sensor; determine needed repairs.
9. Clean, inspect, lubricate, and replace wheel bearing cones and races (cups); clean and inspect locking plates and nuts; replace seals, wear rings, and axle flange gasket; verify wheel bearing torque/endplay and determine needed actions.
10. Inspect, adjust, repair, or replace planetary axle assemblies and components.

D. Transfer Case/Transaxle Diagnosis and Repair (7 questions)
1. Inspect, adjust, and repair transfer case and/or transaxle manual shifting mechanisms, bushings, mounts, levers, cables, linkages, and brackets.
2. Inspect, adjust, and repair transfer case and/or transaxle electrical/pneumatic controls and switches.
3. Check transfer case fluid level; drain and refill with proper fluid.
4. Inspect, service, and replace drive/propeller shaft and universal/CV joints.
5. Check transfer case and pump for leaks and cracks; check seals and vents.
6. Diagnose drive system actuation and engagement concerns; repair or replace components as necessary.
SAMPLE QUESTIONS
DRIVE TRAIN TEST (MIL3)

1. When checking the front differential fluid level of a HMMWV, the technician finds the fluid is a milky color. Which of these could be the cause?

> (A) Water contamination
(B) A restricted breather
(C) Incorrect gear oil
(D) Loose wheel/hub bearings.

2. During a preventive maintenance checks and services (PMCS), a tactical wheeled vehicle’s transmission fluid is very dark and smells burnt. This could be caused by:

(A) deep-water fording.
(B) overloading the vehicle.
(C) a constantly engaged engine fan.
> (D) an externally restricted transmission cooler.
3. While fixing a leaking wheel seal on a HEMTT, the wheel bearing shown in the illustration was discovered. Which of these could be the cause?

(A) A bent axle shaft
(B) Contaminated grease
(C) Under-inflated tires
(D) A restricted differential housing vent

4. A LMTV has had repeated transfer case output seal failures.
   Technician A says that excessive slow-speed, off-road operation could be the cause.
   Technician B says that a restricted transfer case breather/vent could be the cause.
   Who is right?

(A) A only  (C) Both A and B
(B) B only  (D) Neither A nor B
## Specfications & Task List

### Chassis Test (MIL4)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Questions in Test</th>
<th>Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Air Brake System Diagnosis and Repair</strong></td>
<td>12</td>
<td>30%</td>
</tr>
<tr>
<td>1. Air Supply, Parking, and Service Brake Systems</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td>2. Air Brake Mechanical/Wheel-End</td>
<td>(6)</td>
<td></td>
</tr>
<tr>
<td><strong>B. Hydraulic Brake System Diagnosis and Repair</strong></td>
<td>9</td>
<td>23%</td>
</tr>
<tr>
<td><strong>C. Air-over-Hydraulic Braking Systems</strong></td>
<td>1</td>
<td>2%</td>
</tr>
<tr>
<td><strong>D. Antilock Brake System (ABS) Diagnosis and Repair</strong></td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td><strong>E. Central Tire Inflation System Diagnosis and Repair</strong></td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td><strong>F. Tire, Wheel, and Wheel Hub Diagnosis and Repair</strong></td>
<td>7</td>
<td>18%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### A. Air Brake System Diagnosis and Repair (12 questions)

#### 1. Air Supply, Parking, and Service Brake Systems (6 questions)

1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.

2. Check air system buildup time; check air system air loss rate (leakage); determine needed repairs.

3. Inspect, test, repair, or replace air pressure gauges, in-cab lines, hoses, fittings, and air pressure switches and sensors (transducers).

4. Inspect, test, and replace low pressure warning devices.

5. Drain air reservoir tanks; check for oil, water, and foreign material; determine needed repairs.

6. Inspect, adjust, align, and replace compressor drive belts, tensioners, idlers, and pulleys.

7. Inspect and replace air compressor drive gear and coupling.
8. Inspect, repair, or replace air compressor, air inlet supply, oil supply, coolant lines, hoses, fittings, mountings, and brackets.
9. Inspect, test, adjust, and replace system pressure controls (governor/relief valve), unloader assembly, lines, hoses, and fittings.
10. Inspect, repair, or replace air system lines, hoses, fittings, and couplings; check for proper routing and mounting.
11. Inspect, test, clean, and replace air tank relief (pop-off) valves, check valves, drain valves, heaters, wiring, and connectors.
12. Inspect, test, clean, repair, or replace air drier systems, filters, valves, heaters, wiring, and connectors.
13. Inspect, test, and replace brake application (treadle) valve, fittings, and mounts; check pedal operation.
14. Inspect, test, repair, or replace stop light and parking brake light circuit switches, wiring, and connectors.
15. Inspect, test, repair, or replace hand brake (trailer) control valve, lines, hoses, fittings, and mountings.
16. Inspect, test, and replace parking (spring) brake valves, lines, hoses, and fittings.
17. Inspect, test, and replace parking (spring) brake dash control valve.
18. Inspect, test, and replace brake relay valves, quick release valves, and anti-compounding valves/circuits.
19. Inspect, test, and replace tractor protection valve.
20. Inspect, test, and replace inversion/emergency (spring) brake control valve(s).
21. Determine if air brake system problem is caused by tractor or trailer supply or service system components.

2. Air Brake Mechanical/Wheel-End (6 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Diagnose poor stopping, premature wear, brake noise, pulling, grabbing, or dragging problems caused by wheel-end brake components; determine needed repairs.
3. Inspect, test, and replace service/parking brake chambers, diaphragms, clamps, return springs, pushrods, clevises, and mounting brackets.
4. Inspect, service, and replace automatic slack adjusters.
5. Inspect and replace S-cam and wedge brake rollers, bushings, camshafts, seals, spacers, retainers, brake spiders, shields, anchor pins, and springs.
6. Inspect brake shoes; determine needed repairs. Replace as required.
7. Inspect and replace brake drums as needed.
8. Manually release (cage) and set (uncage) parking (spring) brakes.
B. Hydraulic Brake System Diagnosis and Repair (9 questions)

1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.

2. Diagnose poor stopping, brake noise, premature wear, pulling, grabbing, dragging, or pedal feel problems caused by hydraulic system components; determine needed repairs.

