MULTIPLE CHOICE

1. The practice of uniting metal parts by heating or compression is called
   a. plumbing  c. transforming
   b. welding  d. direct current
   ANS: B  PTS: 1

2. The metal to be joined or welded together is classified as the
   a. standard metal  c. base metal
   b. tack metal  d. bead
   ANS: C  PTS: 1

3. The discharge of electricity through an air space is called the
   a. arc  c. amperage
   b. gap  d. electrode
   ANS: A  PTS: 1

4. Flux coated metal welding rods are referred to as
   a. flux  c. electrodes
   b. beads  d. sticks
   ANS: C  PTS: 1

5. The external material on electrodes that remove impurities form the base metal is called
   a. a shield  c. slag
   b. flux  d. paste
   ANS: B  PTS: 1

6. The layer formed on top of the weld caused by the flux and impurities of the base metal floating to the top is called
   a. flux  c. puddle
   b. bead  d. slag
   ANS: D  PTS: 1

7. A small weld to hold base metals together temporarily is called a/an
   a. tack weld  c. temporary work load
   b. bead  d. negative weld
   ANS: A  PTS: 1

8. The molten part of the weld where the heat is being applied is called the
   a. bead  c. flame
   b. current  d. puddle
   ANS: D  PTS: 1

9. The metal that is deposited by the electrode, welding wire or filler rod during the welding process is called the
10. The maximum pull in pounds per square inch that a weld can withstand is referred to as
   a. auxiliary strength
   b. psi
   c. compression strength
   d. tensile strength
   ANS: D PTS: 1

11. An association or society that establishes codes and standards for the welding industry is known as the
   a. American Welding Group
   b. Society of Amercian Welders
   c. American Welding Society
   d. National Metal Organization
   ANS: C PTS: 1

12. An arc welding process that uses flux coated rods is called
   a. TIG welding
   b. stick welding
   c. MIG welding
   d. wire welding
   ANS: B PTS: 1

13. Another name for stick welding is
   a. SMAW
   b. MIG
   c. TIG
   d. GMAW
   ANS: A PTS: 1

14. SMAW stands for
   a. Shielded Material Arc Welding
   b. Shielded Metal Arc Welding
   c. Standard Metal Arc Welding
   d. Standard Material Arc Welding
   ANS: B PTS: 1

15. An arc welding process that uses a wire that is fed automatically at a constant speed as an electrode is called
   a. TIG welding
   b. brazing
   c. wire welding
   d. stick welding
   ANS: C PTS: 1

16. Another name for wire welding is
   a. MIG welding
   b. TIG welding
   c. brazing
   d. SMAW
   ANS: A PTS: 1

17. MIG stands for
   a. Material Inactive Gas
   b. Metal Inert Gas
   c. Material Inverted Gas
   d. Metal Inverted Gas
   ANS: B PTS: 1

18. An arc welding process that uses a tungsten tip and filler rod to create a bead shielded by gas is called
   a. TIG
   b. MIG
   c. SMAW
   d. stick welding
   ANS: c. SMAW PTS: 1
19. TIG stands for
   a. Teranium Inert Gas
   b. Tungsten Inert Gas
   c. Teranium Inactive Gas
   d. Tungsten Inverted Gas

   ANS: B    PTS: 1

20. Both MIG and TIG welding can also be referred to as
   a. GMAW
   b. SMAW
   c. WMAW
   d. CMAW

   ANS: A    PTS: 1

21. GMAW stands for
   a. Gas Material Arc Welding
   b. Gas Metal Advanced Welding
   c. Gas Material Advanced Welding
   d. Gas Metal Arc Welding

   ANS: D    PTS: 1

22. A process that uses both oxygen and acetylene for cutting or welding is referred to as
   a. Oxyacetylene
   b. Acetygen
   c. Oxylene
   d. OA welding

   ANS: A    PTS: 1

23. Which of the following gases can serve as an alternative for acetylene?
   a. diesel fuel
   b. propane
   c. Argon
   d. CO2

   ANS: B    PTS: 1

24. Which of the following gases can serve as an alternative for acetylene?
   a. butane
   b. gasoline
   c. kerosene
   d. Argon

   ANS: A    PTS: 1

25. Which of the following gases can serve as an alternative for acetylene?
   a. helium
   b. oxygen
   c. kerosene
   d. natural gas

