Small Engines CDE Test Bank A

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. What is the correct order of the strokes in a 4-stroke cycle engine?
a. intake, exhaust, compression and power
b. compression, power, exhaust and intake
c. intake, compression, power and exhaust
d. intake, power, compression and exhaust

____ 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
b. exhaust
c. power
d. compression

____ 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
b. exhaust
c. power
d. compression

____ 4. On which two strokes are both valves closed?
a. intake and exhaust
b. compression and power
c. intake and compression
d. power and exhaust

____ 5. The intake valve is cooled by:
a. incoming air/fuel mixture
b. air circulation
c. radiator
d. oil

____ 6. The exhaust valve is difficult to cool because of:
a. the spark plug being placed directly above it
b. incoming fuel mixture
c. hot water surrounding it
d. high temperature exhaust gases

____ 7. The exhaust valve is made of:
a. a very special steel
b. copper
c. brass
d. carbide

____ 8. A single cylinder Briggs and Stratton engine has:
a. 1 valve
b. 4 valves
c. 2 valves
d. 3 valves

____ 9. Valves have a direct effect on:
a. compression
b. displacement
c. compression ratio
d. horsepower

____ 10. If the intake valve fails in a one-cylinder engine, the engine will:
a. run poorly
b. stop
c. idle high
d. back fire

____ 11. What is the most common angle on a valve face?
a. 30 degrees
b. 60 degrees
c. 50 degrees
d. 45 degrees

____ 12. If a valve has a 45 degree face, then the seat would be:
a. 45 degrees
b. 46 degrees
c. 90 degrees
d. it doesn't matter

____ 13. If a valve has a 30 degree face, then the seat would be:
a. 30 degrees
b. 31 degrees
c. 60 degrees
d. it doesn't matter

____ 14. The valves open and close in a one-cylinder engine in as little as:
a. 1/50 of a second
b. 1/10 of a second
c. 1/2 of a second
d. 1 second

____ 15. Valve tappet clearance is measured by using a:
a. rule
b. micrometer
c. feeler gauge
d. caliper

____ 16. When checking the valve tappet clearance, the piston should be at the top of the _____ stroke and then a 1/4" down from there.
a. intake
b. compression
c. power
d. exhaust

____ 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.
b. grinding on the valve head.
c. grinding on the end of the valve stem.
d. grinding on the end of the tappet.

____ 18. On L-head engines if the valve tappet clearance is too big, the proper clearance can be obtained by:
a. refacing the valve
b. recutting the seat
c. lapping the valve
d. any of the above

____ 19. On overhead valve engines the valve clearance is corrected by:
a. clearance does not have to be checked
b. using a wrench and turning the adjusting nut.
c. grinding on the end of the valve stem
d. grinding on the end of the tappet

____ 20. When checking the valve clearance on OHV engines, the clearance is checked between the valve stem and the _____.
a. tappet
b. lifter
c. rocker arm
d. push rod

____ 21. Too little valve clearance can cause:
a. valve burning
b. a dished valve
c. a rich fuel mixture
d. a higher compression ratio

____ 22. Which of the following is **not** a part of a valve:
a. head
b. margin
c. face
d. tail

____ 23. Which of the following **is** a part of a valve?
a. lobe
b. stem
c. leg
d. tail

____ 24. The valve with the biggest size head is the:
a. intake valve
b. exhaust valve
c. compression valve
d. they are all the same size

____ 25. Valve springs must be replaced if they:
a. are bent
b. are not square
c. do not meet tension specifications
d. all of the above

____ 26. The camshaft opens and closes the:
a. intake valve
b. exhuast valve
c. intake and exhaust valves
d. reed valves

____ 27. The thickness of the margin on a new Briggs & Stratton valve is:
a. 1/64”
b. 1/32”
c. 1/16”
d. 1/8”

____ 28. Briggs & Stratton recommends that valves be replaced when the margin measures less than _____.
a. 3/64”
b. 1/16”
c. 1/32”
d. 1/64”

____ 29. Which of the following is **not** a type of valve failure?
a. necked
b. dished
c. burned
d. swollen

____ 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.
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.
c. The one-cylinder engines cost more.
d. The one-cylinder engines are more powerful.