3. Pressure test hydraulic system and inspect for fluid leaks; check system pressure actuator operation and diagnose fault codes using a maintenance support device (MSD) if applicable.

4. Check brake pedal condition and operation; determine needed actions.

5. Inspect, test, and replace master cylinder.

6. Inspect and replace brake lines, flexible hoses, and fittings; check for proper routing and mounting.

7. Inspect, test, and replace brake proportioning valve.

8. Inspect, test, repair, or replace brake pressure warning light circuits, switches, bulbs, wiring, and connectors.

9. Inspect, service, and replace disc brake caliper assemblies.

10. Inspect/test brake fluid; bleed and/or flush system; determine proper fluid type for application.

11. Diagnose poor stopping, brake noise, premature wear, pulling, grabbing, dragging, or pedal feel problems caused by disc brake mechanical components; determine needed repairs.

12. Inspect and replace brake rotors.

13. Inspect, service, and replace brake pads, hardware, and mounts.

14. Diagnose poor stopping complaints caused by brake assist (booster) system problems; replace assembly as needed.

15. Inspect, test, repair, or replace power brake assist system, hoses, control valves, and filters; determine proper fluid type for application.

16. Test, adjust, repair, or replace brake stop light switch, bulbs, wiring, and connectors.

17. Test, inspect, adjust, repair, or replace parking brake system and components.

C. Air-over-Hydraulic Braking Systems (1 question)

1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.

2. Diagnose poor stopping caused by problems with hydraulic intensifiers.

3. Inspect, remove, repair, and replace hydraulic intensifiers including hydraulic and pneumatic lines and fittings.
4. Diagnose brake operation issues caused by pneumatic-hydraulic manifold and pump (park brake pump).
5. Inspect, remove, repair, and replace pneumatic-hydraulic pump; drain, fill, and bleed hydraulic circuit.
6. Diagnose, repair, adjust, remove, and replace spring applied, hydraulic released (SAHR) brake calipers.
7. Remove and replace spring applied, hydraulic released (SAHR) brake caliper pads; adjust brakes and components as required.

D. Antilock Brake System (ABS) Diagnosis and Repair (6 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Observe antilock brake system (ABS) operation, self-test operation, and warning light operation; determine if further diagnosis is needed.
3. Diagnose antilock brake system (ABS) electronic controls and components (including ABS sensors, modulators, tone rings, wiring, ECUs, circuits, solenoids, etc.) using self-diagnosis (blink codes) and/or specified test equipment and maintenance support device (MSD); determine needed repairs.
4. Diagnose poor stopping and wheel lock-up caused by failure of the antilock brake system (ABS); determine needed repairs.
5. Inspect, test, and replace antilock brake system (ABS) air, hydraulic, electrical, and mechanical components.
6. Diagnose automatic traction control (ATC) electronic control(s) and components using self-diagnosis (blink codes) and/or specified test equipment and maintenance support device (MSD); determine needed repairs.

E. Central Tire Inflation System (CTIS) Diagnosis and Repair (5 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Inspect, test, and interpret active diagnostic trouble codes.
3. Diagnose, inspect, and test system data network.
4. Test, inspect, remove, and replace switches, transducers, valves, electronic control unit (ECU), pneumatic control unit (PCU), and/or mechatronic control unit (MCU).
5. Inspect, remove, and replace hoses, lines, and fittings.
F. Tire, Wheel, and Wheel Hub Diagnosis and Repair
(7 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Diagnose tire wear patterns; determine needed repairs.
3. Diagnose wheel and tire vibration, shimmy, shaking problems; determine needed repairs.
4. Inspect and replace wheels, mounting hardware, studs, and fasteners.
5. Inspect tires; service or replace as needed; check and adjust air pressure to technical manual specifications.
6. Match tires and wheels on axles; confirm proper application for vehicle to include run-flat options.
7. Remove and reinstall tire/wheel assemblies to technical manual specifications.
8. Clean, inspect, lubricate, and replace wheel hubs, wheel bearings and races/cups; replace seals and wear rings; torque wheel bearings according to technical manual specifications.
9. Inspect, service and/or replace planetary wheel end/geared hub assemblies in accordance with technical manual specifications.
SAMPLE QUESTIONS
CHASSIS TEST (MIL4)

1. With the air system pressure at 120 psi, the parking brakes will not release on one wheel of a FMTV. Which of these could be the cause?

   (A) Moisture in the air tanks
   (B) A worn brake drum
   > (C) The brake shoes rusted to the drum surface
   (D) A leaking air compressor governor gasket

2. A HMMWV is being diagnosed for an operator report of the brake pedal slowly dropping to the floor when coming to a stop. This could be caused by:

   (A) a stuck-open hydraulic booster flow control valve.
   (B) sticking brake caliper slides.
   (C) a failed power steering pump.
   > (D) an internally leaking master cylinder.
3. A technician is inspecting the front tires of a FMTV and finds that both front tires have the feathered wear shown. Which of these could be the cause?

(A) A low power steering fluid level
(B) Worn shock absorbers
(C) Low tire air pressures
> (D) Excessive toe-out condition

4. The wheels on a tactical wheeled vehicle are being installed.

Technician A says that the wheel nuts should be tightened in a diagonal crossing pattern.

Technician B says that the load range ratings of the tires should all be the same.

Who is right?

(A) A only > (C) Both A and B
(B) B only (D) Neither A nor B
SPECIFICATIONS & TASK LIST
SUSPENSION, STEERING, AND HYDRAULICS TEST (MIL5)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>in Test</th>
<th>of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Steering System Diagnosis and Repair</td>
<td>13</td>
</tr>
<tr>
<td>B.</td>
<td>Suspension System Diagnosis and Repair</td>
<td>13</td>
</tr>
<tr>
<td>C.</td>
<td>Wheel Alignment Diagnosis, Adjustment, and Repair</td>
<td>7</td>
</tr>
<tr>
<td>D.</td>
<td>Hydraulic Power Systems</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

