# ASE T2 Diesel Engine Prep

Free Practice Test — 30 Real Exam-Style Questions

with full answer key & explanations

# Practice Questions

Try all 30 first, then check the answer key at the back.



**1. A diesel engine is experiencing a loss of power. During inspection, the technician discovers valve recession on multiple valves. What is the most likely cause?**

A. Excessive cylinder head torque
B. Too much valve stem protrusion
C. Improper camshaft timing
D. Incorrect valve lash adjustment

**2. When measuring a cylinder head for flatness with a straightedge and feeler gauge, what is the maximum allowable warpage on most medium/heavy duty diesel engines?**

A. 0.001 inch (0.025 mm)
B. 0.005 inch (0.127 mm)
C. 0.003 inch (0.076 mm)
D. 0.010 inch (0.254 mm)

**3. When inspecting valve guides for wear, a technician uses a dial indicator to measure valve stem-to-guide clearance. If the measured clearance is 0.005 inch (0.127 mm), what should the technician do?**

A. Adjust valve lash to compensate
B. Replace or recondition the valve guides
C. Replace only the valve stems
D. This clearance is within specifications



**4. A technician is performing a valve seat runout test using a dial indicator. What is the maximum acceptable runout on most medium/heavy duty diesel engines?**

A. 0.002 inch (0.051 mm)
B. 0.010 inch (0.254 mm)
C. 0.005 inch (0.127 mm)
D. 0.020 inch (0.508 mm)

**5. While disassembling a cylinder head, a technician notices several rocker arms have excessive wear at the valve contact point. What is the most likely cause?**

A. Improper valve rotation
B. Excessive valve spring pressure
C. Incorrect rocker arm material
D. Insufficient lubrication

**6. During cylinder head reassembly, what is the correct sequence for tightening cylinder head bolts?**

A. Tighten from the outside edges inward
B. Tighten in a random pattern to equalize pressure
C. Start at the center and work outward in a spiral pattern
D. Tighten from front to back in a linear pattern



**7. A technician is inspecting valve springs and finds that some have different free heights. What is the most appropriate action?**

A. Stretch the shorter springs to match the others
B. Replace all valve springs as a complete set
C. Replace only the springs with incorrect height
D. Install thicker valve spring shims under shorter springs

**8. When installing valve stem seals on a diesel engine, which procedure is correct?**

A. Lubricate the seals with clean engine oil before installation
B. Install the seals dry to ensure proper seating
C. Apply thread locking compound to prevent rotation
D. Heat the seals before installation to expand them

**9. A technician is checking valve-to-piston clearance during an engine rebuild. What is the minimum acceptable clearance for most medium/heavy duty diesel engines?**

A. 0.020 inch (0.5 mm)
B. 0.100 inch (2.5 mm)
C. 0.040 inch (1.0 mm)
D. 0.060 inch (1.5 mm)

**10. During cylinder head inspection, a technician discovers hairline cracks between valve seats. What is the most appropriate course of action?**

A. Install valve seat inserts to reinforce the area
B. Continue using the head but monitor the cracks
C. Replace the cylinder head
D. Weld the cracks and machine the head

**11. When measuring valve stem height on a diesel engine cylinder head, the technician finds values varying by up to 0.030 inch (0.76 mm). What should be done?**

A. Adjust rocker arms to different heights
B. Recondition the valve seats
C. Replace all valves with longer stems
D. Add shims under valve springs to compensate

**12. When testing valve springs, a technician measures the spring pressure at installed height. If the pressure is 10% below specification, what should be done?**

A. Replace the valve springs
B. Install thicker spring shims
C. Stretch the springs to increase tension
D. This variation is within acceptable limits



**13. During reassembly of an overhead cam cylinder head, what is the correct procedure for installing the camshaft timing gear?**

A. Install the gear in any position and adjust with a timing light
B. Position the gear so all valves are closed
C. Set the camshaft at top dead center before installing
D. Align the timing marks between the camshaft and crankshaft gears

**14. A truck driver complains of white smoke from the exhaust during cold startup that disappears after the engine warms up. What is the most likely cause?**

A. Faulty fuel injector timing
B. Air in the fuel system
C. Normal condensation in the exhaust system
D. Coolant leaking into the combustion chamber

**15. A technician observes continuous blue-gray smoke from a diesel engine's exhaust. What is the most likely cause?**

A. Low compression in one cylinder
B. Excessive oil consumption
C. Restricted air intake
D. Over-fueling condition



**16. During a road test, a medium-duty truck lacks power when climbing hills. The technician notices black smoke from the exhaust during acceleration. What should the technician check first?**

A. Air filter restriction
B. Fuel injector spray pattern
C. Engine oil level
D. Transmission fluid level

**17. When performing a visual inspection of a diesel engine, a technician notices fuel leaking from around an injector base. What is the most appropriate action?**

A. Tighten the injector hold-down bolt
B. Clean the injector body and reinstall
C. Replace the complete injector assembly
D. Replace the injector's copper sealing washer