____ 31. What causes valves to stick?
a. gum accumulation
b. old oil
c. wrong viscosity of oil
d. air filter clogged

____ 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
b. boring
c. seating
d. lapping

____ 33. Valve overlap is when both valves are:
a. closed
b. open
c. both a and b
d. neither a nor b

____ 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
b. valve passage
c. valve guide
d. valve insert

____ 35. A _____ must be used on each valve to hold it firmly against the seat.
a. grinding compound
b. valve spring
c. valve tappet
d. valve push rod

____ 36. Valves should be cleaned with a power wire brush and then:
a. cleaned with soap and water
b. cleaned with gasoline
c. honed
d. inspected for defects

____ 37. The difference in the angle between the valve seat and the valve face is called a/an:
a. tri-angle fit
b. angle fit
c. interference fit
d. compression fit

____ 38. Which of the following is **not** a part of the valve system?
a. keeper
b. retainer
c. spring
d. ring

____ 39. What is another name for a valve tappet?
a. valve lifter
b. valve lobe
c. valve shaft
d. valve pin

____ 40. What pushes against the valve tappets to make them move?
a. cam gear
b. cam lobes
c. crankshaft
d. connecting rod

____ 41. Valves that are used in a 4-stroke cycle engine to open and close the port openings are called:
a. head valves
b. reed valves
c. port valves
d. poppet valves

____ 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
b. alignment
c. assembly
d. train

____ 43. What are the 3 main types of valve train configurations used in small gasoline engines?
a. straight valve, overhead valve, overhead cam
b. L-head, poppet valve, reed valve
c. L-head, overhead valve, overhead cam
d. stem valve, overhead valve, reed valve

____ 44. The L-head engine is also known as the _____ arrangement.
a. valve-in-block
b. straight
c. overhead
d. valve and spring

____ 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
b. overhead cam
c. straight valve
d. L-head

____ 46. In the _____ arrangement, the camshaft is installed in the crankcase and the valves are installed in the cylinder head.
a. overhead valve
b. overhead cam
c. straight valve
d. L-head

____ 47. In the _____ arrangement, both the camshaft and valve assemblies are installed in the cylinder head.
a. overhead valve
b. overhead cam
c. straight valve
d. L-head

____ 48. When referring to a type of engine, OHV stands for:
a. overhead vertical
b. overhead valve
c. outside horizontal valve
d. overhead voltage

____ 49. When referring to a type of engine, OHC stands for:
a. overhead cam
b. overhead crankshaft
c. outside horizontal cam
d. overhead carburetor

____ 50. In an overhead valve configuration, _____transfer motion from the valve lifters to one end of the rocker arms.
a. tappets
b. pushrods
c. valve stems
d. valve levers

____ 51. In an overhead valve configuration, where are the rocker arms installed?
a. in the block
b. to the crankshaft
c. in the cylinder head
d. in the crankcase

____ 52. The rocker arms operate like:
a. gears
b. springs
c. lifters
d. levers

____ 53. When one end of the rocker arm is pushed up, the other end pushes down on the _____.
a. camshaft
b. crankshaft
c. valve stem
d. valve head

____ 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
b. lifters
c. rocker arms
d. springs

____ 55. The camshaft in an overhead cam design is usually driven by either a _____ or _____.
a. chain or gear
b. chain or belt
c. belt or gear
d. gear or shaft

____ 56. The overhead valve design as comapared to the L-head design can increase fuel efficiency by as much as _____.
a. 5%
b. 10%
c. 25%
d. 50%

____ 57. Which part of the engine must be removed before the push rods can be removed?
a. rocker arms
b. valves
c. valve springs
d. piston

____ 58. If the push rods are bent they must be:
a. sanded
b. measured with a micrometer
c. straightened
d. replaced

____ 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
b. 2-cycle engines
c. L-head engines
d. OHV engines

____ 60. Which of the following statements **is** true?
a. Most valve face angles are 60 degrees
b. To adjust the tappet clearance on OHV engines, the valve stem must be ground.
c. Valve guides can be replaced.
d. If valves are warped they can still be used.

____ 61. The basic purpose of a carburetor is to:
a. eqaulize atmospheric pressure
b. clean the air entering the engine
c. regulate the amount of fuel entering the engine
d. regulate the mixture of air and fuel

____ 62. The ideal air to fuel ratio by weight for a small engine is:
a. 10:1
b. 15:1
c. 20:1
d. 25:1

____ 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
b. diaphragm
c. spring
d. float

____ 64. Which part of the carburetor controls engine speed?
a. throttle
b. venturi
c. choke
d. float

____ 65. Gum deposits which clog the carburetor and other fuel system parts are caused by:
a. overheating
b. stale gasoline
c. inadequate operating speeds
d. stalling