A. **Steering System Diagnosis and Repair (13 questions)**
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Diagnose steering column (tilt, telescoping, or fixed) for noise, looseness, and binding problems; determine needed repairs.
3. Inspect and replace steering shaft universal joint(s), slip joints, bearings, bushings, and seals; phase shaft universal joints.
4. Check cab mounting and adjust ride height.
5. Remove the steering wheel (includes steering wheels equipped with electrical/electronic controls and components); install and center the steering wheel.
6. Diagnose steering system noise, steering binding, pull, shimmy, wobble, vibrations, turning radius, turning effort, looseness, and hard steering; determine needed repairs.
7. Determine recommended type of power steering fluid; check level, leakage, overheating, and condition; determine needed service.
8. Flush and refill power steering system; bleed air from system.
9. Perform power steering system pressure, temperature, and flow tests; determine needed repairs.
10. Inspect, service, or replace power steering reservoir including filter, seals, and gaskets.
11. Inspect and reinstall/replace power steering pump drive belts, pulleys and tensioners; adjust drive belts and check alignment.
12. Inspect, adjust, or replace power steering pump, drive gears/shafts, mountings, and brackets.
13. Inspect and replace power steering system cooler, lines, hoses, clamps/ mountings, and fittings; check hose routing.
14. Inspect, adjust, repair, or replace primary and secondary steering gear to include front and rear gearboxes.
15. Adjust steering gear poppet/relief valves.
16. Inspect, align, and replace pitman arm(s).
17. Inspect, adjust, and replace drag link steering arm, idler arms, tie rod/inter-gear link, and tie rod ends; check and set tire toe-in (includes front and rear axles).
18. Inspect and replace tie rod relay rod/center link, clamps, and retainers; position as needed.
19. Check and adjust wheel stops.
20. Inspect, remove, replace, repair, and service reduction gear box.

B. Suspension System Diagnosis and Repair (13 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Inspect and replace front axle assembly and mounting hardware.
3. Inspect, service, adjust, and replace pivot pins, ball joints, knuckles, bushings, locks, bearings, seals, and covers.
4. Inspect and replace shock absorbers, bushings, brackets, and mounts.
5. Inspect, repair, and replace leaf springs, center bolts, clips, spring eye bolts and bushings, shackles, insulators, brackets, and mounts.
6. Inspect, adjust, and replace axle aligning devices including radius rods/ arms, torque rods, transverse beam, stabilizer bars, bushings, mounts, shims, and cams.
7. Inspect and replace walking beams, center (cross) tube, bushings, mounts, load pads, brackets, caps, and mounting hardware.
8. Inspect, test, and replace air suspension springs (bags), mounting plates, and main support beams/springs, pressure regulator and height control valves, linkages, lines, hoses, and fittings.
9. Measure front and rear vehicle ride height; determine needed adjustments or repairs.
10. Torque suspension system components to technical manual specifications.
11. Inspect frame and frame members for cracks, breaks, distortion, elongated holes, looseness, and damage; determine needed repairs.
12. Inspect, install, or repair frame hangers, brackets, crossmembers and fasteners in accordance with technical manuals’ procedures.
13. Inspect, adjust, service, repair, or replace fifth wheel, pivot pins, bushings, locking jaw mechanisms, and mounting bolts.
14. Inspect, adjust, service, repair, or replace sliding fifth wheel, tracks, stops, locking systems, air cylinders, springs, lines, hoses, and controls.
15. Inspect, install, repair or replace pintle hooks and safety chain attachment points.
16. Inspect, test, and service high pressure gas (HPG) suspension system in accordance with technical manual specifications (including nitrogen springs, shock absorbers, and roll control system).
17. Inspect, remove, and replace coil springs, control arms, linkages, bushings, pins, stabilizer bars, ball joints, and mounting components.

C. Wheel Alignment Diagnosis, Adjustment, and Repair (7 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Diagnose vehicle wandering, darting, pulling, drifting, shimmy, and steering effort problems; determine needed adjustments and repairs.
3. Diagnose causes of unusual tire wear. Check and adjust tire toe (front and rear axle).
4. Check rear axle(s) alignment and tracking; adjust or determine needed repairs.
5. Check turning angle and maximum turning radius; determine needed repairs.

D. Hydraulic Power Systems (7 questions)
1. Verify all operator checks and services have been performed and documented; test operation of equipment if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Test and diagnose causes of unusual pump noises, temperatures, pressures, and flow; determine needed actions.
3. Remove and replace hydraulic pump assembly.
4. Remove, service, and replace hydraulic reservoirs; flush and clean in accordance with technical manuals (TM).
5. Diagnose the cause of system contamination.
6. Service and replace hydraulic fluids, filters, breathers, and screens; verify proper fluid for application.
7. Inspect, test, service, remove, and replace hydraulic system accumulators.
8. Inspect, remove, replace, and fabricate hoses/tubing, connectors, seals, and fittings in accordance with technical manuals; use proper procedures to avoid contamination.

9. Diagnose, remove, and replace pressure relief, check, logic, load sense, and directional control valves.

10. Diagnose, inspect, repair, purge and bleed hydraulic system to include motors, actuators, case drains, and cylinders in accordance with the technical manual.

11. Interpret hydraulic system schematics, diagrams, and layouts.

12. Inspect, test, repair, or replace electronic control switches, proximity switches, motors, modules, and solenoids for auxiliary hydraulic systems.
SAMPLE QUESTIONS
SUSPENSION, STEERING, AND HYDRAULICS TEST (MIL5)

1. A HMMWV operator reports that the steering wheel is very difficult to turn. During diagnosis, the technician verifies that the fluid level is correct. Which of these could be the cause?

(A) A loose tie rod end
(B) A worn steering gear
(C) A failed steering pump
(D) A leaking power steering hose

2. During a preventive maintenance checks and services (PMCS), both front tires were found to have excessive wear on the inside edge only. This could be caused by:

(A) underinflated tires.
(B) overinflated tires.
(C) an excessive toe-in-condition.
(D) an excessive toe-out condition.
3. A HEMMT equipped with the suspension system shown is being diagnosed for a low ride height and a very rough ride. Which of these could be the cause?

(A) A bent axle torque arm  
(B) Worn shock absorbers  
(C) A restricted solenoid exhaust port  
(D) A leaking air ride supply line

4. A HMMWV operator reports that the truck wanders from side-to-side when driving on a straight road.

   Technician A says that a worn steering gear could be the cause.

   Technician B says that a slipping serpentine belt could be the cause.