   ANS: D    PTS: 1

26. A welding process using the oxyacetylene rig is referred to as
   a. branding
   b. soldering
   c. brazing
   d. TIG

   ANS: C    PTS: 1

27. Tips used in oxyacetylene welding have how many holes in the end of them?
   a. one
   b. two
   c. four
   d. six

   ANS: A    PTS: 1
28. Which of the following statements is true concerning torch tips for the oxyacetylene rig?
   a. A small tip is used for thick metal.  
   b. 000 size tip is smaller than a size 10 tip  
   c. Tip size does not matter when brazing.  
   d. Tip numbers range up to 100.
   ANS: B  PTS: 1

29. Which of the following statements is not true concerning the oxyacetylene rig?
   a. The acetylene hose has notched fittings.  
   b. The oxygen hose has fittings that are not notched.  
   c. The oxygen hose is green in color.  
   d. The acetylene hose is orange in color.
   ANS: D  PTS: 1

30. Which of the following statements is not true concerning the oxyacetylene rig?
   a. The oxygen operating pressure must be set at 80 psi.  
   b. Never operate acetylene pressure at 15 psi or more.  
   c. Acetylene is a fuel.  
   d. The work area must be properly ventilated.
   ANS: A  PTS: 1

31. Which of the following statements is not true concerning the oxyacetylene rig?
   a. Wear protective clothing.  
   b. Stand in front of the gauges when opening the cylinders so you can see the amount of pressure.  
   c. The acetylene hose has fittings with left-handed threads.  
   d. The oxygen hose has fittings with right-handed threads.
   ANS: B  PTS: 1

32. What is the term that means to bond filler material to a base metal? It is the key to success in brazing.
   a. fusion  
   b. welding  
   c. tinning  
   d. bonding
   ANS: C  PTS: 1

33. When brazing, what is the phrase that means to alternately move a flame into and out of an area to achieve temperature control?
   a. “work the flame”  
   b. “control the flame”  
   c. “alter the flame”  
   d. “play the flame”
   ANS: D  PTS: 1

34. Acetylene is dangerous because it is
   a. compressed  
   b. flammable  
   c. explosive  
   d. all of the above
   ANS: D  PTS: 1

35. Gas leaks on the oxyacetylene rig are checked with
   a. compressed air  
   b. a flame  
   c. soapy water  
   d. teflon
   ANS: C  PTS: 1
36. Removing gas from oxyacetylene equipment is known as
   a. bleeding the lines  c. blowing out the lines
   b. gas removal          d. fuel and air removal

   ANS: A          PTS: 1

37. The acetylene cylinder valve is never opened more than
   a. a half turn  c. two turns
   b. one turn      d. it doesn’t matter

   ANS: A          PTS: 1

38. A device on an oxyacetylene rig that controls the flow of gas is called a
   a. gauge  c. cylinder
   b. regulator  d. torch

   ANS: B          PTS: 1

39. Which of the following types of flames is the correct one for heating and cutting with the oxyacetylene rig?
   a. brazing flame  c. carbonizing flame
   b. oxidizing flame  d. neutral flame

   ANS: D          PTS: 1

40. Welding helmets worn for stick welding are required to have what number shaded lens?
   a. No. 5  c. No. 12
   b. No. 10  d. No. 15

   ANS: B          PTS: 1

41. Safety glasses or goggles worn when using the oxyacetylene torch should be what number shaded lens?
   a. No. 5  c. No. 10
   b. No. 8  d. No. 12

   ANS: A          PTS: 1

42. The percentage of time that a welder can operate without overheating is referred to as the
   a. work load  c. current load
   b. life cycle  d. duty cycle

   ANS: D          PTS: 1

43. A 20% duty cycle welder should weld only how many minutes out of every hour at full capacity?
   a. 10 minutes  c. 15 minutes
   b. 12 minutes  d. 20 minutes

   ANS: B          PTS: 1

44. Current that reserves its direction of flow frequently is referred to as
   a. Alternating current  c. Recycled current
   b. Direct current  d. Replaced current