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

____ 67. The air-fuel mixture entering a two-stroke cycle engine initially enters the engine through the:
a. intake valve
b. carburetor
c. reed valve
d. intake port

____ 68. The term which does **not** represent a type of carburetor found on small gasoline engines is the:
a. nozzle feed
b. float feed
c. suction feed
d. diaphragm

____ 69. The purpose of the venturi on a carburetor is to:
a. mix the correct amount of fuel and air
b. increase air speed/increase pressure
c. decrease air speed/increase pressure
d. increase air speed/decrease pressure

____ 70. According to Bernoulli's scientific principle, as air speed _____, it's pressure _____.
a. increases, decreases
b. increases, increases
c. decreases, is reduced
d. decreases, decreases

____ 71. The air-fuel mixture is forced into the intake manifold by _____.
a. increased pressure
b. throttle acceleration
c. atmospheric pressure
d. emulsion tubes

____ 72. Which of the following is **not** a basic type of carburetor?
a. natural draft or side draft
b. updraft
c. downdraft
d. angled draft

____ 73. The purpose of the carburetor float is to:
a. increase pressure
b. keep a tight seal in the carburetor
c. maintain a constant level of fuel in the float bowl.
d. decrease pressure in the venturi

____ 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
b. neoprene or brass
c. plastic or brass
d. plastic or stainless steel

____ 75. The carburetor float can be made of which two types?
a. neoprene or stainless steel
b. neoprene or brass
c. plastic or brass
d. plastic or stainless steel

____ 76. A round disc mounted on a shaft located at the intake end of the carburetor is called a:
a. throttle
b. filter
c. choke
d. venturi

____ 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
b. adjusting needle
c. choke
d. venturi

____ 78. Which part of the carburetor is responsible for regulating the amount of air-fuel mixture entering the combustion chamber?
a. float
b. venturi
c. choke
d. throttle

____ 79. When the choke on a carburetor is closed it provides:
a. a lean air-fuel mixture
b. a rich air-fuel mixture
c. more air flow
d. a smoother running engine

____ 80. The purpose of a choke on a carburetor is:
a. to provide more air for the engine.
b. to make it run at higher rpm's.
c. to increase the life of the engine.
d. to make it easier to crank a cold engine.

____ 81. Carburetors that are nonadjustable are equipped with a _____ jet.
a. narrow
b. fixed
c. wide
d. closed

____ 82. On carburetors that have adjustments, the initial carburetor adjustment of the needle valve adjusting screw should be:
a. closed and not adjusted again
b. open all the way
c. open 1 1/2 turns
d. it doesn't matter

____ 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
b. welch plug
c. breather
d. primer

____ 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
b. breather
c. choke
d. governor

____ 85. The purpose of a small engine's governor is to prevent:
a. variations of low idle speeds.
b. increasing power output under load
c. overspeeding and underspeeding
d. overloading and flooding

____ 86. Most governors on Briggs & Stratton engines are of two types:
a. mechanical and flyweight type
b. mechanical and centrifugal type
c. air vane and pneumatic
d. mechanical and pneumatic

____ 87. Which type governor works off of centrifugal force?
a. mechanical
b. air vane
c. pneumatic
d. diaphragm

____ 88. Which type governor works off of flyweights?
a. mechanical
b. air vane
c. pneumatic
d. diaphragm

____ 89. Which type governor has a movable air vane that moves based upon the air pressure around the spinning flywheel?
a. mechanical
b. flyweight type
c. pneumatic
d. diaphragm

____ 90. The part of the engine that connects the air vane governor to the throttle shaft lever is called the:
a. linkage
b. coil
c. tappet
d. throttle body

____ 91. The _____ in a governor system on an engine is designed to pull the throttle valve to wide open position.
a. shaft
b. spring
c. flyweights
d. gears

____ 92. On lawn mowers, the _____ is a factor on how the governor should be adjusted.
a. type of gas used
b. compression ratio
c. type of carburetor
d. length of blade

____ 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
b. hunting
c. governing
d. weighting

____ 94. The recommended cleaning interval for a single element air cleaner for small engines is every:
a. 25 hours of operation
b. 50 hours of operation
c. 100 hours of operation
d. week

____ 95. A foam air cleaner should be cleaned using:
a. kerosene
b. liquid detergent and water
c. gasoline
d. either a or b

____ 96. A dual element filter has a _____ type filter as the pre-cleaner.
a. neoprene
b. foam
c. paper
d. cartridge

____ 97. Single element _____ filters should be oiled to help catch dust particles better.
a. neoprene
b. foam
c. paper
d. cartridge

____ 98. Paper air filter cartridges should be cleaned by:
a. washing in liquid detergent and water
b. washing in kerosene
c. tapping lightly on a hard surface
d. using compressed air

____ 99. When installing a paper air filter cartridge, the paper side of the element should face _____ the engine.
a. away from
b. toward
c. inside
d. it doesn't matter

____ 100. The primary purpose of the ignition system is to:
a. provide a spark at the spark plug.
b. make the flywheel turn faster.
c. get a better flow of fuel to the cylinder.
d. make it easier to crank in cold weather.