Who is right?

(A) A only  
(B) B only  
(C) Both A and B  
(D) Neither A nor B
A. General Electrical/Electronic System Diagnosis (9 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Check applied voltages, circuit voltages, and voltage drops in electrical/electronic circuits using digital multimeter (DMM) or appropriate test equipment.
3. Check current flow in electrical/electronic circuits and components using digital multimeter (DMM), clamp-on ammeter, or appropriate test equipment.
4. Check continuity and resistance in electrical/electronic circuits and components using digital multimeter (DMM) or appropriate test equipment.
5. Find shorts, grounds, and opens in electrical/electronic circuits.
6. Diagnose parasitic battery drain problems; determine needed repairs.
7. Inspect and test fusible links, circuit breakers, fuses, and other circuit protection devices; include reset when required.
8. Inspect and test diodes and resistors.
9. Inspect and test relays and solenoids (including solid state devices).
10. Read and interpret electrical schematic diagrams and symbols.
11. Diagnose failures in the multiplexed data communications bus network; determine needed repairs.
12. Diagnose vehicle electronic control systems using maintenance support device (MSD), onboard diagnostics, technical manuals, and software; check and record diagnostic codes; access and verify parameters and calibration settings; determine needed repairs

B. **Battery and Starting System Diagnosis and Repair (9 questions)**

1. Determine battery serviceability by physical/visual inspection prior to servicing.
2. Determine battery state-of-charge by measuring terminal post voltage using a digital multimeter (DMM).
3. Perform battery tests (load and capacitance); test and determine cold-cranking amperage; determine needed service.
4. Inspect, clean, service, or replace battery, cables, and terminal connections.
5. Inspect, clean, repair or replace battery boxes, mounts, and hold-downs.
6. Charge battery using appropriate method for battery type.
7. Jump-start a vehicle using NATO cables or appropriate auxiliary power supply.
8. Diagnose low voltage disconnect (LVD) systems; determine needed repairs.
9. Test/monitor battery and starting system voltage during cranking; determine needed repairs.
10. Perform starting circuit voltage drop tests; determine needed repairs.
11. Inspect, test, and replace starter control circuit switches, 12/24 VDC load battery control device (LBCD), combiner/isolator switches, solenoids, relays, connectors, terminals, and wires.
12. Inspect, clean, repair, or replace cranking control circuit wires, connectors, and terminals.
13. Verify starter solenoid and motor operation; remove and replace starter as needed; inspect flywheel ring gear or flex plate.
14. Differentiate among electrical and/or mechanical problems that cause a slow crank, intermittent crank, no-crank, extended cranking, or cranking noise condition.

C. **Charging System Diagnosis and Repair (8 questions)**

1. Verify operation of charging system circuit indicators; determine needed repairs.
2. Diagnose the cause of no-charge, low charge, or overcharge conditions; determine needed repairs.
3. Inspect, adjust, and replace alternator/generator, drive belts/gears, pulleys, fans, mounting brackets, and tensioners.
4. Test charging system voltage and amperage output tests; determine needed repairs.
5. Perform charging circuit voltage drop tests; determine needed repairs.
6. Inspect, repair, or replace charging circuit connectors, terminals, switches, 12/24 VDC load battery control device (LBCD), combiner/isolator switch, and wires.

7. Inspect and test alternator/generator and control components including control modules/regulators; determine needed action.

D. Lighting Systems Diagnosis and Repair (7 questions)
1. Diagnose the cause of brighter or dimmer than normal, intermittent or no operation of exterior lighting, including headlights, parking lights, blackout lights, and rear composite lights; determine needed repairs.
2. Inspect, repair, replace, and aim/adjust headlights and auxiliary/work lights.
3. Inspect, test, repair, or replace truck exterior lighting switches, control components, relays, sockets, connectors, terminals, bulbs, light emitting diodes (LEDs), and wires.
4. Inspect, test, repair, or replace truck-mounted trailer lighting wiring and connectors.
5. Inspect, test, repair, or replace instrumentation light circuit switches, bulbs, LEDs, sockets, circuit boards, connectors, terminals, and wires.
6. Inspect, test, repair, or replace interior cab light circuit switches, electronic control components, bulbs, LEDs, sockets, connectors, terminals, and wires.
7. Inspect, test, adjust, repair, or replace stoplight circuit switches, electronic control components, relays, bulbs, LEDs, sockets, connectors, terminals, and wires.
8. Diagnose, inspect, test, repair, or replace turn signal and hazard circuit flashers or electronic control components, switches, relays, bulbs, LEDs, sockets, connectors, terminals, and wires.
9. Inspect, test, adjust, repair, or replace backup light and warning devices, circuit switches, bulbs, LEDs, sockets, connectors, terminals, and wires.

E. Related Vehicle Systems Diagnosis and Repair (7 questions)
1. Diagnose the cause of intermittent, inaccurate, or no gauge readings; determine needed repairs.
2. Diagnose the cause of high, low, intermittent, or no readings on electronic instrument cluster gauges; determine needed repairs.
3. Inspect, test, adjust, repair, or replace gauge circuit sending units, sensors, gauges, connectors, terminals, and wires.
4. Inspect, test, repair, or replace warning devices (lights and audible) circuit sending units, sensors, circuit boards/control modules, bulbs, audible component, sockets, connectors, terminals, and wires.
5. Diagnose the cause of constant, intermittent, or no horn operation; determine needed repairs.
6. Diagnose the cause of constant, intermittent, or no windshield wiper operation, wiper speed control and/or park problems; determine needed repairs.
7. Inspect, test, and replace wiper motor and transmission mechanical linkage, arms, and blades, in addition to relays, switches, connectors, terminals, and wires.

8. Inspect, test, repair, or replace windshield washer motor or pump/relay assembly, switches, connectors, terminals, and wires.

9. Inspect, test, repair, or replace sideview mirror motors, de-icer, relays, switches, connectors, terminals, and wires.

10. Inspect, test, repair, or replace windshield de-icer system components.

11. Inspect, test, repair, or replace heater and A/C electrical components including: A/C clutches, motors, resistors, sensors, relays, switches, control modules, connectors, terminals, and wires.