   ANS: A          PTS: 1

45. Current that flows in one direction according to how the welder is set is referred to as
46. A device on AC welders that convert high voltage and low amperage from utility power lines to low voltage and high amperage is referred to as
a. transformers
c. inverters
b. rectifiers
d. converters
ANS: A PTS: 1

47. The “E” in E6013 stands for what according to the Numerical Coding for Electrodes?
  a. Energy
c. Energizer
  b. Electric
d. Electrode
ANS: D PTS: 1

48. The “60” in E6013 represents what according to the Numerical Coding for Electrodes?
  a. tensile strength in hundreds of pounds per square inch
c. compression strength in hundreds of pounds per square inch
  b. tensile strength in thousands of pounds per square inch
d. compression strength in thousands of pounds per square inch
ANS: B PTS: 1

49. The “1” in E6013 represents what according to the Numerical Coding for Electrodes?
  a. welding material
c. welding current
  b. welding size
d. welding position
ANS: D PTS: 1

50. The “3” in E6013 represents what according to the Numerical Coding for Electrodes?
  a. welding material
c. welding current
  b. welding size
d. welding position
ANS: C PTS: 1

51. Which of the following would not be considered a welding position?
  a. overhead
c. horizontal
  b. flat
d. lateral
ANS: D PTS: 1

52. In the MIG welding process, gas pressure should be set at approximately
  a. 10-15 psi
c. 40-50 psi
  b. 25-30 psi
d. It doesn’t matter
ANS: B PTS: 1

53. The types of gas used in the MIG welding process would not include which of the following:
  a. Acetylene
c. CO2
  b. Argon
d. Argon and CO2 mix
ANS: A PTS: 1

54. Which of the following gases is considered to be flammable:
a. argon  

b. CO2  
c. acetylene  
d. They are all flammable

ANS: C  PTS: 1

55. What is one advantage of MIG welding over stick welding?
a. It can be used to weld thicker gauge metal.  
b. It does not have slag to be chipped off.  
c. A MIG welder is cheaper to purchase than a stick welder.  
d. There are no advantages.

ANS: B  PTS: 1

56. Most MIG welding equipment is  
a. manual  
b. robotic  
c. automatic  
d. semiautomatic

ANS: D  PTS: 1

57. Which of the following is not a weld defect?  
a. undercut  
b. insufficient penetration  
c. pits  
d. behind cut

ANS: D  PTS: 1

58. In the TIG welding process, which of the following is **not** true?  
a. Tungsten electrodes are not consumed during the welding process.  
b. Gas pressure should be set at approximately 25-30 psi.  
c. A filler rod is normally used when welding especially on thicker metal.  
d. Tungsten electrodes have a very low melting point.

ANS: D  PTS: 1

59. In the TIG welding process, which of the following is **not** true?  
a. It produces a cleaner bead than MIG  
b. Argon can be used as the shielding gas  
c. It is faster than MIG  
d. It is easier to weld thinner gauge metal than with stick welding.

ANS: C  PTS: 1

60. Which of the following is not a part of the TIG welding torch?
a. gauge  
b. collet body  
c. collet  
d. Tungsten electrode

ANS: A  PTS: 1

61. Which of the following types of fire extinguishers should be available for use in the welding area?  
a. Class A only  
b. Class B only  
c. Class C only  
d. Class A, B and C

ANS: D  PTS: 1

62. Which of the following is needed in the welding area in case of emergency?  
a. ladder  
b. welding gas  
c. fire blanket  
d. spare electrodes

ANS: C  PTS: 1
63. To start an arc by touching the metal with the electrode and then raising it is known as the
   a. tapping method  
   b. touching method  
   c. down and up method  
   d. arcing method  
   ANS: A  PTS: 1

64. To start an arc by dragging the electrode across the metal about an inch is known as the
   a. arcing method  
   b. start up method  
   c. scratch method  
   d. dragging method  
   ANS: C  PTS: 1

65. When welding, one bead or layer of filler metal is known as a/an
   a. path  
   b. pass  
   c. weave  
   d. foundation bead  
   ANS: B  PTS: 1

66. When making several passes during the welding process, the first pass made in a joint is called the
   a. foundation pass  
   b. initial pass  
   c. root pass  
   d. base pass  
   ANS: C  PTS: 1

67. Another name for a fillet weld is called a/an
   a. “T” weld  
   b. “Butt” weld  
   c. “Lap” weld  
   d. “Overhang” weld  
   ANS: A  PTS: 1