____ 101. Most small engines use the _____ system to supply ignition spark.
a. fuel
b. conductor
c. power
d. magneto

____ 102. Which of the following **is** a basic part of the magneto system?
a. governor
b. carburetor
c. permanent magnets
d. tappets

____ 103. Which of the following **is** a basic part of the magneto system?
a. clutch assembly
b. high tension coil
c. needle valve adjusting screw
d. camshaft

____ 104. Which of the following is **not** a basic part of the magneto system?
a. mechanical governor
b. spark plug
c. high tension spark plug wire
d. condensor

____ 105. The "stop switch" grounds the:
a. battery
b. carburetor switch
c. ignition system, stopping the engine
d. none of the above

____ 106. An instrument for measuring **only** the voltage in an electrical circuit is called a:
a. voltmeter
b. volt charger
c. magneto tester
d. multimeter

____ 107. Which of the following is a measure of the resistance to electron flow?
a. power
b. ohms
c. voltage
d. ampere

____ 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
b. ohms
c. voltage
d. ampere

____ 109. Which of the following is a measure of electrical pressure?
a. power
b. ohms
c. voltage
d. ampere

____ 110. Substances that have electrons which can move freely from atom to atom are said to be good:
a. insulators
b. nonconductors
c. conductors
d. none of the above

____ 111. An atom consists of:
a. neutrons, electrons and protons
b. neutrons, bata-trons and protons
c. neutrons, electrons, and alpha-trons
d. nerotrons, electrons and protons

____ 112. The part of the magneto ignition system which converts low voltage into high voltage is the:
a. coil
b. condenser
c. breaker points
d. spark plug

____ 113. The ignition coil used in a magneto system operates like a:
a. spark plug
b. rectifier
c. transformer
d. diode

____ 114. The coil steps up the _____ and decreases the _____.
a. amperage, voltage
b. voltage, amperage
c. voltage, wattage
d. output, input

____ 115. What happens when a coil of wire is passed through a magnetic field?
a. nothing
b. produces static electricity
c. produces current flow
d. produces a spark

____ 116. Secondary voltage in a small engine ignition system can be as high as:
a. 10,000 volts
b. 20,000 volts
c. 30,000 volts
d. 60,000 volts

____ 117. The primary winding in the ignition coil has:
a. many turns of heavy wire
b. few turns of heavy wire
c. many turns of fine wire
d. few turns of fine wire

____ 118. The secondary winding in the ignition coil has:
a. many turns of heavy wire
b. few turns of heavy wire
c. many turns of fine wire
d. few turns of fine wire

____ 119. Spark plug deposits can be caused by:
a. improper carburetor adjustments
b. incorrect gas and oil mixture in 2 stroke cycle engines
c. both a and b
d. neither a nor b

____ 120. The condition of the _____ determines the amount of voltage needed that the ignition system must produce.
a. crankshaft
b. piston rings
c. carburetor
d. spark plug

____ 121. The proper spark plug gap for most small engines is:
a. .02”
b. .03”
c. .04”
d. it doesn’t matter

____ 122. When measuring the spark plug gap, a _____ should be used.
a. flat feeler gauge
b. wire or round feeler gauge
c. vernier caliper
d. micrometer

____ 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
b. 1800
c. 3600
d. 7200

____ 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
b. 1800
c. 3600
d. 7200

____ 125. Which of the following **is** true about spark plugs?
a. They come in different types and sizes
b. It doesn't matter which type you use.
c. They are all 2 1/2 inches long.
d. None of these are true.

