**Small Engines CDE 1**

**MULTIPLE CHOICE**

 1. What is the correct order of the strokes in a 4-stroke cycle engine?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake, exhaust, compression and power | c. | intake, compression, power and exhaust |
| b. | compression, power, exhaust and intake | d. | intake, power, compression and exhaust |

ANS: C PTS: 1

 2. On the \_\_\_\_\_\_\_\_\_\_ stroke of an engine, the piston is going down, one valve is open and the other valve is closed and air and fuel are being drawn into the cylinder.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake | c. | power |
| b. | exhaust | d. | compression |

ANS: A PTS: 1

 3. On the \_\_\_\_\_\_\_\_\_\_ stroke of an engine, the piston is going up, one valve is open and the other valve is closed and the fumes are leaving the cylinder.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake | c. | power  |
| b. | exhaust | d. | compression |

ANS: B PTS: 1

 4. On which two strokes are both valves closed?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake and exhaust | c. | intake and compression |
| b. | compression and power | d. | power and exhaust |

ANS: B PTS: 1

 5. The intake valve is cooled by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | incoming air/fuel mixture | c. | radiator |
| b. | air circulation | d. | oil |

ANS: A PTS: 1

 6. The exhaust valve is difficult to cool because of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the spark plug being placed directly above it | c. | hot water surrounding it |
| b. | incoming fuel mixture | d. | high temperature exhaust gases |

ANS: D PTS: 1

 7. The exhaust valve is made of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a very special steel | c. | brass |
| b. | copper | d. | carbide |

ANS: A PTS: 1

 8. A single cylinder Briggs and Stratton engine has:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 1 valve | c. | 2 valves |
| b. | 4 valves | d. | 3 valves |

ANS: C PTS: 1

 9. Valves have a direct effect on:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compression | c. | compression ratio |
| b. | displacement | d. | horsepower |

ANS: A PTS: 1

 10. If the intake valve fails in a one-cylinder engine, the engine will:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | run poorly | c. | idle high |
| b. | stop | d. | back fire |

ANS: B PTS: 1

 11. What is the most common angle on a valve face?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 30 degrees | c. | 50 degrees |
| b. | 60 degrees | d. | 45 degrees |

ANS: D PTS: 1

 12. If a valve has a 45 degree face, then the seat would be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 45 degrees | c. | 90 degrees |
| b. | 46 degrees | d. | it doesn’t matter |

ANS: B PTS: 1

 13. If a valve has a 30 degree face, then the seat would be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 30 degrees | c. | 60 degrees |
| b. | 31 degrees | d. | it doesn’t matter |

ANS: B PTS: 1

 14. The valves open and close in a one-cylinder engine in as little as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 1/50 of a second | c. | 1/2 of a second |
| b. | 1/10 of a second | d. | 1 second |

ANS: A PTS: 1

 15. Valve tappet clearance is measured by using a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | rule | c. | feeler gauge |
| b. | micrometer | d. | caliper |

ANS: C PTS: 1

 16. When checking the valve tappet clearance, the piston should be at the top of the \_\_\_\_\_\_\_\_\_\_ stroke and then a 1/4 inch down from there.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake | c. | power  |
| b. | compression | d. | exhaust |

ANS: B PTS: 1

 17. On L-head engines if the valve tappet clearance is too small, the proper clearance is obtained by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | grinding on the valve face. | c. | grinding on the end of the valve stem. |
| b. | grinding on the valve head. | d. | grinding on the end of the tappet. |

ANS: C PTS: 1

 18. On L-head engines if the valve tappet clearance is too big, the proper clearance can be obtained by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | refacing the valve | c. | lapping the valve |
| b. | recutting the seat | d. | any of the above |

ANS: D PTS: 1

 19. On overhead valve engines the valve clearance is corrected by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | clearance does not have to be checked | c. | grinding on the end of the valve stem |
| b. | using a wrench and turning the adjusting nut. | d. | grinding on the end of the tappet |

ANS: B PTS: 1

 20. When checking the valve clearance on OHV engines, the clearance is checked between the valve stem and the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | tappet | c. | rocker arm  |
| b. | lifter | d. | push rod |

ANS: C PTS: 1

 21. Too little valve clearance can cause:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | valve burning | c. | a rich fuel mixture |
| b. | a dished valve | d. | a higher compression ratio |

ANS: A PTS: 1

 22. Which of the following is **not** a part of a valve:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | head | c. | face |
| b. | margin | d. | tail |

ANS: D PTS: 1

 23. Which of the following **is** a part of a valve?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | lobe | c. | leg |
| b. | stem | d. | tail |

ANS: B PTS: 1

 24. The valve with the biggest size head is the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake valve | c. | compression valve |
| b. | exhaust valve | d. | they are all the same size |

ANS: A PTS: 1

 25. Valve springs must be replaced if they:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | are bent | c. | do not meet tension specifications |
| b. | are not square | d. | all are correct |

ANS: D PTS: 1

 26. The camshaft opens and closes the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake valve | c. | intake and exhaust valves |
| b. | exhuast valve | d. | reed valves |

ANS: C PTS: 1

 27. The thickness of the margin on a new Briggs & Stratton valve is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 1/64 inch | c. | 1/16 inch |
| b. | 1/32 inch | d. | 1/8 inch |

ANS: B PTS: 1

 28. Briggs & Stratton recommends that valves be replaced when the margin measures less than \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 3/64 inch | c. | 1/32 inch |
| b. | 1/16 inch | d. | 1/64 inch |

ANS: D PTS: 1

 29. Which of the following is **not** a type of valve failure?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | necked | c. | burned |
| b. | dished | d. | swollen |

ANS: D PTS: 1

 30. Why are the valves more important in a one-cylinder engine than a multi-cylinder engine?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | They are not more important in a one-cylinder engine. | c. | The one-cylinder engines cost more. |
| b. | If the valves fail in a multi-cylinder engine you only lose a portion of the power, but if they fail in a one-cylinder engine you lose all power. | d. | The one-cylinder engines are more powerful. |

ANS: B PTS: 1

 31. What causes valves to stick?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | gum accumulation | c. | wrong viscosity of oil |
| b. | old oil | d. | air filter clogged |

ANS: A PTS: 1

 32. \_\_\_\_\_\_\_\_\_\_ is a process where the valve face is rubbed against the valve seat using an abrasive compound in order to produce a particular type surface.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | honing | c. | seating |
| b. | boring | d. | lapping |

ANS: D PTS: 1

 33. Valve overlap is when both valves are:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | closed | c. | closed and open |
| b. | open | d. | none are correct |