68. The angle of the electrode when stick welding should be
   a. 90 degrees from the vertical position  
   b. 60 degrees from the vertical position  
   c. 30-45 degrees from the vertical position  
   d. 10-15 degrees from the vertical position  
   ANS: D  PTS: 1

69. Which of the following can help you determine the correct arc length for stick welding?
   a. the sound of the arc  
   b. the appearance of the bead  
   c. welding experience  
   d. all of the above  
   ANS: D  PTS: 1

70. An arc that is the correct length when stick welding should sound like
   a. water boiling  
   b. bacon frying  
   c. eggs boiling  
   d. the sound doesn’t matter  
   ANS: B  PTS: 1

71. If the arc length is too long when stick welding, a ______ sound is heard.
   a. booing  
   b. scratching  
   c. soft  
   d. squealing  
   ANS: A  PTS: 1

72. What happens if the arc length is too short when stick welding?
   a. The metal gets too hot.  
   b. The welder will shut off.  
   c. The electrode sticks to the metal.  
   d. Nothing. It needs to be short.  
   ANS: C  PTS: 1
73. What will be the result if the amperage is set too low when stick welding?
   a. The molten puddle will burn a hole in the base metal.
   b. It will be difficult to strike the arc and keep it running.
   c. It will result in a wide bead.
   d. It will cause a lot of splatter.
   
   ANS: B  PTS: 1

74. What will be the result if the amperage is set too low when stick welding?
   a. Nothing will happen.
   b. The welder will shut off.
   c. It will result in a narrow, stringy bead.
   d. It will result in a wide bead.
   
   ANS: C  PTS: 1

75. Indicators of excessive heat when welding would include:
   a. the puddle burns through the metal
   b. the arc is very noisy
   c. neither a nor b
   d. both a and b
   
   ANS: D  PTS: 1

76. Indicators of excessive heat when welding would include:
   a. It is difficult to manage the puddle.
   b. The arc will not strike.
   c. The bead is wavy.
   d. The bead is narrow.
   
   ANS: A  PTS: 1

77. A _______ bead is a bead that is made without weaving.
   a. stringer
   b. flat
   c. line
   d. restricted
   
   ANS: A  PTS: 1

78. The _______ is a low spot in metal where the force of a flame has pushed out molten metal.
   a. hole
   b. puddle
   c. crater
   d. convex
   
   ANS: C  PTS: 1

79. When stick welding several beads on top of each other, slag must be removed after each bead is welded or there will be _______ inside the weld.
   a. hot pockets
   b. puddles
   c. voids
   d. You don’t have to remove the slag.
   
   ANS: C  PTS: 1

80. Which of the following types of pipe should have the most ventilation to the work area when welding?
   a. mild steel
   b. stainless steel
   c. galvanized
   d. It doesn’t matter.
   
   ANS: C  PTS: 1

81. The output of a welder is relatively
   a. low voltage and high amperage
   b. high voltage and low amperage
   c. high voltage and high amperage
   d. low voltage and low amperage
82. A chipping hammer is used to
   a. prepare edges for welding  c. temper beads
   b. remove scale from steel    d. remove slag
ANS: D  PTS: 1

83. Which of the following would not be considered a safety item when welding.
   a. welding helmet            c. welding gloves
   b. safety glasses            d. spare electrodes
ANS: D  PTS: 1

84. The temperature of the electric welding arc is about
   a. 400 degrees F              c. 1800 degrees F
   b. 840 degrees F              d. 9000 degrees F
ANS: D  PTS: 1

85. Welding tables should be made of
   a. concrete                   c. metal
   b. masonite                  d. wood
ANS: C  PTS: 1

86. Burning clothes on a human should be extinguished with
   a. fire blanket              c. sand
   b. fire extinguisher        d. any of these
ANS: A  PTS: 1

87. Water in a welding area is useful for
   a. receiving sparks from piercing  c. cooling metal
   b. extinguishing fires          d. all of the above
ANS: D  PTS: 1

88. If only one kind of electrode for all stick welding is to be purchased, the best choice is an
   a. E6010                      c. E6013
   b. E6011                      d. E7018
ANS: B  PTS: 1