**18. A diesel engine has a surging idle. Which test should be performed first?**

A. Cylinder balance test
B. Injector cutout test
C. Check for air in the fuel system
D. Compression test

**19. A heavy-duty truck has excessive black smoke at idle. The technician checks and finds the air filter is clean. What should be checked next?**

A. Exhaust gas recirculation valve
B. Fuel injector operation
C. Engine oil level
D. Coolant temperature sensor

**20. When checking a truck's service history, the technician notices multiple fuel filter replacements in a short timeframe. What should the technician suspect?**

A. Fuel tank contamination
B. Incorrect filter specification
C. Poor maintenance practices
D. High-pressure pump failure

**21. During a crankcase pressure test, the technician observes higher than normal pressure readings. What is the most likely cause?**

A. Clogged oil separator
B. Blocked crankcase ventilation
C. Worn valve guides
D. Worn piston rings



**22. A driver complains that the engine occasionally loses power while driving on the highway. Which diagnostic procedure should be performed first?**

A. Remove and inspect fuel injectors
B. Conduct a cylinder cutout test
C. Check for diagnostic trouble codes
D. Perform a compression test

**23. While checking a diesel engine that failed to start in cold weather, what should the technician test first?**

A. Injection pump timing
B. Battery voltage
C. Glow plug resistance
D. Fuel quality

**24. A technician observes excessive engine vibration at idle. What is the most appropriate diagnostic step?**

A. Perform a cylinder balance test
B. Check engine mounts
C. Verify proper oil level
D. Inspect drive belts



**25. When measuring exhaust back pressure on a diesel engine, the technician finds the reading to be significantly higher than specifications. What is the most likely cause?**

A. Exhaust leak at manifold
B. Failed turbocharger
C. Collapsed muffler baffle
D. Restricted diesel particulate filter

**26. A technician notices an intermittent ticking noise from the top of a diesel engine. The noise changes with engine speed. What is the most likely cause?**

A. Connecting rod bearing failure
B. Fuel injector leakage
C. Excessive valve clearance
D. Piston slap

**27. During a visual inspection, a technician notices evidence of tampering with the diesel emissions system. What should the technician do first?**

A. Ignore the modifications if the engine runs properly
B. Document the tampering with photos and notes
C. Immediately repair the modified components
D. Clear all diagnostic trouble codes

**28. A diesel engine runs rough and produces excessive white exhaust smoke that smells sweet. What is the most likely cause?**

A. Failed head gasket
B. Poor fuel quality
C. Incorrect injection timing
D. Clogged air filter

**29. A truck will not start during a cold morning. The technician notices that the engine cranks normally. After connecting a scan tool, the fuel rail pressure shows 0 PSI. What is the most likely cause?**

A. Clogged fuel filter
B. Failed crankshaft position sensor
C. Low battery voltage
D. Failed fuel pump

**30. While performing a visual inspection of the engine compartment, a technician notices coolant leaking from the water pump weep hole. What does this indicate?**

A. Overfilled cooling system
B. Blocked coolant return line
C. Failed water pump seal
D. Normal condensation drainage

# Answer Key & Explanations



**1. D — Incorrect valve lash adjustment**
Valve recession occurs when valve seats wear excessively, allowing valves to recede deeper into the cylinder head. This is typically caused by lack of lubrication or incorrect valve lash adjustment that prevents proper rotation of the valves during operation.

**2. C — 0.003 inch (0.076 mm)**
Most medium/heavy duty diesel engine manufacturers specify a maximum cylinder head warpage of 0.003 inch (0.076 mm) across the length of the head. Exceeding this specification requires either machining or replacement of the head.

**3. B — Replace or recondition the valve guides**
Excessive valve stem-to-guide clearance (typically over 0.003-0.004 inch depending on the engine) indicates worn valve guides that need replacement or reconditioning. This excessive clearance can cause oil consumption, valve stem breakage, and poor engine performance.

**4. A — 0.002 inch (0.051 mm)**
Maximum acceptable valve seat runout on most medium/heavy duty diesel engines is typically 0.002 inch (0.051 mm). Excessive runout prevents proper valve sealing, leading to compression loss and possible valve burning.

**5. D — Insufficient lubrication**
Insufficient lubrication is typically the cause of excessive wear at rocker arm valve contact points. This can be due to clogged oil passages, low oil pressure, or extended oil change intervals that degraded the oil's lubricating properties.

**6. C — Start at the center and work outward in a spiral pattern**
Cylinder head bolts must be tightened in a spiral pattern from the center outward to ensure even clamping force and prevent warping of the cylinder head or improper gasket seating.

**7. B — Replace all valve springs as a complete set**
Valve springs with different free heights indicate fatigue, sagging, or improper parts. Uneven spring heights can cause valve timing issues and potential engine damage, so replacing all valve springs as a set ensures consistent valve operation.