ANS: B PTS: 1

 34. A machined hole in the block through which the valve stem passes in order to align the valve and assure accurate raising and lowering in relation to the seat is called the

|  |  |  |  |
| --- | --- | --- | --- |
| a. | valve tunnel | c. | valve guide |
| b. | valve passage | d. | valve insert |

ANS: C PTS: 1

 35. A \_\_\_\_\_\_\_\_\_\_\_\_ must be used on each valve to hold it firmly against the seat.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | grinding compound | c. | valve tappet |
| b. | valve spring | d. | valve push rod |

ANS: B PTS: 1

 36. Valves should be cleaned with a power wire brush and then:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cleaned with soap and water | c. | honed |
| b. | cleaned with gasoline | d. | inspected for defects |

ANS: D PTS: 1

 37. The difference in the angle between the valve seat and the valve face is called a/an:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | tri-angle fit | c. | interference fit |
| b. | angle fit | d. | compression fit |

ANS: C PTS: 1

 38. Which of the following is **not** a part of the valve system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | keeper | c. | spring |
| b. | retainer | d. | ring |

ANS: D PTS: 1

 39. What is another name for a valve tappet?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | valve lifter | c. | valve shaft |
| b. | valve lobe | d. | valve pin |

ANS: A PTS: 1

 40. What pushes against the valve tappets to make them move?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cam gear | c. | crankshaft |
| b. | cam lobes | d. | connecting rod |

ANS: B PTS: 1

 41. Valves that are used in a 4-stroke cycle engine to open and close the port openings are called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | head valves | c. | port valves |
| b. | reed valves | d. | poppet valves |

ANS: D PTS: 1

 42. The valve \_\_\_\_\_\_\_\_\_\_ consists of all of the components that work together to transform the rotation of the crankshaft into the opening and closing of the valves.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | parts | c. | assembly |
| b. | alignment | d. | train |

ANS: D PTS: 1

 43. What are the 3 main types of valve train configurations used in small gasoline engines?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | straight valve, overhead valve, overhead cam | c. | L-head, overhead valve, overhead cam |
| b. | L-head, poppet valve, reed valve | d. | stem valve, overhead valve, reed valve |

ANS: C PTS: 1

 44. The L-head engine is also known as the \_\_\_\_\_\_\_\_\_\_\_\_ arrangement.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | valve-in-block | c. | overhead |
| b. | straight | d. | valve and spring |

ANS: A PTS: 1

 45. In the \_\_\_\_\_\_\_\_\_\_\_\_ arrangement, the camshaft is located in the crankcase and the valves are located in the cylinder block, directly above the camshaft lobes.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overhead valve | c. | straight valve |
| b. | overhead cam | d. | L-head |

ANS: D PTS: 1

 46. In the \_\_\_\_\_\_\_\_\_\_\_\_ arrangement, the camshaft is installed in the crankcase and the valves are installed in the cylinder head.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overhead valve | c. | straight valve |
| b. | overhead cam | d. | L-head |

ANS: A PTS: 1

 47. In the \_\_\_\_\_\_\_\_\_\_\_\_ arrangement, both the camshaft and valve assemblies are installed in the cylinder head.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overhead valve | c. | straight valve |
| b. | overhead cam | d. | L-head |

ANS: B PTS: 1

 48. When referring to a type of engine, OHV stands for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overhead vertical | c. | outside horizontal valve |
| b. | overhead valve | d. | overhead voltage |

ANS: B PTS: 1

 49. When referring to a type of engine, OHC stands for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overhead cam | c. | outside horizontal cam |
| b. | overhead crankshaft | d. | overhead carburetor |

ANS: A PTS: 1

 50. In an overhead valve configuration, \_\_\_\_\_\_\_\_\_\_\_\_transfer motion from the valve lifters to one end of the rocker arms.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | tappets | c. | valve stems |
| b. | pushrods | d. | valve levers |

ANS: B PTS: 1

 51. In an overhead valve configuration, where are the rocker arms installed?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | in the block | c. | in the cylinder head |
| b. | to the crankshaft | d. | in the crankcase |

ANS: C PTS: 1

 52. The rocker arms operate like:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | gears | c. | lifters |
| b. | springs | d. | levers |

ANS: D PTS: 1

 53. When one end of the rocker arm is pushed up, the other end pushes down on the \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | camshaft | c. | valve stem |
| b. | crankshaft | d. | valve head |

ANS: C PTS: 1

 54. In an overhead cam design, the camshaft may be positioned directly over the valves or they may be offset. If the camshaft is offset, \_\_\_\_\_\_\_\_\_\_\_\_ are added to the design to transfer motion from the camshaft to the valves.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | pushrods | c. | rocker arms |
| b. | lifters | d. | springs |

ANS: C PTS: 1

 55. The camshaft in an overhead cam design is usually driven by either a \_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | chain or gear | c. | belt or gear |
| b. | chain or belt | d. | gear or shaft |

ANS: B PTS: 1

 56. The overhead valve design as comapared to the L-head design can increase fuel efficiency by as much as \_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 5% | c. | 25% |
| b. | 10% | d. | 50% |

ANS: C PTS: 1

 57. Which part of the engine must be removed before the push rods can be removed?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | rocker arms | c. | valve springs |
| b. | valves | d. | piston |

ANS: A PTS: 1

 58. If the push rods are bent they must be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | sanded | c. | straightened |
| b. | measured with a micrometer | d. | replaced |

ANS: D PTS: 1

 59. Which of the following types of engines have valves and springs that are capable of being removed with your hands without the use of tools?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | straight valve engines | c. | L-head engines |
| b. | 2-cycle engines | d. | OHV engines |

ANS: D PTS: 1

 60. Which of the following statements **is** true?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Most valve face angles are 60 degrees | c. | Valve guides can be replaced. |
| b. | To adjust the tappet clearance on OHV engines, the valve stem must be ground. | d. | If valves are warped they can still be used. |

ANS: C PTS: 1

 61. The basic purpose of a carburetor is to:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | eqaulize atmospheric pressure | c. | regulate the amount of fuel entering the engine |
| b. | clean the air entering the engine | d. | regulate the mixture of air and fuel |

ANS: D PTS: 1

 62. The ideal air to fuel ratio by weight for a small engine is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 10:1 | c. | 20:1 |
| b. | 15:1 | d. | 25:1 |

ANS: B PTS: 1

 63. A flexible piece in the carburetor that pulsates when a vacuum is created in the engine and draws fuel into a chamber of the carburetor is called a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | venturi | c. | spring |
| b. | diaphragm | d. | float |

ANS: B PTS: 1

 64. Which part of the carburetor controls engine speed?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | throttle | c. | choke |
| b. | venturi | d. | float |

