ASE T1 Truck Gas 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 medium-duty truck engine is experiencing low oil pressure at idle. Technician A says this could be caused by a worn oil pump. Technician B says this could be caused by excessive main bearing clearance. Who is right?

A. A only
B. B only
C. Neither A nor B
D. Both A and B

2. During an oil pressure test on a heavy-duty truck engine, the pressure is normal at idle but drops significantly at higher RPMs. The most likely cause is:

A. Oil pressure sending unit failure
B. Low oil level
C. Worn oil pump relief valve
D. Clogged oil filter

3. When inspecting a truck's serpentine belt system, the technician notices fraying on the edges of the belt. Technician A says misaligned pulleys could cause this condition. Technician B says a worn tensioner could cause this condition. Who is right?

A. Neither A nor B
B. Both A and B
C. A only
D. B only

4. A truck engine overheats during heavy load conditions but maintains normal temperature at idle. Technician A says a partially clogged radiator could cause this. Technician B says a slipping fan clutch could cause this. Who is right?

A. Both A and B
B. A only
C. B only
D. Neither A nor B

5. While performing a cooling system pressure test on a medium-duty truck, the technician notices a steady drop in pressure without visible external leaks. The most likely cause is:

A. Faulty radiator cap
B. Air in the cooling system
C. Failed water pump seal
D. Leaking head gasket

6. When reinstalling an oil cooler on a heavy-duty truck engine, the technician should:

A. Hand-tighten the fittings only
B. Reuse all gaskets regardless of condition
C. Follow the manufacturer's torque specifications
D. Apply silicone sealant to all mounting surfaces

7. A cooling fan on a medium-duty truck runs constantly, even when the engine is cold. Technician A says a faulty fan clutch could cause this condition. Technician B says a stuck-closed thermostat could cause this condition. Who is right?

A. Neither A nor B
B. A only
C. B only
D. Both A and B

8. During a truck engine oil pressure test, the technician notices oil pressure builds slowly after a cold start. The most likely cause is:

A. Worn oil pump pickup tube or screen
B. Excessive oil viscosity
C. Faulty oil pressure gauge
D. Worn camshaft bearings

9. When checking a truck's oil pressure relief valve, Technician A says it should be inspected for scoring or wear. Technician B says it should be tested to ensure it opens at the correct pressure. Who is right?

A. A only
B. B only
C. Neither A nor B
D. Both A and B

10. A truck engine has normal operating temperature but the coolant recovery reservoir is constantly overflowing. The most likely cause is:

A. Stuck-open thermostat
B. Air trapped in the cooling system
C. Faulty radiator cap
D. Overcharged cooling system

11. While inspecting a water pump on a medium-duty truck, the technician notices coolant leaking from the weep hole. Technician A says this indicates a failed pump seal. Technician B says this is normal condensation and not a concern. Who is right?

A. Neither A nor B
B. A only
C. B only
D. Both A and B

12. When inspecting a cylinder head for warpage, Technician A says that the head should be checked with a straightedge and feeler gauge in a diagonal pattern. Technician B says that warpage exceeding 0.008 inch (0.20 mm) generally requires resurfacing. Who is right?

A. Both A and B
B. A only
C. B only
D. Neither A nor B

13. When inspecting valve guides in a cylinder head, the technician finds excessive clearance between the valve stems and guides. Which of these is the MOST appropriate repair?

A. Replace the valves only
B. Machine the valve seats only
C. Replace the entire cylinder head
D. Install new valve guides or ream for oversized valve stems

14. During cylinder head disassembly, a technician notices carbon deposits on the back of the intake valves. This condition is MOST likely caused by:

A. Leaking head gaskets
B. Excessive valve guide clearance
C. Normal PCV system operation
D. A cracked exhaust manifold

15. Technician A says that valve springs should be measured for free length and compared to specifications. Technician B says that valve springs should be tested for proper spring pressure at the installed height. Who is right?

A. Neither A nor B
B. Both A and B
C. A only
D. B only

16. When reassembling a cylinder head, which of these should be done FIRST?

A. Grind or cut the valve seats
B. Install the valve stem seals
C. Install the valve springs
D. Measure valve spring installed height

17. A medium-duty truck engine exhibits a rattling noise from the valve cover area. The most likely cause is:

A. Carbon buildup on valve stems
B. Loose rocker arm pedestal bolts
C. Worn valve guides
D. Excessive valve lash

18. When measuring valve stem-to-guide clearance, Technician A uses a micrometer and a small hole gauge. Technician B uses a dial indicator mounted to measure sideways movement of the valve stem. Who is using the correct method?