12. Inspect, test, repair, or replace auxiliary power outlets, integral fuses, connectors, terminals, and wires.

13. Diagnose, remove, and replace 120 V inverter and 12 V converter.


15. Inspect, test, repair, or replace electronic control switches, proximity switches, motors, modules, and solenoids for auxiliary hydraulic systems.

16. Inspect, test, repair, or replace automatic fire extinguishing system (AFES) components in accordance with technical manuals.

17. Inspect, test, repair, or replace electronic control switches, motors, modules, and solenoids for water fording systems.
SAMPLE QUESTIONS
ELECTRICAL/ELECTRONICS TEST (MIL6)

1. The low air pressure indicator light and buzzer stay ON in a FMTV after the air pressure gauges reach 120 psi. Which of these could be the cause?

   (A) A failed brake light switch  
   (B) A leaking spring brake chamber  
   (C) A leaking parking brake control valve  
   > (D) A failed low air pressure sensor

2. A HMMWV is being diagnosed for the taillight circuit breaker tripping repeatedly.

   Technician A says that an open ground circuit to the taillights could be the cause.

   Technician B says that an internally shorted taillight assembly could be the cause.

   Who is right?

   (A) A only                      (C) Both A and B  
   > (B) B only                      (D) Neither A nor B
3. A HMMWV with the starting system shown is being tested for a report of slow engine cranking. During testing, with the master control switch in the start position, the meter readings were observed. Which of these could be the cause?

(A) Low starter solenoid resistance
(B) High positive battery cable resistance
(C) High negative battery cable resistance
(D) Low battery charge

4. The right front headlight of a HMMWV is noticeably dim. With the circuit energized, a reading of 24.5 volts is measured on the positive wire. A reading of 8.35 volts is measured on the ground wire. This could be caused by a:

(A) weak circuit breaker.
(B) poor ground connection.
(C) failed headlight assembly.
(D) loose positive terminal.
# SPECIFICATIONS & TASK LIST

## HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) TEST (MIL7)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Questions in Test</th>
<th>Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. HVAC Systems Diagnosis, Service, and Repair</strong></td>
<td>6</td>
<td>15%</td>
</tr>
<tr>
<td><strong>B. A/C System and Component Diagnosis, Service, and Repair</strong></td>
<td>16</td>
<td>40%</td>
</tr>
<tr>
<td><strong>C. Heating and Engine Cooling Systems Diagnosis, Service, and Repair</strong></td>
<td>8</td>
<td>20%</td>
</tr>
<tr>
<td><strong>D. Operating Systems and Related Controls Diagnosis and Repair</strong></td>
<td>10</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

### A. HVAC Systems Diagnosis, Service, and Repair (6 questions)

1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Verify the need for service or repair of HVAC systems based on unusual operating noises; determine appropriate action.
3. Diagnose HVAC system problems indicated by sight, sound, smell, and component temperature conditions; determine appropriate action.
4. Identify system type and components, and conduct performance test(s) on HVAC systems (vent outlet temperature, air flow, and verify system pressures); determine appropriate action.
5. Identify HVAC control system type; check and record electronic diagnostic codes/indicator lights (if applicable); determine further diagnosis.
B. A/C System and Component Diagnosis, Service, and Repair (16 questions)

A/C System - General

1. Diagnose the cause of temperature control problems in the A/C system; determine needed repairs.
2. Identify refrigerant and check for contamination; determine appropriate action.
3. Diagnose A/C system problems indicated by pressure gauge readings and sight glass/moisture indicator conditions (where applicable); compare gauge readings to ambient temperature/pressure chart; determine needed service or repairs.
4. Perform A/C system leak test (UV dye, electronic tester, pressure); determine needed repairs.
5. Recover A/C system refrigerant; determine amount of refrigerant and oil removed; determine appropriate action.
6. Evacuate A/C system using appropriate equipment.
7. Determine whether contaminated A/C system components can be cleaned and reused or must be replaced.
8. Charge A/C system with correct type and quantity of refrigerant and lubricant.
9. Recycle refrigerant.
10. Handle, label, and store refrigerant.
11. Maintain and service certified recovery/recycling equipment.

Compressor and Clutch

12. Diagnose A/C system problems that cause protection devices (pressure, thermal, and electronic) to interrupt compressor operation; determine needed repairs.
13. Inspect, test, and replace A/C system pressure, thermal, and electronic protection devices.
14. Inspect and replace A/C compressor drive belts, pulleys, idlers, and tensioners, mountings, and hardware; adjust drive belts if applicable. Check belt alignment.
15. Inspect and test A/C compressor clutch components or assembly. Determine needed actions.

Evaporator, Condenser, and Related Components

17. Correct system lubricant level when replacing the evaporator, condenser, receiver/drier or accumulator/drier, and hoses.
18. Inspect, repair, or replace A/C system hoses, lines, filters, fittings, service ports and caps, O-rings, and seals.
19. Inspect A/C condenser for proper air flow, including air shrouds.
20. Inspect, test, and replace A/C system condenser and mountings.
21. Inspect and replace receiver/drier or accumulator/drier.
22. Inspect, test, and replace expansion valve(s) (including front and rear) and thermostatic switch; check placement of thermal bulb (capillary tube).
23. Inspect, test, and replace evaporator core (front or rear).
24. Inspect, clean, and repair evaporator housing and water drain; check for proper evaporator air flow; inspect and service/replace evaporator air filter.
25. Diagnose system failures resulting in refrigerant loss from the A/C system high pressure relief device.

C. Heating and Engine Cooling Systems Diagnosis, Service, and Repair (8 questions)
1. Diagnose the cause of outlet air temperature control problems in the HVAC system; determine needed repairs.
2. Diagnose window fogging problems; determine needed repairs.
3. Perform engine cooling system tests for leaks, freeze protection level, contamination, coolant level, temperature, coolant type, and conditioner concentration (if applicable); determine needed action in accordance with the appropriate technical manual.
4. Inspect and replace engine cooling and heating system hoses, lines, fittings, and clamps.
5. Inspect, test, and/or replace radiator, pressure cap, and coolant recovery system components (expansion/surge tank). Verify proper airflow across radiator and accessory coolers; visually inspect for debris and external blockage.
6. Inspect and/or replace water pump and drive system.
7. Inspect, test, and/or replace thermostats, by-passes, housings, and seals.
8. Flush, refill, and bleed air from cooling system.
9. Inspect, test, and repair or replace engine cooling fan, hub, clutch, controls, thermostat, shroud, and air flow control devices.
10. Inspect, test, and replace heating system coolant control valve(s) and manual shut-off valves.
11. Inspect, check for proper air flow, flush, and/or replace heater core.

