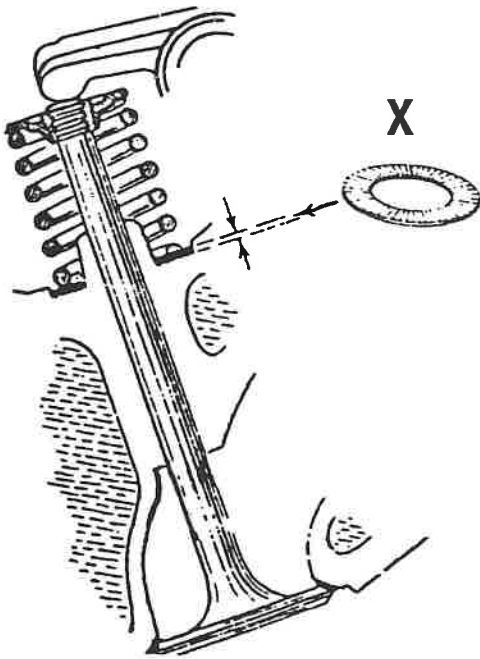


## Prepare yourself for ASE testing with these questions on ENGINE REPAIR



1. Technician A says that Part 'X' shown above is used to rotate the valve spring. Technician B says that Part 'X' is used to correct installed spring height. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

2. A compression test shows that one cylinder is too low. A leakage test on that cylinder shows that there is excessive leakage. During the test, air could be heard coming from the tail pipe. Which of the following could be the cause?

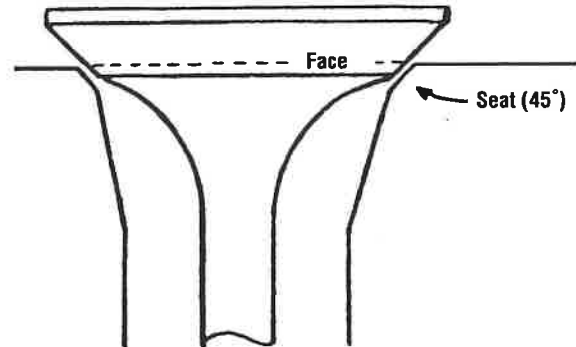
- A. broken piston rings
- B. bad head gasket
- C. bad exhaust gasket
- D. an exhaust valve not seating

3. Technician A says that main bearing oil clearance can be checked with Plastigage™. Technician B says that main bearing oil clearance can be checked with a dial bore gauge. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

4. Which of the following is NOT a method of correcting excessive valve stem to guide clearance?

- A. knurling the valve stem
- B. knurling the guide
- C. reaming for oversize
- D. guide replacement



5. To raise the seat contact on the valve face shown above, which combination of stones should be used?

- A. 45 degree and 60 degree stones
- B. 30 degree and 45 degree stones
- C. 15 degree and 30 degree stones
- D. 30 degree and 60 degree stones

6. A vacuum gauge is connected to the intake manifold of an engine running at idle. The pointer on the gauge fluctuates rapidly but steadies as the engine speed is increased. The test results indicate:

- A. a leaking intake manifold gasket
- B. worn valve guides
- C. late ignition timing
- D. a weak valve spring

7. A technician takes a compression reading on a 4-cyl. engine and gets readings of 140, 135, 135 and 40 psi. Then he performs a wet compression test and the readings are almost the same as those in the first test. Technician A says that a burned valve could cause these readings. Technician B says that a broken piston ring could cause these readings. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B



8. Technician A says that valve timing that is incorrect can cause high cylinder compression readings. Technician B says that late ignition timing can cause a high intake manifold vacuum reading. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

9. Technician A says that severe cylinder bore taper can be determined by measuring the cylinder with a gauge. Technician B says that severe cylinder bore taper can be found by performing a cylinder leakage test. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

10. Camshaft lift is defined as:

- A. the distance the valves are open
- B. the height of the lobes on the camshaft
- C. the time the valves stay closed
- D. the time the valves stay open

11. Technician A says that a burned valve could be the result of too little valve lash. Technician B says excessive valve lash could cause very fast camshaft wear. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

12. Technician A says that engine cylinders wear most at the top of the ring travel. Technician B says that the difference in cylinder bore measurements taken parallel and perpendicular to the crankshaft will indicate cylinder bore taper. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

13. A tapping noise can be heard coming from the upper part of an engine running at idle. Which of the following could be the cause?