A. B only
B. Neither A nor B
C. Both A and B
D. A only

19. After cylinder head removal, a technician notices that some of the head bolts are stretched. The MOST appropriate action would be to:

A. Heat the bolts to restore their original length
B. Replace all the head bolts
C. Reuse the bolts if threads are in good condition
D. Apply thread locker to the stretched bolts

20. When replacing valve stem seals, which of these procedures is MOST important?

A. Properly compressing the valve springs
B. Checking valve spring free length
C. Lubricating the valve stems before installation
D. Installing the seals with the intake manifold removed

21. A technician is checking valve seat width. The specification calls for 0.040-0.060 inch (1.0-1.5 mm). The actual measurement is 0.080 inch (2.0 mm). The MOST appropriate action would be to:

A. Replace the valve with one that has a wider face
B. Leave it alone since wider seats provide better sealing
C. Replace the entire cylinder head
D. Recut the valve seat to narrow it to specification

22. When installing rocker arms on a cylinder head with adjustable valves, the valves should be adjusted when the piston is at:

A. Top dead center (TDC) on the exhaust stroke
B. Mid-stroke on the compression stroke
C. Top dead center (TDC) on the compression stroke
D. Bottom dead center (BDC) on the exhaust stroke

23. During valve spring installation, which of these measurements is MOST critical?

A. Valve spring color code
B. Valve spring installed height
C. Valve spring coil spacing
D. Valve spring wire diameter

24. A technician is checking cylinder head flatness with a straightedge and feeler gauge. The maximum warpage found is 0.005 inch (0.13 mm). Which of these is the MOST appropriate action?

A. Reuse the cylinder head without resurfacing
B. Resurface the cylinder head to restore flatness
C. Replace the cylinder head
D. Use a thicker head gasket to compensate

25. Technician A says that camshaft bearings should be installed with the oil holes aligned with the cylinder head oil galleries. Technician B says that camshaft endplay should be measured after bearing installation. Who is right?

A. A only
B. B only
C. Neither A nor B
D. Both A and B

26. When torquing cylinder head bolts, which of these methods is MOST commonly specified by manufacturers?

A. Torquing outer bolts first, then inner bolts
B. Torquing based on bolt length, longest to shortest
C. Torquing in a specific sequence and in multiple steps
D. Torquing all bolts to final specification in one step

27. A technician is inspecting an engine block for cracks. Technician A says that fluorescent dye penetrant testing is an effective method for finding cracks. Technician B says that magnetic particle testing can only be used on aluminum engine blocks. Who is right?

A. Neither A nor B
B. A only
C. B only
D. Both A and B

28. A technician measures a cylinder bore and finds it to be 0.003 in. (0.076 mm) out of round. What is the most likely cause?

A. Normal wear from piston movement
B. Improper torque sequence during assembly
C. Overheating of the engine
D. Detonation damage

29. When measuring main bearing clearance with Plastigage, what should be done before taking the measurement?

A. Apply engine oil to the journal surface
B. Rotate the crankshaft several times
C. Measure the journal with a dial indicator
D. Clean the crankshaft journal and bearing surface

30. During an engine block inspection, a technician finds a crankshaft main bearing journal that is 0.005 in. (0.127 mm) smaller than the other journals. What should the technician do?

A. Machine all journals to match the smallest one
B. This is within normal tolerance, no action needed
C. Replace or recondition the crankshaft
D. Install undersized bearings only on the worn journal

Answer Key & Explanations

1. D — Both A and B
Both worn oil pumps and excessive main bearing clearances can cause low oil pressure at idle. The worn pump would not produce sufficient pressure, while excessive bearing clearance allows oil to escape too quickly, reducing system pressure.

2. C — Worn oil pump relief valve
When oil pressure is normal at idle but drops at higher RPMs, a worn oil pump relief valve is often the culprit. At higher RPMs, the relief valve should maintain proper pressure, but if worn, it will allow excess oil to bypass, causing pressure drop.

3. B — Both A and B
Misaligned pulleys will cause belt edge fraying as the belt runs at an incorrect angle. A worn tensioner can allow belt movement and misalignment, also contributing to edge fraying.

4. A — Both A and B
Both conditions can cause the described overheating pattern. A partially clogged radiator cannot dissipate heat adequately under load, and a slipping fan clutch won't provide sufficient cooling airflow when needed most during heavy loads.

5. D — Leaking head gasket
When a pressure test shows decreasing pressure without visible external leaks, a leaking head gasket allowing pressure to enter the combustion chamber is often the cause. This creates an internal leak not visible from outside the engine.

6. C — Follow the manufacturer's torque specifications
Following the manufacturer's torque specifications is critical when reinstalling an oil cooler to ensure proper sealing and prevent leaks while avoiding damage to components from over-tightening.

7. B — A only
A faulty fan clutch that fails to disengage will cause the fan to run constantly regardless of engine temperature. A stuck-closed thermostat would cause overheating but wouldn't directly affect fan operation when the engine is cold.

8. A — Worn oil pump pickup tube or screen
A worn oil pump pickup tube or screen can cause slow oil pressure buildup after a cold start because it restricts oil flow to the pump initially. This condition typically improves as oil warms and becomes more fluid.