____ 126. Which of the following **is** a part of a spark plug?
a. tappet
b. primary windings
c. electrode
d. core

____ 127. Which of the following **is** a part of a spark plug?
a. terminal nut
b. secondary windings
c. metal needle
d. high tension lead connector

____ 128. Which of the following **is** a part of a spark plug?
a. magneto
b. lobes
c. armature
d. ribs

____ 129. The spark plug insulator is usually a _____ material.
a. plastic
b. fiberglass
c. ceramic
d. brass

____ 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
b. flashover
c. flashback
d. flashdown

____ 131. What are the two types of high tension lead connections?
a. round type and square type
b. long type and short type
c. wide type and narrow type
d. exposed clip type and boot type

____ 132. Spark plug _____ is determined by the thickness of the cylinder head.
a. reach
b. thickness
c. material
d. voltage

____ 133. The _____ is the hottest part of the spark plug.
a. center electrode
b. tip of the insulator
c. threaded end
d. outside shell

____ 134. Spark plugs are manufactured in various heat ranges from _____ to_____.
a. 100 degrees to 200 degrees
b. 200 degrees to 400 degrees
c. 400 degrees to 1,000 degrees
d. hot to cold

____ 135. Spark plug heat transfer is controlled by the length of the _____.
a. insulator nose
b. center electrode
c. high tension lead
d. coil wire

____ 136. The operating temperature of spark plugs can be studied with a special spark plug having a _____ installed in it.
a. thermometer
b. voltmeter
c. spark tester
d. thermocouple

____ 137. Spark plugs can have different types of electrode configurations. They are:
a. inside gap, surface gap, clipped gap and automotive gap
b. retracted gap, outside gap, clipped gap and automotive gap
c. retracted gap, surface gap, clipped gap and automotive gap
d. retracted gap, surface gap, clipped gap and straight gap

____ 138. On engines that have breaker points, opening the breaker points in the ignition system:
a. reverses the microfarads in the primary circuit.
b. builds up the magnetic field.
c. controls the engine speed.
d. stops the flow of current in the primary circuit.

____ 139. On engines that have breaker points, the storage capacity of the condenser is measured in:
a. ohms
b. volts
c. amps
d. microfarads

____ 140. The proper breaker point gap is:
a. .02”
b. .03”
c. .04”
d. it doesn’t matter

____ 141. The breaker point assembly is an electrical _____.
a. meter
b. switch
c. sensor
d. diode

____ 142. The spark plug fires only at the instant the breaker points _____.
a. open
b. close
c. turn
d. flash

____ 143. Which type of ignition system replaced the breaker points igniton system:
a. spark plug ignition system
b. solid state ignition system
c. mechanical ignition system
d. power ignition system

____ 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.
b. The coil can be turned in any direction.
c. Any type spark plug can be used.
d. There are no moving parts.

____ 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
b. can use any type of gas
c. higher spark output
d. improved idling

____ 146. Which of the following is **not** an advantage of a solid state ignition system over the breaker point system?
a. less maintenance
b. easier starting
c. increased carburetor life
d. provides smoother power under load

____ 147. What closes the breaker points?
a. cam lobes
b. linkage
c. crankshaft
d. a spring

____ 148. The space between the flywheel and the armature is known as the _____.
a. flywheel gap
b. coil gap
c. air gap
d. ignition space

____ 149. Some small engine applications use a:
a. battery ignition system
b. capacitor discharge ignition system
c. electronic ignition system
d. all of the above

____ 150. A typical 12 volt battery will have _____ cells
a. 24
b. 12
c. 6
d. 4

____ 151. Oil viscosity is a measure of:
a. the ability to flow quickly
b. the detergents
c. the resistance to flow
d. the type of service

____ 152. Which of the following grades of oil is the thickest?
a. SAE 5W-20
b. SAE 5W-30
c. SAE 10W-30
d. SAE 10W-40

____ 153. Most small engine manufacturers recommend _____ for temperatures **above** 40 degrees.
a. SAE 20
b. SAE 30
c. SAE 5W-20
d. SAE 5W-30

____ 154. Most small engine manufacturers recommend _____ for temperatures **below** 40 degrees.
a. SAE 0W-40
b. SAE 5W-40
c. SAE 10W-40
d. SAE 5W-30

____ 155. SAE stands for:
a. Service Automotive Engines
b. Service American Engines
c. Society of American Engineers
d. Society of Automotive Engineers

____ 156. API stands for:
a. American Part Institute
b. Automotive Part Institute
c. American Petroleum Institute
d. Automotive Petroleum Institute

____ 157. The "W" in 10W-30 stands for:
a. winter
b. weight
c. way
d. weather

____ 158. The API classification system for oils is divided into which two categories?
a. "C" and "S" categories
b. "C" and "K" categories
c. "C1" and "C2" categories
d. "S1" and "S2" categories

____ 159. The API rating certifies that engine oil meets:
a. a certain temperature.
b. a certain weight.
c. a certain viscosity grade.
d. certain quality and performance standards.