D. Operating Systems and Related Controls Diagnosis and Repair (10 questions)
1. Diagnose the cause of failures in HVAC electrical, air, and mechanical control systems; determine needed repairs.
2. Inspect, test, repair, and replace HVAC heater blower motors, resistors, switches, relays, modules, wiring, and protection devices.
3. Inspect, test, repair, and replace A/C compressor clutch relays, modules, wiring, sensors, switches, diodes, and protection devices.
4. Inspect and test HVAC-related data-network control systems; determine needed repairs.
5. Inspect, test, repair, and replace engine cooling/condenser fan motors, relays, modules, switches, sensors, wiring, and protection devices.
6. Inspect, test, repair, and replace electric actuators, motors, relays/modules, switches, sensors, wiring, and protection devices.
7. Inspect, test, repair, or replace HVAC system electrical or mechanical control panel assemblies.
8. Inspect, test, adjust, repair, or replace HVAC system ducts, doors, outlets, control cables, linkages, and actuators/motors.
9. Diagnose constant/automatic temperature control system problems; determine needed repairs.
10. Inspect, test, and replace constant/automatic temperature control module(s).
SAMPLE QUESTIONS
HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) TEST (MIL7)

1. An operator reports no heat in the cab of a FMTV. The technician finds coolant level and temperature to be OK and the fan speed to work properly. Which of these could be the cause?

   (A) A stuck-ON engine fan
   > (B) A restricted heater core
   (C) A loose serpentine belt
   (D) A stuck-open heater control valve

2. A FMTV heater system works normally, but the A/C blows warm air. This could be caused by:

   (A) a stuck-closed thermostat.
   (B) a failed blower motor.
   (C) a stuck-close water shut-off valve.
   > (D) a low refrigerant charge.
3. A HMMWV is being diagnosed for a report of poor A/C cooling. A technician connects manifold gauges and observes the pressures shown. Which of these could be the cause?

(A) A worn compressor drive belt  
(B) A low refrigerant charge  
(C) A restricted A/C compressor suction line  
(D) A partially restricted A/C condenser

4. A HMMWV operator reports that the A/C compressor is turning ON and OFF very quickly and that the A/C is not cooling very well.

Technician A says that an undercharged A/C system could be the cause.

Technician B says that a stuck-open water control valve could be the cause.

Who is right?

(A) A only  
(B) B only  
(C) Both A and B  
(D) Neither A nor B
SPECIFICATIONS & TASK LIST
PREVENTIVE MAINTENANCE CHECKS
AND SERVICES (PMCS) TEST (MIL8)

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Questions in Test</th>
<th>Percent of Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. General PMCS Documentation and Procedures</td>
<td>3</td>
<td>7%</td>
</tr>
<tr>
<td>B. Engine Systems</td>
<td>7</td>
<td>18%</td>
</tr>
<tr>
<td>C. Cab and Body</td>
<td>5</td>
<td>12%</td>
</tr>
<tr>
<td>D. Electrical/Electronics</td>
<td>8</td>
<td>20%</td>
</tr>
<tr>
<td>E. Frame and Chassis</td>
<td>13</td>
<td>33%</td>
</tr>
<tr>
<td>1. Brakes</td>
<td>(5)</td>
<td></td>
</tr>
<tr>
<td>2. Drivetrain</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>3. Steering, Tires, and Wheels</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>4. Suspension, Frame, and Fifth Wheel</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>5. Auxiliary Hydraulic Systems</td>
<td>(1)</td>
<td></td>
</tr>
<tr>
<td>F. Road/Operational Test</td>
<td>4</td>
<td>10%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>40</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

A. General PMCS Documentation and Procedures (3 questions)
1. Verify all operator checks and services have been performed and documented; road test vehicle if required. Determine vehicle identification information and utilize to identify applicable technical manual, warnings, cautions, and notes; ensure that outstanding safety messages and alerts have been applied.
2. Utilize the maintenance allocation chart (MAC) to determine the proper level of maintenance to be performed.
3. Utilize technical manuals (TM) to perform proper maintenance procedures, identify parts, and troubleshoot systems.
4. Identify, classify, and document fluid leaks in accordance with technical manuals.
5. Demonstrate a knowledge of the different types of personal protective equipment (PPE) and how they are used to prevent injury.
6. Identify usable on codes (UOC).
7. Determine source, maintenance, and recoverability (SMR) codes.
8. Prevent, clean, and respond to hazardous substance spills; properly store, label, and dispose of hazardous wastes in accordance with DOD regulations.
9. Identify and acquire authorized repair parts, special tools, and applicable test, measurement, and diagnostic equipment (TMDE).
10. Check condition and securement of safety equipment and all required decals and data plates.
11. Inspect for and apply corrosion prevention policy in accordance with technical manuals and DOD standard manuals.