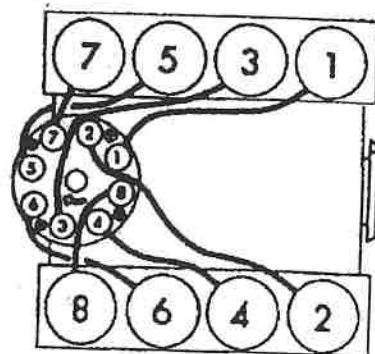
- A. valve clearance out of adjustment
- B. worn rocker arm shaft
- C. loose exhaust manifold
- D. all of the above

14. An engine's upper and lower center main bearings show more wear than the ones toward either end of the crankshaft. Technician A says this wear pattern could be due to a bent crankshaft and replacing it with one that is straight will fix the problem. Technician B says that the cylinder block main bearing bores are misaligned and the problem can be fixed by align boring or honing the block. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

15. Blue-gray smoke comes from the exhaust of a vehicle during deceleration. Of the following, which cause is **LEAST** likely?

- A. worn valve guides
- B. broken valve seals
- C. worn piston rings
- D. clogged oil return passages



Engine Firing Order:  
1-8-4-3-6-5-7-2

16. During a cylinder balance test on the engine shown above, cylinder No. 5 and cylinder No. 7 were both found to be weak. Technician A says a blown head gasket could be the cause. Technician B says an ignition problem could be the cause. Who is correct?

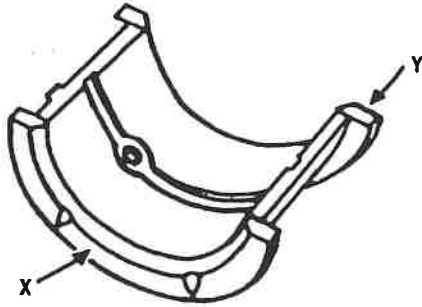
- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B



## Prepare yourself for ASE testing with these questions on ENGINE REPAIR

17. When a cylinder head is disassembled, the stem height on one valve is found to be too high. Which of the following can correct this?
- A. regrind the valve
  - B. regrind the valve seat
  - C. install a new valve seat
  - D. install a shim
18. All of the following methods can be used to find cracks in aluminum heads **EXCEPT**:
- A. pressure test
  - B. magnetic particle detection
  - C. visual inspection
  - D. dye penetrant
19. Technician A says that before installing an oil pump, it should be primed with clean engine oil. Technician B says that before installing an oil pump, the position of the pickup screen should be checked to make sure it fits closely to the bottom of the oil pan. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
20. Crankshaft journals should be measured for:
- A. diameter
  - B. out-of-round
  - C. taper
  - D. all of the above
21. All of the following can cause low oil pressure **EXCEPT**:
- A. diluted engine oil
  - B. worn pistons
  - C. excessive bearing clearance
  - D. clogged oil pump pickup
22. While conducting a cylinder leakage test, bubbles are seen in the coolant in the radiator. Technician A says a failed exhaust valve is the cause. Technician B says a failed intake valve is the cause. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
23. Technician A says that umbrella valve seals are installed in their operating position during cylinder head assembly. Technician B says that positive valve seals are positioned by the valve. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
24. Technician A says that excessive grinding of the valve face and seat allows the valve tips to move too far away from their spring seats. Technician B says grinding the stem tips helps to correct minor changes in valve spring installed height. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
25. Technician A says that excessive cylinder head or block deck surfacing on a pushrod engine can change the geometry between the valve stem tip and rocker arm. Technician B says that excessive grinding of the valve face and seat changes the geometry between the valve stem tip and rocker arm. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B



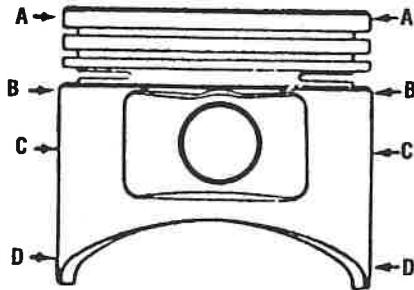


26. Technician A says that Plastigage™ is used to measure the clearance between the crankshaft and 'X' and 'Y' on the bearing shown above. Technician B says that a dial indicator is used to measure the clearance. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

27. Technician A says that piston rings installed upside down will cause increased oil consumption. Technician B says rings installed upside down will cause piston ring land damage. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B



28. The diameter of the piston above is measured from point:

- A. 'A' to 'A'
- B. 'B' to 'B'
- C. 'C' to 'C'
- D. 'D' to 'D'

29. Of the following spring measurements, which would NOT require spring replacement if the measurement is not within specification?