____ 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
b. brand name
c. SAE viscosity grade
d. API rating

____ 161. API ratings do not apply to which type of engine?
a. 4 stroke cycle engines
b. 2 stroke cycle engines
c. automobiles
d. diesel engines

____ 162. Higher viscosity oils are recommended for _____ temperatures.
a. lower
b. higher
c. average
d. any

____ 163. Multi-viscosity oils should be used in:
a. 2 stroke cycle engines
b. some 4 stroke cycle small engines
c. automobiles
d. both b and c

____ 164. When changing engine oil:
a. run the engine to warm the oil.
b. stop the engine and disconnect the spark plug.
c. both a and b
d. b only

____ 165. Oil consumption is greater in a:
a. 2 stroke cycle engine
b. 4 stroke cycle engine
c. it's the same in both
d. there is no way to tell

____ 166. Which of the following is **not** a function of lubricating a small engine?
a. Oil prevents corrosion and cleans an engine.
b. Oil reduces heat by reducing friction.
c. Oil helps seal piston rings to help prevent blow-by.
d. Oil produces friction which decreases power output.

____ 167. The resistance to motion created when one surface rubs against another is called:
a. friction
b. instability
c. negative movement
d. roughness

____ 168. What is one of the most common methods used for lubricating 4 stroke cycle engines?
a. splash system
b. oil pump
c. spray system
d. injection system

____ 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
b. slinger
c. control
d. pump

____ 170. The oil _____ sets on the camshaft and spins as the crankshaft rotates to lubricate the engine.
a. dipper
b. slinger
c. control
d. pump

____ 171. The _____ forces oil under pressure against the rotating connecting rod.
a. oil pump
b. dipper
c. ejection pump
d. barrel pump

____ 172. The _____ is a cylinder and plunger type of lubrication pump.
a. oil pump
b. dipper
c. ejection pump
d. barrel pump

____ 173. Pressure relief valves are used in all:
a. barrel lubrication systems
b. ejection lubrication systems
c. closed lubrication systems
d. pressurized lubrication systems

____ 174. The recommended interval for changing the oil in small engines is:
a. every 10 hours of operation
b. every 25 hours of operation
c. every 50 hours of operation
d. just one time a year

____ 175. It is recommended that the oil be changed after the first _____ hours of operation on new engines.
a. 2
b. 5
c. 10
d. 15

____ 176. Old oil gradually becomes thick and loses its _____ and _____ abilities.
a. wetting and sticking
b. heating and lubricating
c. cooling and lubricating
d. cooling and heating

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

____ 178. A faulty seal at either end of the dipstick tube can result in a loss of crankcase _____.
a. compression
b. ignition
c. temperature
d. vacuum

____ 179. Which of the following statements is **not** true.
a. Use the grade of oil recommended by the manufacturer.
b. Change the oil when it is warm.
c. Do not underfill the crankcase with oil.
d. Put more oil in the crankcase than what is recommended so you will always have enough.

____ 180. The OIL GARD system will stop the engine when the _____ is low.
a. oil level
b. oil pressure
c. compression
d. oil viscosity

____ 181. What are the two types of OIL GARD systems?
a. pump operated and spark gap type
b. float operated and spark gap type
c. float operated and pump operated type
d. ground and spark gap type

____ 182. The compression ratio found in most small engines is:
a. 3:1
b. 6:1
c. 9:1
d. 12:1

____ 183. When referring to the piston strokes, TDC is known as:
a. Top Dead Center
b. Top Down Center
c. Top Dead Crankshaft
d. Turn Down Camshaft

____ 184. When referring to the piston strokes, BDC is known as:
a. Bottom Dead Center
b. Bottom Down Center
c. Bottom Dead Crankshaft
d. Bring Down Camshaft

____ 185. Piston slap results from excessive clearance between
a. piston and cylinder wall
b. piston and piston rod
c. piston and piston pin
d. piston rings

____ 186. The piston skirt is:
a. inside the piston
b. on the top part of the piston
c. on the bottom part of the piston
d. not part of the piston

____ 187. A diagonal wear pattern on the piston skirt is caused by a/an _____.
a. warped piston
b. twisted connecting rod
c. out of round cylinder
d. this is a normal wear pattern

____ 188. The piston journal is:
a. inside the piston
b. on the top part of the piston
c. on the bottom part of the piston
d. not part of the piston