ANS: A PTS: 1

 65. Gum deposits which clog the carburetor and other fuel system parts are caused by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | overheating | c. | inadequate operating speeds |
| b. | stale gasoline | d. | stalling |

ANS: B PTS: 1

 66. If black smoke is coming from the exhaust when the engine is operating at 3000 rpm’s, the most probable cause is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a lean air-fuel mixture | c. | improper set ignition points |
| b. | an improperly installed breather | d. | a rich high speed air-fuel mixture |

ANS: D PTS: 1

 67. The air-fuel mixture entering a two-stroke cycle engine initially enters the engine through the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake valve | c. | reed valve |
| b. | carburetor | d. | intake port |

ANS: B PTS: 1

 68. The term which does **not** represent a type of carburetor found on small gasoline engines is the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nozzle feed | c. | suction feed |
| b. | float feed | d. | diaphragm |

ANS: A PTS: 1

 69. The purpose of the venturi on a carburetor is to:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mix the correct amount of fuel and air | c. | decrease air speed/increase pressure |
| b. | increase air speed/increase pressure | d. | increase air speed/decrease pressure |

ANS: D PTS: 1

 70. According to Bernoulli’s scientific principle, as air speed \_\_\_\_\_\_\_\_\_\_, it’s pressure \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | increases, decreases | c. | decreases, is reduced |
| b. | increases, increases | d. | decreases, decreases |

ANS: A PTS: 1

 71. The air-fuel mixture is forced into the intake manifold by \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | increased pressure | c. | atmospheric pressure |
| b. | throttle acceleration | d. | emulsion tubes |

ANS: C PTS: 1

 72. Which of the following is **not** a basic type of carburetor?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | natural draft or side draft | c. | downdraft |
| b. | updraft | d. | angled draft |

ANS: D PTS: 1

 73. The purpose of the carburetor float is to:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | increase pressure | c. | maintain a constant level of fuel in the float bowl. |
| b. | keep a tight seal in the carburetor | d. | decrease pressure in the venturi |

ANS: C PTS: 1

 74. The needle valve in the carburetor float bowl has a needle point that can be of which two types?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | neoprene or stainless steel | c. | plastic or brass |
| b. | neoprene or brass | d. | plastic or stainless steel |

ANS: B PTS: 1

 75. The carburetor float can be made of which two types?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | neoprene or stainless steel | c. | plastic or brass |
| b. | neoprene or brass | d. | plastic or stainless steel |

ANS: C PTS: 1

 76. A round disc mounted on a shaft located at the intake end of the carburetor is called a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | throttle | c. | choke |
| b. | filter | d. | venturi |

ANS: C PTS: 1

 77. A round disc mounted on a shaft in a carburetor that is located beyond the main fuel nozzle is called a/an:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | throttle | c. | choke |
| b. | adjusting needle | d. | venturi |

ANS: A PTS: 1

 78. Which part of the carburetor is responsible for regulating the amount of air-fuel mixture entering the combustion chamber?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | float | c. | choke |
| b. | venturi | d. | throttle |

ANS: D PTS: 1

 79. When the choke on a carburetor is closed it provides:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a lean air-fuel mixture | c. | more air flow |
| b. | a rich air-fuel mixture | d. | a smoother running engine |

ANS: B PTS: 1

 80. The purpose of a choke on a carburetor is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | to provide more air for the engine. | c. | to increase the life of the engine. |
| b. | to make it run at higher rpm’s. | d. | to make it easier to crank a cold engine. |

ANS: D PTS: 1

 81. Carburetors that are nonadjustable are equipped with a \_\_\_\_\_ jet.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | narrow | c. | wide |
| b. | fixed | d. | closed |

ANS: B PTS: 1

 82. On carburetors that have adjustments, the initial carburetor adjustment of the needle valve adjusting screw should be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | closed and not adjusted again | c. | open 1 1/2 turns |
| b. | open all the way | d. | it doesn’t matter |

ANS: C PTS: 1

 83. The \_\_\_\_\_\_\_\_\_\_ is a hand-operated plunger, which, when depressed, forces additional fuel through the main nozzle prior to starting a cold engine.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | diaphragm | c. | breather |
| b. | welch plug | d. | primer |

ANS: D PTS: 1

 84. When the load on the engine increases, the \_\_\_\_\_\_\_\_\_\_ automatically opens the throttle valve to allow more air-fuel mixture to enter the engine.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | carburetor | c. | choke |
| b. | breather | d. | governor |

ANS: D PTS: 1

 85. The purpose of a small engine’s governor is to prevent:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | variations of low idle speeds. | c. | overspeeding and underspeeding |
| b. | increasing power output under load | d. | overloading and flooding |

ANS: C PTS: 1

 86. Most governors on Briggs & Stratton engines are of two types:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mechanical and flyweight type | c. | air vane and pneumatic |
| b. | mechanical and centrifugal type | d. | mechanical and pneumatic |

ANS: D PTS: 1

 87. Which type governor works off of centrifugal force?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mechanical | c. | pneumatic |
| b. | air vane | d. | diaphragm |

ANS: A PTS: 1

 88. Which type governor works off of flyweights?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mechanical | c. | pneumatic |
| b. | air vane | d. | diaphragm |

ANS: A PTS: 1

 89. Which type governor has a movable air vane that moves based upon the air pressure around the spinning flywheel?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mechanical  | c. | pneumatic |
| b. | flyweight type | d. | diaphragm |

ANS: C PTS: 1

 90. The part of the engine that connects the air vane governor to the throttle shaft lever is called the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | linkage | c. | tappet |
| b. | coil | d. | throttle body |

ANS: A PTS: 1

 91. The \_\_\_\_\_\_\_\_\_\_ in a governor system on an engine is designed to pull the throttle valve to wide open position.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | shaft | c. | flyweights |
| b. | spring | d. | gears |

ANS: B PTS: 1

 92. On lawn mowers, the \_\_\_\_\_\_\_\_\_\_ is a factor on how the governor should be adjusted.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | type of gas used | c. | type of carburetor |
| b. | compression ratio | d. | length of blade |

ANS: D PTS: 1

 93. The engine speeds up and the governor responds, the engine speed drops and the governor stops functioning. The engine speeds up again and the governor responds again. When this action is repeated over and over, it is known as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | working properly | c. | governing |
| b. | hunting | d. | weighting |

ANS: B PTS: 1

 94. The recommended cleaning interval for a single element air cleaner for small engines is every:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 25 hours of operation | c. | 100 hours of operation |
| b. | 50 hours of operation | d. | week |

ANS: A PTS: 1

 95. A foam air cleaner should be cleaned using:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | kerosene | c. | gasoline |
| b. | liquid detergent and water | d. | kerosene, liquid detergent and water |