B. Engine Systems (7 questions)
1. Check engine operation (including unusual noises, vibration, and excessive exhaust smoke); record idle rpm, governed rpm, and PTO/high idle rpm (if applicable).
2. Inspect vibration damper.
3. Inspect condition of belt(s), tensioner(s), and pulley(s); check and adjust belt tension.
4. Check engine for oil, coolant, air, and fuel leaks (Engine Off and Engine Running).
5. Inspect engine mounts for looseness and deterioration.
6. Check engine oil level and condition; check dipstick seal and fill cap seal.
7. Check engine compartment wiring, harnesses, connectors, and seals for damage, mounting, and proper routing.
8. Check fuel tanks, vents, mountings, lines, caps, and seals.
9. Inspect water separator/fuel heater; drain water from separator; replace fuel filter(s); prime and bleed fuel system.
10. Inspect crankcase ventilation system (blowby).
11. Check exhaust system mountings for looseness and damage.
12. Check engine exhaust system for leaks, excessive noise, proper routing, and missing or damaged components (heat shields, guards, and fording kit).
13. Check air induction system piping and fording kit, charge air cooler, hoses, clamps, mountings, proper routing, and indicators; check for air restrictions and leaks.
14. Inspect turbocharger(s) for noise, oil, and exhaust leaks; check mountings and connections; check wastegate, variable geometry turbocharger (VGT), linkages, and hoses.
15. Service or replace air filter(s) as needed.
16. Check fan clutch/hub operation, bearing condition, and noise (including viscous/thermostatic, air, and electric fan types); inspect fan assembly and shroud for missing and damaged components.
17. Inspect radiator (including air flow restriction, missing/corroded fins, leaks, and damage) and mountings.
18. Pressure test cooling system and radiator cap.
19. Inspect coolant hoses and clamps for leaks, damage, and proper routing.
20. Inspect coolant expansion/overflow reservoirs.
21. Identify coolant type; check coolant for contamination and protection level (freeze point).
22. Drain and refill cooling system; bleed air from system; recover coolant.
23. Inspect water pump for leaks and bearing play.
24. Change engine oil and filters; visually check oil for coolant or fuel contamination; inspect and clean magnetic drain plugs.

**C. Cab and Body (5 questions)**
1. Inspect and check operation of master power, battery disconnect, and ignition switches.
2. Check operation of indicator lights, warning lights, and/or alarms.
3. Check operation of instruments/gauges and panel lighting.
4. Check operation of electronic power take-off (PTO) and high idle (if applicable).
5. Check operation of defroster, heater, ventilation, and applicable A/C (HVAC) controls.
6. Check operation of all accessories and auxiliary systems, switches, and controls.
7. Use on-board diagnostic system to read current and historic diagnostic trouble codes from electronic modules (including engine, transmission, ABS, AFES, and CTIS, if applicable).
8. Check operation of electric and air horns.
9. Check condition of automatic fire extinguishing system (AFES).
10. Inspect seat belts and gunner's restraints.
11. Inspect gunner's protection kit, gunner's platform, and turret ring.
12. Inspect wiper blades and arms; check wiper/washer operation.
13. Inspect windshield glass for cracks, chips, clarity, discoloration/glazing, delamination, and other damage; check sun visor operation.
14. Check seat condition, operation, mounting, and suspension components.
15. Check door glass for cracks, chips, clarity, discoloration/glazing, delamination, and other damage; check window operation.
16. Inspect steps and grab handles.
17. Inspect mirror mountings, brackets, glass, heaters, and motors.
18. Inspect and record all observed physical damage to cab and armor.
19. Inspect and lubricate door and hood hinges, latches, strikers, combat locks, linkages, and cables; service as needed.
20. Inspect and lubricate cab mountings, hinges, latches, and linkages; service as needed.
21. Inspect tilt cab hydraulic pump, lines, and cylinders for leakage; inspect tilt cab safety devices; service as needed.
22. Check accelerator and brake pedal operation and condition.
23. Check cab ride height; mounts, hoses, valves, dampers, and fittings for leaks and damage.
24. Inspect bumpers and mounts.
25. Inspect A/C condenser and lines for condition and visible leaks; check mountings.
26. Inspect A/C compressor and lines for condition and visible leaks; check clutch; check mountings.
27. Check A/C system condition and operation.
28. Check HVAC air inlet filters and ducts; service as needed.

D. Electrical/Electronics (8 questions)
1. Inspect battery box(es), cover(s), and mountings.
2. Inspect battery hold-downs, connections, cables, and cable routing; service as needed.
3. Perform and record battery open circuit, load, and/or capacitance tests.
4. Inspect starter, mounting, connections, cables, and cable routing.
5. Engage starter; check for unusual noises and starting difficulty.
6. Inspect alternator/generator, mounting, wiring, and wiring routing.
7. Perform alternator/generator current output and voltage tests.
8. Check operation of interior lights and blackout lights; service as needed.
9. Check all exterior lights, blackout lights, lenses, and reflectors; check headlight alignment; service as needed.
10. Inspect and test trailer power cord connector, cable, and holder; service as needed.

E. Frame and Chassis (13 questions)
1. Brakes (5 questions)
   1. Check parking brake operation (air, hydraulic, and mechanical).
   2. Check and record air governor cut-in and cut-out settings (psi).
   3. Service air drier as needed. Check air drier purge valve operation and air drier heater, if equipped.
   4. Check air system for leaks (brakes applied and released).
   5. Drain air tanks; test one-way and double-check valves.
   6. Check low air pressure warning devices.
   7. Check spring brake inversion/emergency (spring) brake control valve, if equipped.
   8. Check tractor protection valve, if equipped.
   9. Test air pressure build-up time.
   10. Check condition and operation of hand brake (trailer) control valve, if equipped.
   11. Perform antilock brake system (ABS) operational system (chuff) self-test.
       Perform automatic traction control (ATC) operational system self-test, if equipped.
12. Inspect coupling air lines, holders, and gladhands.
13. Check brake chambers and air lines for secure mountings, damage, and missing caging plugs.
14. Inspect and record front and rear brake shoe/pad condition and thickness.
15. Inspect condition of front and rear brake drums/rotors.
16. Check operation and adjustment of front and rear brake automatic slack adjusters.
17. Check mechanical brake end actuators and components (S-camshaft, wedge, and hardware).
18. Lubricate all air brake component grease fittings.
19. Check master cylinder or intensifier for leaks and damage; check fluid level and condition.
20. Inspect hydraulic brake lines, fittings, flexible hoses, and valves for leaks and damage.
21. Check operation of hydraulic system, including pedal travel, pedal effort, and pedal feel.
22. Inspect brake calipers for leaks and damage.
23. Inspect power brake booster(s), hoses, and control valves.