____ 189. The piston stem is:
a. inside the piston
b. on the top part of the piston
c. on the bottom part of the piston
d. not part of the piston

____ 190. The part of the piston that is located above the top ring and between the ring grooves is called:
a. piston margin
b. piston head
c. piston lands
d. piston skirt

____ 191. Blow-by is:
a. a leaking carburetor
b. failure of rings to seal off compression
c. raw gasoline in the combustion chamber
d. a hole in the crankcase

____ 192. Which of the following statements **is** true about "blowby"?
a. It is of no concern.
b. There is no such thing as "blowby".
c. Properly installed piston rings prevent it.
d. Properly installed gaskets and seals in the carburetor prevent it.

____ 193. What provides a seal between the combustion chamber and the crankcase?
a. gasket
b. piston and piston rings
c. cylinder head
d. valve seats

____ 194. Piston pins are also known as _____ pins.
a. round
b. wrist
c. tubelar
d. connecting

____ 195. The piston pin acts like a _____ between the connecting rod and piston and holds the two together.
a. brace
b. bracket
c. spring
d. hinge

____ 196. Piston pins are made of:
a. cast iron
b. plastic
c. aluminum
d. case-hardened steel

____ 197. The piston pin is held in place by:
a. screws
b. tack welds
c. spring retainers
d. piston rings

____ 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
b. piston pin support
c. piston brace
d. piston pin hole bracket

____ 199. The movement of the piston in the cylinder from top to bottom is known as the _____.
a. stroke
b. throw
c. wear
d. tandem

____ 200. The space displaced in the cylinder by the piston in its up and down movement is called:
a. piston area
b. cylinder displacement
c. piston displacement
d. cylinder area

____ 201. The formula for "piston displacement" is:
a. Stroke cubed divided by 4 x 3.14 x Bore
b. Stroke squared divided by 4 x 3.14 x Bore
c. Bore cubed divided by 4 x 3.14 x Stroke
d. Bore squared divided by 4 x 3.14 x Stroke

____ 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
b. 17 cubic inches
c. 24 cubic inches
d. 84 cubic inches

____ 203. What is an engine's displacement if the Bore is 2 inches and the Stroke is 2.9 inches?
a. 9 cubic inches
b. 38 cubic inches
c. 13 cubic inches
d. 18 cubic inches

____ 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
b. 67 cubic inches
c. 16 cubic inches
d. 40 cubic inches

____ 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
b. 14 cubic inches
c. 14.5 cubic inches
d. 47 cubic inches

____ 206. Why is the piston hollow?
a. to reduce weight
b. to cut down on cost of material
c. to make it easier to install the rings
d. to make it easier to remove from the cylinder

____ 207. The top of the piston is:
a. flat
b. dome shaped
c. wedge shaped
d. can be any of the above

____ 208. Most 4-cycle small engines have a _____ piston.
a. flat
b. dome shaped
c. wedge shaped
d. there are an even number of pistons having each of the shapes

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

____ 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
b. Category I pistons
c. cam-ground pistons
d. machined pistons

____ 211. Which of the following statements **is** true concerning oval shaped pistons?
a. As the piston heats up, it expands to a round shape.
b. As the piston heats up, it becomes more oval shaped.
c. As the piston heats up, it stays the same.
d. There is no such thing as oval shaped pistons.

____ 212. Which of the following statements is **not** true concerning oval shaped pistons?
a. Oval shaped pistons are called cam-ground pistons.
b. Oval shaped pistons are made in order to have the smallest clearance possible between the piston skirt and the cylinder wall.
c. When the piston heats up and expands, it enlarges parallel to the piston pin.
d. They have no effect at all.

____ 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
b. thrust
c. hard
d. tempered

____ 214. The thrust surfaces of a piston are _____ to the centerline of the crankshaft and piston pin.
a. at right angles
b. at 45 degree angles
c. at 30 degree angles
d. lined up

____ 215. Which part of the piston runs hotter?
a. piston skirt
b. connecting rod
c. piston head
d. piston pin

____ 216. Which part of the piston expands more during operation?
a. piston skirt
b. connecting rod
c. piston head
d. piston pin

____ 217. Piston heads are sometimes made smaller than the piston skirt to compensate for:
a. expansion
b. cylinder size
c. ring size
d. piston pin installation

____ 218. When the head of a piston is made smaller than the skirt, the difference is _____.
a. 1/4 of an inch
b. 3/8 of an inch
c. several thousandths of an inch
d. only a few thousandths of an inch