ANS: D PTS: 1

 96. A dual element filter has a \_\_\_\_\_\_\_\_ type filter as the pre-cleaner.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | neoprene | c. | paper |
| b. | foam | d. | cartridge |

ANS: B PTS: 1

 97. Single element \_\_\_\_\_\_\_\_ filters should be oiled to help catch dust particles better.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | neoprene | c. | paper |
| b. | foam | d. | cartridge |

ANS: B PTS: 1

 98. Paper air filter cartridges should be cleaned by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | washing in liquid detergent and water | c. | tapping lightly on a hard surface |
| b. | washing in kerosene | d. | using compressed air |

ANS: C PTS: 1

 99. When installing a paper air filter cartridge, the paper side of the element should face \_\_\_\_\_\_\_\_\_\_ the engine.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | away from | c. | inside |
| b. | toward | d. | it doesn’t matter |

ANS: A PTS: 1

 100. The primary purpose of the ignition system is to:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | provide a spark at the spark plug. | c. | get a better flow of fuel to the cylinder. |
| b. | make the flywheel turn faster. | d. | make it easier to crank in cold weather. |

ANS: A PTS: 1

 101. Most small engines use the \_\_\_\_\_\_\_\_\_\_ system to supply ignition spark.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | fuel | c. | power  |
| b. | conductor | d. | magneto |

ANS: D PTS: 1

 102. Which of the following **is** a basic part of the magneto system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | governor | c. | permanent magnets |
| b. | carburetor | d. | tappets |

ANS: C PTS: 1

 103. Which of the following **is** a basic part of the magneto system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | clutch assembly | c. | needle valve adjusting screw |
| b. | high tension coil | d. | camshaft |

ANS: B PTS: 1

 104. Which of the following is **not** a basic part of the magneto system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | mechanical governor | c. | high tension spark plug wire |
| b. | spark plug | d. | condensor |

ANS: A PTS: 1

 105. The “stop switch” grounds the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | battery | c. | ignition system, stopping the engine |
| b. | carburetor switch | d. | none are correct |

ANS: C PTS: 1

 106. An instrument for measuring **only** the voltage in an electrical circuit is called a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | voltmeter | c. | magneto tester |
| b. | volt charger | d. | multimeter |

ANS: A PTS: 1

 107. Which of the following is a measure of the resistance to electron flow?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | power | c. | voltage |
| b. | ohms | d. | ampere |

ANS: B PTS: 1

 108. Which of the following is a measure of the number of electrons flowng past any given point in a specific length of time? In other words, it is the rate of electron flow.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | power | c. | voltage |
| b. | ohms | d. | ampere |

ANS: D PTS: 1

 109. Which of the following is a measure of electrical pressure?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | power | c. | voltage |
| b. | ohms | d. | ampere |

ANS: C PTS: 1

 110. Substances that have electrons which can move freely from atom to atom are said to be good:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | insulators | c. | conductors |
| b. | nonconductors | d. | none of the above |

ANS: C PTS: 1

 111. An atom consists of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | neutrons, electrons and protons | c. | neutrons, electrons, and alpha-trons |
| b. | neutrons, bata-trons and protons | d. | nerotrons, electrons and protons |

ANS: A PTS: 1

 112. The part of the magneto ignition system which converts low voltage into high voltage is the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | coil | c. | breaker points |
| b. | condenser | d. | spark plug |

ANS: A PTS: 1

 113. The ignition coil used in a magneto system operates like a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | spark plug | c. | transformer |
| b. | rectifier | d. | diode |

ANS: C PTS: 1

 114. The coil steps up the \_\_\_\_\_\_\_\_\_\_ and decreases the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | amperage, voltage | c. | voltage, wattage |
| b. | voltage, amperage | d. | output, input |

ANS: B PTS: 1

 115. What happens when a coil of wire is passed through a magnetic field?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | nothing | c. | produces current flow |
| b. | produces static electricity | d. | produces a spark |

ANS: C PTS: 1

 116. Secondary voltage in a small engine ignition system can be as high as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 10,000 volts | c. | 30,000 volts |
| b. | 20,000 volts | d. | 60,000 volts |

ANS: C PTS: 1

 117. The primary winding in the ignition coil has:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | many turns of heavy wire | c. | many turns of fine wire |
| b. | few turns of heavy wire | d. | few turns of fine wire |

ANS: B PTS: 1

 118. The secondary winding in the ignition coil has:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | many turns of heavy wire | c. | many turns of fine wire |
| b. | few turns of heavy wire | d. | few turns of fine wire |

ANS: C PTS: 1

 119. Spark plug deposits can be caused by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | proper carburetor adjustments | c. | correct gas and oil mixture in 2 stroke cycle engines |
| b. | incorrect gas and oil mixture in 2 stroke cycle engines | d. | none are correct |

ANS: B PTS: 1

 120. The condition of the \_\_\_\_\_\_\_\_\_\_ determines the amount of voltage needed that the ignition system must produce.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | crankshaft | c. | carburetor |
| b. | piston rings | d. | spark plug |

ANS: D PTS: 1

 121. The proper spark plug gap for most small engines is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | .02 inch | c. | .04 inch |
| b. | .03 inch | d. | it doesn’t matter |

ANS: B PTS: 1

 122. When measuring the spark plug gap, a \_\_\_\_\_\_\_\_\_\_ should be used.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | flat feeler gauge | c. | vernier caliper |
| b. | wire or round feeler gauge | d. | micrometer |

ANS: B PTS: 1

 123. A four-cycle engine runs at 3600 rpm’s. The number of sparks per minute required at the spark plug would be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 900 | c. | 3600 |
| b. | 1800 | d. | 7200 |

ANS: B PTS: 1

 124. A two-cycle engine runs at 3600 rpm’s. The number of sparks per minute required at the spark plug would be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 900 | c. | 3600 |
| b. | 1800 | d. | 7200 |

ANS: C PTS: 1

 125. Which of the following **is** true about spark plugs?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | They come in different types and sizes | c. | They are all 2 1/2 inches long. |
| b. | It doesn’t matter which type you use. | d. | None of these are true. |

ANS: A PTS: 1

 126. Which of the following **is** a part of a spark plug?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | tappet | c. | electrode |
| b. | primary windings | d. | core |

ANS: C PTS: 1

 127. Which of the following **is** a part of a spark plug?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | terminal nut | c. | metal needle |
| b. | secondary windings | d. | high tension lead connector |

ANS: A PTS: 1

 128. Which of the following **is** a part of a spark plug?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | magneto | c. | armature |
| b. | lobes | d. | ribs |

ANS: D PTS: 1

 129. The spark plug insulator is usually a \_\_\_\_\_\_\_\_\_\_ material.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | plastic | c. | ceramic |
| b. | fiberglass | d. | brass |