9. D — Both A and B
Both statements are correct procedures for properly checking an oil pressure relief valve. The valve should be inspected for physical damage and tested to ensure it operates at the manufacturer's specified pressure.

10. C — Faulty radiator cap
A faulty radiator cap that doesn't maintain proper system pressure will allow coolant to escape to the recovery reservoir. This happens even at normal operating temperatures if the cap isn't sealing correctly.

11. B — A only
Coolant leaking from a water pump weep hole indicates that the pump's seal has failed. The weep hole is designed to allow seal leakage to exit rather than contaminating the bearings, and any coolant present indicates seal failure.

12. A — Both A and B
Both technicians are correct. Checking cylinder head warpage requires using a straightedge and feeler gauge in a diagonal pattern across the cylinder head, as well as lengthwise and across the width. Most manufacturers specify that warpage exceeding 0.008 inch requires resurfacing the cylinder head.

13. D — Install new valve guides or ream for oversized valve stems
When valve guides show excessive clearance with valve stems, the most appropriate repair is to replace or ream the valve guides to accept oversized valve stems, which will restore proper clearance and prevent issues like oil consumption or uneven valve seating.

14. C — Normal PCV system operation
Carbon deposits on the back of intake valves are most commonly caused by PCV system issues that allow oil vapors to enter the intake manifold, where they collect on the back of the intake valves, especially in engines with port fuel injection.

15. B — Both A and B
Both technicians are correct. Valve springs should be measured for free length to check for sagging or fatigue, and they should also be tested for proper pressure at their installed height to ensure they provide the correct seating and operating forces.

16. A — Grind or cut the valve seats
Before installing valves, the valve seats must be properly ground or cut to ensure proper valve seating. This is done first because it establishes the proper seating surface for the valves before the valves are installed in the guides.

17. D — Excessive valve lash
A rattling noise from the valve cover area is most commonly caused by excessive valve lash (clearance), which creates a tapping or rattling sound as the valvetrain components move with too much clearance between them.

18. C — Both A and B
Both methods are correct for measuring valve stem-to-guide clearance. Technician A measures the valve stem diameter and the valve guide inside diameter to calculate clearance, while Technician B directly measures the lateral movement of the valve stem within the guide.

19. B — Replace all the head bolts
Head bolts are typically torque-to-yield (TTY) fasteners that stretch during installation by design. When removed, these bolts remain stretched and cannot return to their original dimensions, making replacement necessary to ensure proper torque and clamping force.

20. A — Properly compressing the valve springs
Compressing the valve springs properly is most important because it allows access to the valve stem seals without damaging components or risking valve drops into the cylinder. This procedure requires a valve spring compressor tool to safely perform the job.

21. D — Recut the valve seat to narrow it to specification
When valve seats are too wide, they should be recut to narrow them to specifications. Wide valve seats can cause poor valve seating, reduced heat transfer, and potentially lead to valve burning or poor engine performance.

22. C — Top dead center (TDC) on the compression stroke
Valve adjustment should be performed when the piston is at top dead center (TDC) on the compression stroke. This ensures both valves are closed and provides the proper reference point for setting valve lash according to manufacturer specifications.

23. B — Valve spring installed height
Valve spring installed height is the most critical measurement during installation because it directly affects spring pressure. Incorrect installed height can lead to improper valve operation, premature valve or seat wear, and potential engine damage.

24. A — Reuse the cylinder head without resurfacing
Since the warpage is within typical manufacturer specifications (usually 0.008 inch or less is acceptable), no resurfacing is required. The cylinder head can be reused as is, saving time and maintaining the original head thickness.

25. D — Both A and B
Both technicians are correct. Camshaft bearings must have their oil holes aligned with the cylinder head oil galleries to ensure proper lubrication, and camshaft endplay must be measured after installation to ensure it meets specifications and allows proper operation.

26. C — Torquing in a specific sequence and in multiple steps
The most commonly specified method for torquing cylinder head bolts is a multi-step sequence with a specific pattern. This ensures even clamping force across the head gasket and prevents distortion of the cylinder head or block during assembly.

27. B — A only
Fluorescent dye penetrant testing is effective for finding cracks in engine blocks. Magnetic particle testing can only be used on ferrous (iron-based) materials, not aluminum blocks.

28. A — Normal wear from piston movement
Cylinder bores typically wear in an oval pattern due to the side thrust forces of the piston, resulting in an out-of-round condition. This is normal wear caused by the piston's movement during the power stroke.

29. D — Clean the crankshaft journal and bearing surface
Before using Plastigage to measure main bearing clearance, the crankshaft journal and bearing surface must be thoroughly cleaned. Oil or contaminants will affect the accuracy of the Plastigage reading.

30. C — Replace or recondition the crankshaft
A main bearing journal that is significantly smaller (0.005 in.) than others indicates uneven wear or improper

previous machining. The crankshaft should be replaced or reconditioned by grinding all journals to the next standard undersize.

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