- A. installed height
- B. pressure
- C. free height
- D. squareness

30. Technician A says that a hydraulic lifter rotates during operation. Technician B says the face of the lifter should be convex. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

31. Technician A says that valve lash should be adjusted with the piston in the cylinder being adjusted at TDC on the compression stroke. Technician B says that hydraulic lifters should be adjusted to zero lash. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

32. Technician A says that the thermostat controls maximum engine temperature. Technician B says if the engine continuously runs hot, install a cooler thermostat. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

33. Technician A says if the camshaft bores are more than 0.0015-in. (0.0381mm) out-of-round, they should be align bored or align honed. Technician B says that the block needs to be align bored or honed if bore alignment is not within 0.0015-in. (0.0381mm). Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B





# Prepare yourself for ASE testing with these questions on ENGINE REPAIR

34. Technician A says that head bolts must be tightened in one step to achieve an accurate torque. Technician B says that torque-to-yield head bolts can be reused. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
35. Technician A is rebuilding an engine with a timing chain. Technician B is rebuilding an engine with a timing belt. Technician A says that the timing chain is stretched and must be replaced, however, the timing sprockets appear to be in good shape so they can be reused. Technician B says he is replacing the timing belt and that this requires him to also replace the timing sprockets. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
36. All of the following are ways to clean an aluminum engine **EXCEPT**:
- A. cold solvent tank
  - B. carburetor cleaner
  - C. hot caustic tank
  - D. pyrolytic oven
37. All of the following are methods of repairing a cracked block **EXCEPT**:
- A. pinning
  - B. magnafluxing
  - C. gluing
  - D. welding
38. In order to perform a proper compression test, all of the following conditions should be met **EXCEPT**:
- A. The throttle blades should be held wide open.
  - B. The battery should be fully charged.
  - C. The engine should be at operating temperature.
  - D. Only the spark plug for the cylinder to be tested should be removed.
39. A single rod bearing shows excessive wear, but the rest show normal wear. Technician A says this could be due to an out-of-round connecting rod bore. Technician B says that this could be due to an obstruction in the crankshaft oil passage(s) that supplies the bearing. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
40. All of the following could cause an engine to ping or detonate **EXCEPT**:
- A. a faulty EGR valve
  - B. retarded ignition timing
  - C. excessive machining of the cylinder head
  - D. using fuel with too low of an octane rating
41. Technician A says that a twisted connecting rod would cause a slanted wear pattern on the side of a piston. Technician B says that a bent connecting rod would cause the rod bearing inserts to have more wear on one side. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
42. An engine has a defective harmonic balancer. Technician A says this can cause inaccurate ignition timing readings. Technician B says this can cause a broken crankshaft. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
43. Technician A says the flywheel on an externally balanced engine can only be installed in one position on the crankshaft flange. Technician B says that flywheel runout should be checked with a straightedge and feeler gauge. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B



44. All of the following could cause an engine to over-heat **EXCEPT**:

- A. defective fan clutch
- B. clogged cooling system
- C. broken fan shroud
- D. stuck open thermostat

45. All of the following can cause an engine oil leak **EXCEPT**:

- A. cracked valve cover gasket
- B. stuck open PCV valve
- C. worn rear main seal
- D. worn piston rings

46. Technician A says that the engine should be accelerated when checking vacuum advance. Technician B says that the engine should be accelerated when checking centrifugal advance. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

47. Technician A says if a ring ridge is not removed, damage to the new piston and rings can result. Technician B says when the block will be rebored for over-size pistons, removing the ridge is not necessary. Who is correct?

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

48. All of the following could cause reduced performance from a turbocharged engine **EXCEPT**:

- A. dirty air filter
- B. restricted exhaust system
- C. worn turbocharger bearings
- D. stuck closed wastegate

49. All of the following statements about batteries are true **EXCEPT**:

- A. A fully charged battery should have a specific gravity of 1.260.
- B. If the open circuit voltage is less than 12.4 volts, charge the battery at a slow rate.
- C. A battery is load tested to one-third its CCA (Cold Cranking Amps) rating for 15 seconds.
- D. At the end of a load test, battery voltage must be 9.6 volts or more.

50. Technician A says that a deep gouge in a cylinder bore can be repaired by installing a sleeve. Technician B says a crack in a cylinder bore requires that the block be replaced. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B

51. When a cylinder head with an overhead camshaft is discovered to be warped, which of the following is the **MOST** correct repair option?

- A. replace the head
- B. check for cracks, straighten the head, surface the head
- C. surface the head, then straighten it
- D. straighten the head, surface the head, check for cracks

52. Technician A says that crankshaft connecting rod journals typically experience the most wear at BDC (Bottom Dead Center). Technician B says that bearing journal diameter should be measured at the center and at both ends. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B