ANS: C PTS: 1

 130. Caused by moisture or dirt, \_\_\_\_\_\_\_\_\_\_ is the tendency for current to travel down the outside of the spark plug instead of traveling through the center.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | outside spark | c. | flashback |
| b. | flashover | d. | flashdown |

ANS: B PTS: 1

 131. What are the two types of high tension lead connections?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | round type and square type | c. | wide type and narrow type |
| b. | long type and short type | d. | exposed clip type and boot type |

ANS: D PTS: 1

 132. Spark plug \_\_\_\_\_\_\_\_ is determined by the thickness of the cylinder head.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | reach | c. | material |
| b. | thickness | d. | voltage |

ANS: A PTS: 1

 133. The \_\_\_\_\_\_\_\_\_\_\_\_ is the hottest part of the spark plug.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | center electrode | c. | threaded end |
| b. | tip of the insulator | d. | outside shell |

ANS: B PTS: 1

 134. Spark plugs are manufactured in various heat ranges from \_\_\_\_\_\_\_\_\_\_ to\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 100 degrees to 200 degrees | c. | 400 degrees to 1,000 degrees |
| b. | 200 degrees to 400 degrees | d. | hot to cold |

ANS: D PTS: 1

 135. Spark plug heat transfer is controlled by the length of the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | insulator nose | c. | high tension lead |
| b. | center electrode | d. | coil wire |

ANS: A PTS: 1

 136. The operating temperature of spark plugs can be studied with a special spark plug having a \_\_\_\_\_\_\_\_\_\_\_\_ installed in it.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | thermometer | c. | spark tester |
| b. | voltmeter | d. | thermocouple |

ANS: D PTS: 1

 137. Spark plugs can have different types of electrode configurations. They are:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | inside gap, surface gap, clipped gap and automotive gap | c. | retracted gap, surface gap, clipped gap and automotive gap |
| b. | retracted gap, outside gap, clipped gap and automotive gap | d. | retracted gap, surface gap, clipped gap and straight gap |

ANS: C PTS: 1

 138. On engines that have breaker points, opening the breaker points in the ignition system:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | reverses the microfarads in the primary circuit. | c. | controls the engine speed. |
| b. | builds up the magnetic field. | d. | stops the flow of current in the primary circuit. |

ANS: D PTS: 1

 139. On engines that have breaker points, the storage capacity of the condenser is measured in:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | ohms | c. | amps |
| b. | volts | d. | microfarads |

ANS: D PTS: 1

 140. The proper breaker point gap is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | .02 inch | c. | .04 inch |
| b. | .03 inch | d. | it doesn’t matter |

ANS: A PTS: 1

 141. The breaker point assembly is an electrical \_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | meter | c. | sensor |
| b. | switch | d. | diode |

ANS: B PTS: 1

 142. The spark plug fires only at the instant the breaker points \_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | open | c. | turn |
| b. | close | d. | flash |

ANS: A PTS: 1

 143. Which type of ignition system replaced the breaker points igniton system:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | spark plug ignition system | c. | mechanical ignition system |
| b. | solid state ignition system | d. | power ignition system |

ANS: B PTS: 1

 144. One of the advantages of a solid state ingnition system over the breaker point system is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | The engine can be used at any angle. | c. | Any type spark plug can be used. |
| b. | The coil can be turned in any direction. | d. | There are no moving parts. |

ANS: D PTS: 1

 145. Which of the following is **not** an advantage of a solid state ignition system over the breaker point system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | increased spark plug life | c. | higher spark output |
| b. | can use any type of gas | d. | improved idling |

ANS: B PTS: 1

 146. Which of the following is **not** an advantage of a solid state ignition system over the breaker point system?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | less maintenance | c. | increased carburetor life |
| b. | easier starting | d. | provides smoother power under load |

ANS: C PTS: 1

 147. What closes the breaker points?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cam lobes | c. | crankshaft |
| b. | linkage | d. | a spring |

ANS: D PTS: 1

 148. The space between the flywheel and the armature is known as the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | flywheel gap | c. | air gap |
| b. | coil gap | d. | ignition space |

ANS: C PTS: 1

 149. Some small engine applications use a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | battery ignition system | c. | electronic ignition system |
| b. | capacitor discharge ignition system | d. | all are correct |

ANS: D PTS: 1

 150. A typical 12 volt battery will have \_\_\_\_\_ cells

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 24 | c. | 6 |
| b. | 12 | d. | 4 |

ANS: C PTS: 1

 151. Oil viscosity is a measure of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | the ability to flow quickly | c. | the resistance to flow |
| b. | the detergents | d. | the type of service |

ANS: C PTS: 1

 152. Which of the following grades of oil is the thickest?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | SAE 5W-20 | c. | SAE 10W-30 |
| b. | SAE 5W-30 | d. | SAE 10W-40 |

ANS: D PTS: 1

 153. Most small engine manufacturers recommend \_\_\_\_\_\_\_\_\_\_ for temperatures **above** 40 degrees.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | SAE 20 | c. | SAE 5W-20 |
| b. | SAE 30 | d. | SAE 5W-30 |

ANS: B PTS: 1

 154. Most small engine manufacturers recommend \_\_\_\_\_\_\_\_\_\_ for temperatures **below** 40 degrees.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | SAE 0W-40 | c. | SAE 10W-40 |
| b. | SAE 5W-40 | d. | SAE 5W-30 |

ANS: D PTS: 1

 155. SAE stands for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Service Automotive Engines | c. | Society of American Engineers |
| b. | Service American Engines | d. | Society of Automotive Engineers |

ANS: D PTS: 1

 156. API stands for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | American Part Institute | c. | American Petroleum Institute |
| b. | Automotive Part Institute | d. | Automotive Petroleum Institute |

ANS: C PTS: 1

 157. The W in 10W-30 stands for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | winter | c. | way |
| b. | weight | d. | weather |

ANS: A PTS: 1

 158. The API classification system for oils is divided into which two categories?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | C and S categories | c. | C1 and C2 categories |
| b. | C and K categories | d. | S1 and S2 categories |

ANS: A PTS: 1

 159. The API rating certifies that engine oil meets:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a certain temperature. | c. | a certain viscosity grade. |
| b. | a certain weight. | d. | certain quality and performance standards. |

ANS: D PTS: 1

 160. An oil container will have certain types of information printed on the label by the manufacturer. Which of the following will **not** be found on the label by the manuafacturer.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | price | c. | SAE viscosity grade |
| b. | brand name | d. | API rating |

ANS: A PTS: 1

 161. API ratings do not apply to which type of engine?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 4 stroke cycle engines | c. | automobiles |
| b. | 2 stroke cycle engines | d. | diesel engines |