2. Drivetrain (3 questions)
1. Check transmission and/or transfer case/transaxle housing, fasteners, seals, filter, cooler, and cooler lines for cracks, leaks, and proper routing, if equipped.
2. Check transmission and/or transfer case/transaxle wiring, connectors, seals, and harnesses for damage and proper routing.
3. Inspect transmission and/or transfer case/transaxle breather; service as needed.
4. Inspect transmission and/or transfer case/transaxle mounts for looseness and deterioration.
5. Check transmission and/or transfer case/transaxle oil/fluid level and condition.
6. Inspect U-joints, yokes, driveshafts, and center bearings for looseness, damage, and proper phasing.
7. Inspect axle housing(s) for cracks and leaks.
8. Inspect axle breather(s); service as needed.
9. Lubricate all drivetrain grease points.
10. Check drive axle(s) oil level.
11. Change drive axle(s) oil; check and clean magnetic plugs.
12. Check power take-off (PTO) unit operation and mounting; check PTO U-joints and driveshaft for looseness, damage, and proper phasing, if equipped.
13. Change transmission and/or transfer case/transaxle oil/fluid and filters; check and clean magnetic plugs.

3. Steering, Tires, and Wheels (3 questions)
1. Check steering wheel and column operation for free play and binding.
2. Check power steering pump and hoses for leaks and mounting; check fluid level and condition.
3. Change power steering fluid and filter.
4. Inspect steering gear(s) (front and rear including gear reduction) for leaks and mounting.
5. Inspect steering shafts and U-joints for condition and proper phasing; inspect pinch bolts, splines, Pitman arm-to-steering sector shaft, idler arm, drag link, tie rod ends, cross tube, and wheel stops.
6. Check pivot pins, bearings, and ball joints for wear.
7. Check front- and rear-wheel spindle bearings/hub assemblies and gear reduction wheel end assemblies for looseness and noise.
8. Check oil level and condition in all wheel hubs; check for leaks.
9. Service wheel bearings, geared hubs/wheel ends as needed in accordance with technical manual specifications.
10. Inspect tires for irregular wear patterns and correct load rating in accordance with the technical manual.
11. Inspect tires for cuts, cracks, dry-rot, bulges, and sidewall damage.
12. Inspect wheel valve, hoses, valve caps, and stems.
13. Measure and record tire tread depth.
14. Check and record tire air pressure; adjust as needed.
15. Check for loose lugs and bead locks; check mounting hardware condition; service as needed.
16. Retorque lugs/nuts in accordance with technical manual specifications.
17. Inspect wheels for cracks or damage; confirm proper application.
18. Match tires and wheels on axles; confirm proper application for vehicle to include run-flat options.
19. Lubricate all steering grease points.

4. Suspension, Frame, and Fifth Wheel (1 question)
1. Visually inspect front and rear solid axle suspension components (springs, hangers, shackles, spring U-bolts, insulators, radius rods, torque rods, load pads, walking beams, stabilizer bars, and equalizers); inspect and/or torque U-bolts in accordance with technical manual specifications.
2. Visually inspect front and rear independent suspension components (springs, stabilizer bars, ball joints, mounting components, control arms, linkages, roll control circuit, and oil/nitrogen lines); confirm nitrogen charge if applicable.
3. Inspect shock absorbers for leaks and mounting.
4. Inspect air suspension components (air springs/bags, mounts, arms, hoses, valves, linkage, and fittings) for leaks and damage; check suspension ride height.
5. Lubricate all suspension grease points.
6. Inspect fifth wheel mount, bolts, slider, air lines, locks, pivot pins, bushings, and stops.
7. Test operation of fifth wheel locking device; adjust as needed.
8. Check mud flaps, brackets, and reflective devices.
9. Check pintle hook assembly, mounting bolts, and locks; lubricate grease points.
10. Clean and inspect fifth wheel plate for cracks and damage; lubricate fifth wheel plate and all grease points.
11. Inspect frame and frame members for cracks and damage.
12. Inspect body attaching hardware.

5. Auxiliary Hydraulic Systems (1 question)
   1. Inspect hydraulic system for leaks, damage, binding, improper routing, and proper operation.
   2. Service and inspect hydraulic reservoirs, breathers, and filters; drain and replace hydraulic fluid; clean magnets and suction screens.
   3. Check operation of manual and electronic hydraulic manifolds, valves, and controls.
   4. Inspect cylinders (single-acting, double-acting, and telescopic) for leaks, loose mountings, and pitting; lubricate grease points.
   5. Inspect hydraulic motors for leaks and loose mounting; lubricate grease points.
   6. Inspect and service winches; clean and lubricate cables, winders, drums, and guides.

F. Road/Operational Test (4 questions)
   1. Check operation of all instruments, gauges, and lights.
   2. Check steering wheel for play, binding, and centering.
   3. Check operation of automatic transmission.
   4. Test service and parking brakes.
   5. Observe exhaust for excessive or unusual smoke.
   6. Verify engine/exhaust brake operation.
   7. Check operation of backup warning devices and cameras, if applicable.
   8. Check vehicle for unusual noise, vibration, and stability/handling concerns.
SAMPLE QUESTIONS
PREVENTIVE MAINTENANCE CHECKS & SERVICES (PMCS) TEST (MIL8)

1. During a PM inspection, the technician observes black streaks/residue at the end of the charge air cooler hoses on the pipe between the charge air cooler and the intake. Which of these could be the cause?

   (A) A worn turbocharger
   (B) A restricted charge air cooler
   > (C) Loose hose clamps
   (D) A leaking exhaust manifold gasket

2. During inspection of a tactical wheeled vehicle equipped with air brakes, the technician observes that on the right rear wheel, the lower shoe lining is worn much thinner than the upper shoe lining. This could be caused by:

   (A) a worn brake drum.
   > (B) worn S-cam bushings.
   (C) a seized automatic slack adjuster.
   (D) low air system pressure.
3. The fluid level check shown is being performed on a FMTV during a PMCS.

   Technician A says that the fluid level should be checked on level ground.

   Technician B says that the fluid level is overfilled.

   Who is right?

   > (A) A only  (C) Both A and B
   (B) B only  (D) Neither A nor B

4. A HMMWV operator reports that the steering is very loose.

   Technician A says that a worn steering gear could be the cause.

   Technician B says that a worn power steering pump could be the cause.

   Who is right?

   > (A) A only  (C) Both A and B
   (B) B only  (D) Neither A nor B
Contact us:

Automotive Service Excellence
1503 Edwards Ferry Rd., N.E. Suite 401
Leesburg, VA 20176

703-669-6609
800-390-6789 Toll Free
703-669-6122 Fax

Email: contactus@ase.com
Website: www.ase.com