**8. A — Lubricate the seals with clean engine oil before installation**
Valve stem seals should be lubricated with clean engine oil before installation to prevent tearing during installation and to ensure smooth initial operation. Dry installation can damage the seals.

**9. D — 0.060 inch (1.5 mm)**
Most medium/heavy duty diesel engines require a minimum valve-to-piston clearance of 0.060 inch (1.5 mm) for intake valves and slightly more for exhaust valves to prevent contact during operation, which could cause severe engine damage.

**10. C — Replace the cylinder head**
Hairline cracks between valve seats indicate structural damage to the cylinder head that will likely worsen under heat and pressure. Even small cracks can lead to coolant leaks, compression loss, or complete head failure, necessitating replacement.

**11. B — Recondition the valve seats**
Variations in valve stem height can cause improper valve lash, affecting engine performance and potentially causing valve damage. Reconditioning valve seats through grinding and cutting restores proper height relationships.

**12. A — Replace the valve springs**
Valve springs that have lost 10% or more of their specified pressure are fatigued and no longer provide proper valve control. This can lead to valve float, improper seating, and engine performance issues.

**13. D — Align the timing marks between the camshaft and crankshaft gears**
Aligning timing marks between the camshaft and crankshaft gears ensures proper valve timing. Failure to align these marks can result in valves opening at the wrong time, causing poor performance or engine damage.

**14. C — Normal condensation in the exhaust system**
White smoke during cold startup that disappears after warmup is typically caused by normal condensation in the exhaust system. This is common in cold weather and is not usually indicative of a problem.

**15. B — Excessive oil consumption**
Blue-gray smoke that persists regardless of engine temperature is typically caused by excessive oil consumption. This indicates oil is entering the combustion chamber, often due to worn valve guides, piston rings, or cylinder walls.

**16. A — Air filter restriction**
A restricted air filter can cause insufficient air for proper combustion, resulting in black smoke (unburned fuel) and reduced power, especially under load conditions like climbing hills.

**17. D — Replace the injector's copper sealing washer**
If fuel is leaking around an injector base, the copper sealing washer may be damaged or missing. Replacing the sealing washer is the appropriate repair to prevent fuel leakage.

**18. C — Check for air in the fuel system**
Checking for air in the fuel system should be done first when diagnosing a surging idle, as air bubbles in the fuel can cause inconsistent fuel delivery and create a surging condition.

**19. B — Fuel injector operation**
After confirming the air filter is clean, fuel injector problems are the next likely cause of excessive black smoke at idle, as they can cause over-fueling or poor fuel atomization.

**20. A — Fuel tank contamination**
Multiple fuel filter replacements in a short period suggest contamination in the fuel system, possibly from the fuel tank. This could be due to water, debris, or microbial growth contaminating the fuel.

**21. D — Worn piston rings**
Higher than normal crankcase pressure is typically caused by blow-by gases escaping past worn piston rings

into the crankcase, indicating internal engine wear.

**22. C — Check for diagnostic trouble codes**
Checking for diagnostic trouble codes (DTCs) should be performed first when diagnosing intermittent power loss, as the engine control module may have detected and recorded the fault even if the check engine light is not currently on.

**23. B — Battery voltage**
Battery voltage should be checked first in cold weather no-start conditions, as cold temperatures reduce battery performance, and diesel engines require significant cranking power for starting.

**24. A — Perform a cylinder balance test**
When diagnosing excessive vibration, performing a cylinder balance test helps identify if one or more cylinders are contributing less power than others, which would cause uneven running and vibration.

**25. D — Restricted diesel particulate filter**
High exhaust back pressure is most commonly caused by a restricted diesel particulate filter (DPF), which can become clogged with soot and ash, restricting exhaust flow.

**26. C — Excessive valve clearance**
An intermittent ticking noise from the top of the engine that changes with engine speed is typically caused by excessive valve clearance, which creates a tapping or ticking sound as the valvetrain operates.

**27. B — Document the tampering with photos and notes**
When evidence of emissions system tampering is found, the technician should first document the findings with photos and notes before proceeding, as this may have warranty, legal, and compliance implications.

**28. A — Failed head gasket**
White exhaust smoke with a sweet smell is a classic symptom of coolant entering the combustion chamber, often due to a failed head gasket allowing coolant to leak into one or more cylinders.

**29. D — Failed fuel pump**
Zero fuel rail pressure during cranking indicates a fuel supply issue. A failed fuel pump is the most likely cause as it's not building any pressure in the system, preventing engine start.

**30. C — Failed water pump seal**
Coolant leaking from the water pump weep hole indicates a failed water pump seal. The weep hole is designed to allow coolant to escape externally rather than contaminate the bearing when the seal fails.

# Ready to pass?

Unlock the full ASE T2 Diesel Engine Prep bank, every explanation, and unlimited timed mock exams.

**Scan to start practising**
https://certs.theorypractice.app/aset2dieselenginestest

Watch the full video walkthrough on YouTube @CertsQuizPrep