ANS: B PTS: 1

 162. Higher viscosity oils are recommended for \_\_\_\_\_\_\_\_\_\_ temperatures.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | lower | c. | average |
| b. | higher | d. | any |

ANS: B PTS: 1

 163. Multi-viscosity oils should be used in:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2 stroke cycle engines | c. | automobiles |
| b. | some 4 stroke cycle small engines | d. | 2 stroke and some 4 stroke cycle engines |

ANS: D PTS: 1

 164. When changing engine oil:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | run the engine to warm the oil. | c. | change the oil when it is cold |
| b. | stop the engine  | d. | with the engine running, disconnect the spark plug. |

ANS: A PTS: 1

 165. Oil consumption is greater in a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2 stroke cycle engine | c. | it’s the same in both |
| b. | 4 stroke cycle engine | d. | there is no way to tell |

ANS: A PTS: 1

 166. Which of the following is **not** a function of lubricating a small engine?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Oil prevents corrosion and cleans an engine. | c. | Oil helps seal piston rings to help prevent blow-by. |
| b. | Oil reduces heat by reducing friction. | d. | Oil produces friction which decreases power output. |

ANS: D PTS: 1

 167. The resistance to motion created when one surface rubs against another is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | friction | c. | negative movement |
| b. | instability | d. | roughness |

ANS: A PTS: 1

 168. What is one of the most common methods used for lubricating 4 stroke cycle engines?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | splash system | c. | spray system |
| b. | oil pump | d. | injection system |

ANS: A PTS: 1

 169. The oil \_\_\_\_\_\_\_\_ is fastened to the connecting rod cap and picks up oil from the crankcase to lubricate the engine as the crankshaft rotates.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | dipper | c. | control |
| b. | slinger | d. | pump |

ANS: A PTS: 1

 170. The oil \_\_\_\_\_\_\_\_ sets on the camshaft and spins as the crankshaft rotates to lubricate the engine.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | dipper | c. | control  |
| b. | slinger | d. | pump |

ANS: B PTS: 1

 171. The \_\_\_\_\_\_\_\_\_\_ forces oil under pressure against the rotating connecting rod.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oil pump | c. | ejection pump |
| b. | dipper | d. | barrel pump |

ANS: C PTS: 1

 172. The \_\_\_\_\_\_\_\_\_\_ is a cylinder and plunger type of lubrication pump.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oil pump | c. | ejection pump |
| b. | dipper | d. | barrel pump |

ANS: D PTS: 1

 173. Pressure relief valves are used in all:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | barrel lubrication systems | c. | closed lubrication systems |
| b. | ejection lubrication systems | d. | pressurized lubrication systems |

ANS: D PTS: 1

 174. The recommended interval for changing the oil in small engines is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | every 10 hours of operation | c. | every 50 hours of operation |
| b. | every 25 hours of operation | d. | just one time a year |

ANS: C PTS: 1

 175. It is recommended that the oil be changed after the first \_\_\_\_\_ hours of operation on new engines.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2 | c. | 10 |
| b. | 5 | d. | 15 |

ANS: B PTS: 1

 176. Old oil gradually becomes thick and loses its \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ abilities.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | wetting and sticking | c. | cooling and lubricating |
| b. | heating and lubricating | d. | cooling and heating |

ANS: C PTS: 1

 177. When checking the oil level in an engine that is equipped with an oil fill plug, the oil level should be:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | at the top of the plug opening | c. | one inch down from the top of the plug opening |
| b. | 1/2 inch down from the top of the plug opening | d. | to where you can barely see the oil |

ANS: A PTS: 1

 178. A faulty seal at either end of the dipstick tube can result in a loss of crankcase \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compression | c. | temperature |
| b. | ignition | d. | vacuum |

ANS: D PTS: 1

 179. Which of the following statements is **not** true.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Use the grade of oil recommended by the manufacturer. | c. | Do not underfill the crankcase with oil. |
| b. | Change the oil when it is warm. | d. | Put more oil in the crankcase than what is recommended so you will always have enough. |

ANS: D PTS: 1

 180. The OIL GARD system will stop the engine when the \_\_\_\_\_\_\_\_ is low.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oil level | c. | compression |
| b. | oil pressure | d. | oil viscosity |

ANS: A PTS: 1

 181. What are the two types of OIL GARD systems?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | pump operated and spark gap type | c. | float operated and pump operated type |
| b. | float operated and spark gap type | d. | ground and spark gap type |

ANS: B PTS: 1

 182. The compression ratio found in most small engines is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 3:1 | c. | 9:1 |
| b. | 6:1 | d. | 12:1 |

ANS: B PTS: 1

 183. When referring to the piston strokes, TDC is known as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Top Dead Center | c. | Top Dead Crankshaft |
| b. | Top Down Center | d. | Turn Down Camshaft |

ANS: A PTS: 1

 184. When referring to the piston strokes, BDC is known as:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Bottom Dead Center | c. | Bottom Dead Crankshaft |
| b. | Bottom Down Center | d. | Bring Down Camshaft |

ANS: A PTS: 1

 185. Piston slap results from excessive clearance between

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston and cylinder wall | c. | piston and piston pin |
| b. | piston and piston rod | d. | piston rings |

ANS: A PTS: 1

 186. The piston skirt is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | inside the piston | c. | on the bottom part of the piston |
| b. | on the top part of the piston | d. | not part of the piston |

ANS: C PTS: 1

 187. A diagonal wear pattern on the piston skirt is caused by a/an \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | warped piston | c. | out of round cylinder |
| b. | twisted connecting rod | d. | this is a normal wear pattern |

ANS: B PTS: 1

 188. The piston journal is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | inside the piston | c. | on the bottom part of the piston |
| b. | on the top part of the piston | d. | not part of the piston |

ANS: D PTS: 1

 189. The piston stem is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | inside the piston | c. | on the bottom part of the piston |
| b. | on the top part of the piston | d. | not part of the piston |

ANS: D PTS: 1

 190. The part of the piston that is located above the top ring and between the ring grooves is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston margin | c. | piston lands |
| b. | piston head | d. | piston skirt |

ANS: C PTS: 1

 191. Blow-by is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | a leaking carburetor | c. | raw gasoline in the combustion chamber |
| b. | failure of rings to seal off compression | d. | a hole in the crankcase |

ANS: B PTS: 1

 192. Which of the following statements **is** true about blowby?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | It is of no concern. | c. | Properly installed piston rings prevent it. |
| b. | There is no such thing as “blowby”. | d. | Properly installed gaskets and seals in the carburetor prevent it. |