____ 219. An abnormal reduction in the diameter of the piston skirt due to heat or stress is called:
a. piston reduction
b. piston shrink
c. polarizing
d. piston collapse

____ 220. What pushes the piston toward the crankshaft?
a. connecting rod
b. expanding gases
c. camshaft
d. incoming air/fuel mixture

____ 221. The piston makes a _____ motion.
a. reciprocating
b. rotating
c. slow
d. twisted

____ 222. The up and down movement of the piston is changed to a _____ motion by the crankshaft.
a. reciprocating
b. sideways
c. fast
d. rotary

____ 223. The connecting rod attaches the piston to the:
a. cylinder head
b. camshaft
c. crankshaft
d. driveshaft

____ 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
b. piston rings
c. piston skirt
d. head gasket

____ 225. A 4-cycle engine piston usually has three piston rings which consists of:
a. two for oil control and one for compression
b. two for compression and one for oil control
c. all three for oil control
d. all three for compression

____ 226. Piston rings are made of:
a. cast iron
b. steel
c. aluminum
d. both a and b

____ 227. Piston rings can be plated with chrome or other materials to _____.
a. cut down on cost
b. reduce wear
c. make them easier to install
d. increase the fuel to air ratio

____ 228. Most pistons use _____ compression rings.
a. cast iron
b. steel
c. aluminum
d. cast aluminum

____ 229. When steel is used in the construction of piston rings, it is usually with the _____.
a. compression ring
b. oil control ring
c. scraper ring
d. steel is not used at all

____ 230. Oil control rings are made:
a. as one piece
b. as three pieces
c. as five pieces
d. can be made in either one or three pieces

____ 231. Compression rings can act as a mild scraper to aid in _____.
a. sealing off burned gases
b. oil control
c. compression
d. fuel to oil ratio

____ 232. Which of the three rings on a piston is normally the widest:?
a. oil ring
b. compression ring
c. scraper ring
d. the top ring

____ 233. Which of the piston rings is known as the perforated ring?
a. compression ring
b. oil ring
c. scraper ring
d. all of the rings are perforated

____ 234. Which of the three ring grooves has holes or slots in it?
a. oil ring groove
b. compression ring groove
c. scraper ring groove
d. top ring groove

____ 235. The oil ring should be installed in the:
a. top groove
b. middle groove
c. bottom groove
d. it doesn't matter

____ 236. What will cause piston rings to get stuck in ring lands?
a. carbon build-up
b. lacquer build-up
c. high operating temperatures
d. all of the above

____ 237. On which of the four strokes do the piston rings provide the maximum amount of seal against the cylinder wall?
a. intake
b. compression
c. power
d. exhaust

____ 238. Most four-cycle engines have rings that _____.
a. do not move
b. float
c. last forever
d. wear out in one year

____ 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
b. ring compression
c. ring tension
d. ring force

____ 240. _____ will **not** rotate around the groove of the piston.
a. Compressed rings
b. Very tight rings
c. Chrome rings
d. Pinned rings

____ 241. When pinned rings are used they are typically found in:
a. four cycle engines
b. two cycle engines
c. diesel engines
d. high compression ratio engines

____ 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
b. micrometer
c. telescoping gauge
d. caliper

____ 243. The clearance between the ends of the piston ring is called:
a. piston ring end space
b. piston ring end gap
c. piston ring end bridge
d. piston ring end clearance

____ 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.
b. to allow some compression to escape to make it easier to crank.
c. to allow the rings to be installed in the cylinder and still exert tension on the cylinder wall.
d. both a and c

____ 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.
b. The ring end gaps should be lined up with each other before the piston is installed.
c. Some four cycle small engines have four piston rings.
d. New rings should be installed every year.

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

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

____ 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.
b. Take the rings off of the piston and push them into the cylinder one at a time and measure the gap.
c. Turn the piston upside down and push the ring into the cylinder before measuring.
d. both b and c

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

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

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

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

____ 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
b. .004
c. .008
d. .010

Small Engines CDE Test Bank A
Answer Section

MULTIPLE CHOICE

1.	ANS: C	PTS: 1
2.	ANS: A	PTS: 1
3.	ANS: B	PTS: 1
4.	ANS: B	PTS: 1
5.	ANS: A	PTS: 1
6.	ANS: D	PTS: 1
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29.	ANS: D	PTS: 1
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31.	ANS: A	PTS: 1
32.	ANS: D	PTS: 1
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