# ENGINE REPAIR

53. All of the following can result from resurfacing a cylinder block **EXCEPT**:
- A. change in the camshaft timing on an overhead camshaft engine
  - B. change in the alignment between the cylinder heads and intake manifold on a V8 engine
  - C. decreased compression
  - D. change in the valvetrain geometry on a push-rod engine
54. Technician A says if only the upper front main bearing is worn, a belt adjusted too tight is indicated. Technician B says when an engine with a knock is disassembled, the connecting rod bearing(s) closest to the oil pump will show the most wear. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
55. A timing cover is being installed using a synthetic rubber gasket. Technician A says that a  $\frac{1}{8}$ -in. (3.175mm) to  $\frac{3}{16}$ -in. (4.762mm) wide bead of sealer should be applied along the length of the cover flange and block surface. Technician B says the gasket must be installed against a perfectly clean and dry surface. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
56. Technician A says that when replacing a thermostat, the heat sensing element should face the radiator. Technician B says that when checking a fan clutch, the fan should rotate easily. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
57. When cleaning a cylinder block for final assembly, which of the following should be used?
- A. carburetor cleaner
  - B. kerosene or cutting lubricant
  - C. hot, soapy water and a bristle brush
  - D. petroleum solvent
58. Technician A says that a cylinder should be bored to within 0.001-in. (0.025mm) of final size. Technician B says that 220 grit stones should be used for finish honing when cast iron rings are used. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
59. Technician A says the retainer clips on pistons with floating pins should be reused if they are not damaged. Technician B says that after a full floating pin bushing is pressed into the rod, the piston and rod is then reassembled. Who is correct?
- A. Technician A only
  - B. Technician B only
  - C. Both A and B
  - D. Neither A or B
60. All of the following statements about piston rings are true **EXCEPT**:
- A. Ring end gap must be measured prior to installation.
  - B. Rings must be installed facing the correct vertical direction.
  - C. Rings are installed on the piston using a ring compressor.
  - D. Ring end gaps must be staggered around the piston.
61. A manifold vacuum test is performed on an engine in a shop that is located approximately 4000 ft. (1.2km) above sea level. With the engine at normal operating temperature, the gauge reads a steady 15 in. Hg at idle. Which of the following would be indicated by this vacuum reading?
- A. late ignition timing
  - B. low compression
  - C. vacuum leak
  - D. normal operation



62. An engine has a light metallic knocking noise during light engine loads. However, when the cylinder with the noise is disabled during a cylinder balance test, the sound diminishes. Technician A says that the noise is caused by excessive connecting rod bearing clearance. Technician B says that the noise is caused by excessive piston-to-wall clearance. Who is correct?
- Technician A only
  - Technician B only
  - Both A and B
  - Neither A or B
63. All of the following are statements describing normal mechanical fan clutch operation **EXCEPT**:
- A fan clutch has viscous drag regardless of temperature.
  - A fan clutch varies fan speed according to engine temperature.
  - A fan clutch stops the fan from spinning within two seconds after turning off a hot engine.
  - A fan clutch varies fan speed according to engine speed.
64. Which of the following methods can be used to find a cylinder with an internal coolant leak?
- Draw vapors from the radiator into a vial containing a special chemical and look for a color change.
  - Hold an exhaust analyzer probe over the radiator neck and check for the presence of exhaust gases.
  - Perform a leakdown test and look for the presence of bubbles in the radiator coolant.
  - all of the above
65. All of the following can cause an oil leak **EXCEPT**:
- worn piston rings
  - worn valve seals
  - worn rear main seal
  - clogged PCV system
66. The ignition timing is being checked on an older vehicle with a distributor ignition system. To prevent spark advance while the timing is checked, Technician A says that the vacuum hose should be disconnected from the distributor vacuum diaphragm and plugged. Technician B says that, to prevent spark advance while the timing is checked, the timing should be checked when the engine is at idle. Who is correct?
- Technician A only
  - Technician B only
  - Both A and B
  - Neither A or B
67. Technician A says that the specific gravity of the battery electrolyte should be checked after adding water to bring all cells to the proper level. Technician B says that specific gravity should be checked right after the battery is charged. Who is correct?
- Technician A only
  - Technician B only
  - Both A and B
  - Neither A or B
68. All of the following are true statements regarding a starter current draw test **EXCEPT**:
- As a general rule, current draw on a V8 should be higher than on a 4-cylinder engine.
  - Battery voltage should remain above 9.6V during the test.
  - Higher than normal current draw readings can be caused by excessive resistance in the starter circuit.
  - Higher than normal current draw readings can be caused by engine mechanical problems.
69. Technician A says that threaded oil gallery plugs can be removed by first heating them with a torch and then quenching with wax. Technician B says that if a tap-in oil gallery plug comes out, oil pressure will be lost and there will be oil all over the outside of the engine. Who is correct?
- Technician A only
  - Technician B only
  - Both A and B
  - Neither A or B





## Prepare yourself for ASE testing with these questions on ENGINE REPAIR

70. After reassembling a hydraulic lifter, Technician A says that it should be tested with a leakdown tester. Technician B says that the leakdown rate is how far the lifter plunger moves within a set time period. Who is correct?

- A. Technician A only
- B. Technician B only
- C. Both A and B
- D. Neither A or B



# NOTES