ANS: C PTS: 1

 193. What provides a seal between the combustion chamber and the crankcase?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | gasket | c. | cylinder head |
| b. | piston and piston rings | d. | valve seats |

ANS: B PTS: 1

 194. Piston pins are also known as \_\_\_\_\_\_\_\_\_\_ pins.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | round | c. | tubelar |
| b. | wrist | d. | connecting |

ANS: B PTS: 1

 195. The piston pin acts like a \_\_\_\_\_\_\_\_\_\_ between the connecting rod and piston and holds the two together.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | brace | c. | spring |
| b. | bracket | d. | hinge |

ANS: D PTS: 1

 196. Piston pins are made of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cast iron | c. | aluminum |
| b. | plastic | d. | case-hardened steel |

ANS: D PTS: 1

 197. The piston pin is held in place by:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | screws | c. | spring retainers |
| b. | tack welds | d. | piston rings |

ANS: C PTS: 1

 198. The area around the piston pin hole on the inner side of the piston that is strengthened to prevent breakage is called the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston boss | c. | piston brace |
| b. | piston pin support | d. | piston pin hole bracket |

ANS: A PTS: 1

 199. The movement of the piston in the cylinder from top to bottom is known as the \_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | stroke | c. | wear |
| b. | throw | d. | tandem |

ANS: A PTS: 1

 200. The space displaced in the cylinder by the piston in its up and down movement is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston area | c. | piston displacement |
| b. | cylinder displacement | d. | cylinder area |

ANS: C PTS: 1

 201. The formula for piston displacement is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Stroke cubed divided by 4 x 3.14 x Bore | c. | Bore cubed divided by 4 x 3.14 x Stroke |
| b. | Stroke squared divided by 4 x 3.14 x Bore | d. | Bore squared divided by 4 x 3.14 x Stroke |

ANS: D PTS: 1

 202. What is an engine’s displacement if the Bore is 2.5 inches and the Stroke is 3.5 inches?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 43 cubic inches | c. | 24 cubic inches |
| b. | 17 cubic inches | d. | 84 cubic inches |

ANS: B PTS: 1

 203. What is an engine’s displacement if the Bore is 2 inches and the Stroke is 2.9 inches?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 9 cubic inches | c. | 13 cubic inches |
| b. | 38 cubic inches | d. | 18 cubic inches |

ANS: A PTS: 1

 204. What is an engine’s displacement if the Bore is 2.5 inches and the Stroke is 3.25 inches?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 21 cubic inches | c. | 16 cubic inches |
| b. | 67 cubic inches | d. | 40 cubic inches |

ANS: C PTS: 1

 205. What is an engine’s displacement if the Bore is 1.75 inches and the Stroke is 3.25 inches?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 8 cubic inches | c. | 14.5 cubic inches |
| b. | 14 cubic inches | d. | 47 cubic inches |

ANS: A PTS: 1

 206. Why is the piston hollow?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | to reduce weight | c. | to make it easier to install the rings |
| b. | to cut down on cost of material | d. | to make it easier to remove from the cylinder |

ANS: A PTS: 1

 207. The top of the piston is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | flat | c. | wedge shaped |
| b. | dome shaped | d. | can be any of the above |

ANS: D PTS: 1

 208. Most 4-cycle small engines have a \_\_\_\_\_\_\_\_\_\_ piston.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | flat | c. | wedge shaped |
| b. | dome shaped | d. | there are an even number of pistons having each of the shapes |

ANS: A PTS: 1

 209. Depending on the style of the engine, the top of the piston can have different shapes. This is to:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | appeal to the customer | c. | give the engine a higher compression ratio |
| b. | provide efficient flow of gases entering and leaving the combustion chamber. | d. | give better balance to the piston |

ANS: B PTS: 1

 210. When a small engine designer wants the smallest possible clearance between the piston skirt and the cylinder wall, skirts are often ground to an oval shape. These type pistons are called \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oval shaped pistons | c. | cam-ground pistons |
| b. | Category I pistons | d. | machined pistons |

ANS: C PTS: 1

 211. Which of the following statements **is** true concerning oval shaped pistons?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | As the piston heats up, it expands to a round shape. | c. | As the piston heats up, it stays the same. |
| b. | As the piston heats up, it becomes more oval shaped. | d. | There is no such thing as oval shaped pistons. |

ANS: A PTS: 1

 212. Which of the following statements is **not** true concerning oval shaped pistons?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Oval shaped pistons are called cam-ground pistons. | c. | When the piston heats up and expands, it enlarges parallel to the piston pin.  |
| b. | Oval shaped pistons are made in order to have the smallest clearance possible between the piston skirt and the cylinder wall. | d. | They have no effect at all. |

ANS: D PTS: 1

 213. The \_\_\_\_\_\_\_\_\_\_ surfaces of a piston are the sides of the piston skirt that are forced against the cylinder wall during the compression and power strokes.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | metal | c. | hard |
| b. | thrust | d. | tempered |

ANS: B PTS: 1

 214. The thrust surfaces of a piston are \_\_\_\_\_\_\_\_\_\_ to the centerline of the crankshaft and piston pin.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | at right angles  | c. | at 30 degree angles |
| b. | at 45 degree angles | d. | lined up |

ANS: A PTS: 1

 215. Which part of the piston runs hotter?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston skirt | c. | piston head  |
| b. | connecting rod | d. | piston pin |

ANS: C PTS: 1

 216. Which part of the piston expands more during operation?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston skirt | c. | piston head  |
| b. | connecting rod  | d. | piston pin |

ANS: C PTS: 1

 217. Piston heads are sometimes made smaller than the piston skirt to compensate for:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | expansion | c. | ring size |
| b. | cylinder size | d. | piston pin installation |

ANS: A PTS: 1

 218. When the head of a piston is made smaller than the skirt, the difference is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 1/4 of an inch | c. | several thousandths of an inch |
| b. | 3/8 of an inch | d. | only a few thousandths of an inch |

ANS: D PTS: 1

 219. An abnormal reduction in the diameter of the piston skirt due to heat or stress is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston reduction | c. | polarizing |
| b. | piston shrink | d. | piston collapse |

ANS: D PTS: 1

 220. What pushes the piston toward the crankshaft?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | connecting rod | c. | camshaft |
| b. | expanding gases | d. | incoming air/fuel mixture |

ANS: B PTS: 1

 221. The piston makes a \_\_\_\_\_\_\_\_\_\_\_\_ motion.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | reciprocating | c. | slow |
| b. | rotating | d. | twisted |

ANS: A PTS: 1

 222. The up and down movement of the piston is changed to a \_\_\_\_\_\_\_\_\_\_ motion by the crankshaft.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | reciprocating | c. | fast |
| b. | sideways | d. | rotary |

ANS: D PTS: 1

 223. The connecting rod attaches the piston to the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cylinder head | c. | crankshaft |
| b. | camshaft | d. | driveshaft |

ANS: C PTS: 1

 224. What keeps burning gases from leaking out between the sides of the piston and the cylinder wall and also aids in good compression.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | valves | c. | piston skirt  |
| b. | piston rings | d. | head gasket |

ANS: B PTS: 1

 225. A 4-cycle engine piston usually has three piston rings which consists of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | two for oil control and one for compression | c. | all three for oil control |
| b. | two for compression and one for oil control | d. | all three for compression |

ANS: B PTS: 1

 226. Piston rings are made of:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cast iron | c. | aluminum |
| b. | steel | d. | cast iron and steel |

ANS: D PTS: 1

 227. Piston rings can be plated with chrome or other materials to \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cut down on cost | c. | make them easier to install |
| b. | reduce wear | d. | increase the fuel to air ratio |

ANS: B PTS: 1

 228. Most pistons use \_\_\_\_\_\_\_\_\_\_\_\_ compression rings.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | cast iron | c. | aluminum  |
| b. | steel | d. | cast aluminum |

ANS: A PTS: 1

 229. When steel is used in the construction of piston rings, it is usually with the \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compression ring | c. | scraper ring |
| b. | oil control ring | d. | steel is not used at all |

ANS: B PTS: 1

 230. Oil control rings are made:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | as one piece | c. | as five pieces |
| b. | as three pieces | d. | can be made in either one or three pieces |

ANS: D PTS: 1

 231. Compression rings can act as a mild scraper to aid in \_\_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | sealing off burned gases | c. | compression |
| b. | oil control | d. | fuel to oil ratio |

ANS: B PTS: 1

 232. Which of the three rings on a piston is normally the widest:?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oil ring | c. | scraper ring |
| b. | compression ring | d. | the top ring |

ANS: A PTS: 1

 233. Which of the piston rings is known as the perforated ring?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compression ring | c. | scraper ring |
| b. | oil ring | d. | all of the rings are perforated |

ANS: B PTS: 1

 234. Which of the three ring grooves has holes or slots in it?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | oil ring groove | c. | scraper ring groove |
| b. | compression ring groove | d. | top ring groove |

ANS: A PTS: 1

 235. The oil ring should be installed in the:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | top groove | c. | bottom groove |
| b. | middle groove | d. | it doesn’t matter |

ANS: C PTS: 1

 236. What will cause piston rings to get stuck in ring lands?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | carbon build-up | c. | high operating temperatures |
| b. | lacquer build-up | d. | all of the above |

ANS: D PTS: 1

 237. On which of the four strokes do the piston rings provide the maximum amount of seal against the cylinder wall?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | intake | c. | power  |
| b. | compression | d. | exhaust |

ANS: C PTS: 1

 238. Most four-cycle engines have rings that \_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | do not move | c. | last forever |
| b. | float | d. | wear out in one year |

ANS: B PTS: 1

 239. Most piston rings have an outside diameter that is slightly larger than the cylinder bore diameter. This causes the ring to exert force on the cylinder wall when installed. This force is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | ring seal | c. | ring tension  |
| b. | ring compression | d. | ring force |

ANS: C PTS: 1

 240. \_\_\_\_\_\_\_\_\_\_\_\_ will **not** rotate around the groove of the piston.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | compressed rings | c. | chrome rings |
| b. | very tight rings | d. | pinned rings |

ANS: D PTS: 1

 241. When pinned rings are used they are typically found in:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | four cycle engines | c. | diesel engines  |
| b. | two cycle engines | d. | high compression ratio engines |

ANS: B PTS: 1

 242. Piston rings must have the right amount of side clearance which allows them to move in and out in the groove while exerting tension on the cylinder wall, and it also provides for adequate lubrication and heat expansion. The side clearance should be checked with a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | feeler gauge | c. | telescoping gauge  |
| b. | micrometer | d. | caliper |

ANS: A PTS: 1

 243. The clearance between the ends of the piston ring is called:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | piston ring end space | c. | piston ring end bridge |
| b. | piston ring end gap | d. | piston ring end clearance |

ANS: B PTS: 1

 244. The purpose of the ring end gap on piston rings is:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | to permit piston rings to expand and contract under various temperatures and operating conditions. | c. | to allow the rings to be installed in the cylinder and still exert tension on the cylinder wall.  |
| b. | to allow some compression to escape to make it easier to crank.  | d. | to permit piston rings to expand and contract under various temperatures and operating conditions and to allow the rings to be installed in the cylinder and still exert tension on the cylinder wall.  |

ANS: D PTS: 1

 245. Which of the following statements **is** true concerning piston rings.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | The ring end gaps should be staggered 120 degress from each other before the piston is installed. | c. | Some four cycle small engines have four piston rings.  |
| b. | The ring end gaps should be lined up with each other before the piston is installed.  | d. | New rings should be installed every year. |

ANS: A PTS: 1

 246. The piston ring end gap should be measured with a:

|  |  |  |  |
| --- | --- | --- | --- |
| a. | feeler gauge | c. | telescoping gauge |
| b. | micrometer | d. | caliper |

ANS: A PTS: 1

 247. When measuring the piston ring end gaps, which of the following **is** true?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Leave the rings on the piston and measure the gaps. | c. | Turn the piston upside down and push the ring into the cylinder before measuring.  |
| b. | Take the rings off of the piston and push them into the cylinder one at a time and measure the gap. | d. | Take the rings off of the piston and push them into the cylinder one at a time and measure the gap and turn the piston upside down and push the ring into the cylinder before measuring. |

ANS: D PTS: 1

 248. If the piston ring end gaps are too small, what should be done?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Throw them away and buy new ones. | c. | Dress the butt ends of the rings with an electric grinder.  |
| b. | Dress the butt ends of the rings with a hand file. | d. | Nothing. It doesn’t hurt for them to be too small. |

ANS: B PTS: 1

 249. If the piston ring end gaps are too big, what should be done?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | Throw them away and buy new ones. | c. | Use JB Weld on the end gaps to make them smaller. |
| b. | Weld the end gaps to build them up so the gaps will be smaller. | d. | Nothing. It doesn’t hurt for them to be too big. |

ANS: A PTS: 1

 250. As a rule of thumb, when checking the piston ring end gap measurement, allow \_\_\_\_\_\_\_\_ of an inch of end gap for every one inch of cylinder diameter. However, it is better to always follow the manufacturer’s specifications.

|  |  |  |  |
| --- | --- | --- | --- |
| a. | .001 | c. | .008 |
| b. | .004 | d. | .010 |

ANS: B PTS: 1