89. For most welding in agricultural mechanics the best electrode size is
   a. 1/16 inch                  c. 3/16 inch
   b. 1/8 inch                  d. 1/4 inch
ANS: B  PTS: 1

90. The correct arc length when welding is approximately
   a. 1/8 inch                  c. 3/8 inch
   b. 1/4 inch                  d. 1/2 inch
ANS: A  PTS: 1
91. When welding, the operator sees by
   a. daylight                       c. light from the arc
   b. flourescent light             d. all of the above
   
   ANS: C   PTS:  1

92. The appearance and strength of a bead are influenced by
   a. amps                           c. speed
   b. angle                          d. all of the above
   
   ANS: D   PTS:  1

93. The recommended weave pattern for the beginning weldor doing down hand welding is
   a. circular                       c. J
   b. figure eight                   d. T
   
   ANS: A   PTS:  1

94. In metal, the most rapid movement of heat is
   a. down                           c. horizontal
   b. up                             d. equal in all directions
   
   ANS: B   PTS:  1

95. To make a hole with an electrode is called
   a. cutting                        c. piercing
   b. electrodning                   d. brazing
   
   ANS: C   PTS:  1

96. The best amperage setting for cutting with a stick welder is _____ higher than for welding.
   a. 25 %                           c. 75 %
   b. 50 %                           d. 100 %
   
   ANS: B   PTS:  1

97. Which of the following welds is the most difficult to make.
   a. flat                           c. vertical down
   b. horizontal                     d. vertical up
   
   ANS: D   PTS:  1

98. Joining parts by melting them together is known as
   a. oxidation                      c. fusion welding
   b. carbonizing                    d. heat welding
   
   ANS: C   PTS:  1

99. A spring loaded clamp attached to an electrical cable and is not insulated and carries current between
   the welding table and to the welder is called a
   a. electrode clamp                 c. welder clamp
   b. ground clamp                   d. positive clamp
   
   ANS: B   PTS:  1

100. How many cables does a welder have?
    a. 1                               c. 3
101. 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  
   ANS: C  PTS: 1

102. 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  
   ANS: A  PTS: 1

103. 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  
   ANS: B  PTS: 1

104. On which two strokes are both valves closed?
   a. intake and exhaust  
   b. compression and power  
   c. intake and compression  
   d. power and exhaust  
   ANS: B  PTS: 1

105. The intake valve is cooled by:
   a. incoming air/fuel mixture  
   b. air circulation  
   c. radiator  
   d. oil  
   ANS: A  PTS: 1

106. 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  
   ANS: D  PTS: 1

107. The exhaust valve is made of:
   a. a very special steel  
   b. copper  
   c. brass  
   d. carbide  
   ANS: A  PTS: 1

108. A single cylinder Briggs and Stratton engine has:
   a. 1 valve  
   b. 4 valves  
   c. 2 valves  
   d. 3 valves  
   ANS: C  PTS: 1

109. Valves have a direct effect on:
   a. compression  
   b. compression ratio  
   c. compression ratio  
   ANS: C  PTS: 1
b. displacement  
d. horsepower  
ANS: A  PTS:  1

110. 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

111. 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

112. 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

113. 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

114. 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

115. Valve tappet clearance is measured by using a:  
a. rule  
c. feeler gauge  
b. micrometer  
d. caliper  
ANS: C  PTS:  1

116. 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  
c. power  
b. compression  
d. exhaust  
ANS: B  PTS:  1

117. 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

118. 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
119. 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
   ANS: B  PTS: 1

120. 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
   ANS: C  PTS: 1

121. Too little valve clearance can cause:
   a. valve burning  
   b. a dished valve  
   c. a rich fuel mixture  
   d. a higher compression ratio
   ANS: A  PTS: 1

122. Which of the following is **not** a part of a valve:
   a. head  
   b. margin  
   c. face  
   d. tail
   ANS: D  PTS: 1

123. Which of the following **is** a part of a valve?
   a. lobe  
   b. stem  
   c. leg  
   d. tail
   ANS: B  PTS: 1

124. 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
   ANS: A  PTS: 1

125. 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
   ANS: D  PTS: 1

126. The camshaft opens and closes the:
   a. intake valve  
   b. exhaust valve  
   c. intake and exhaust valves  
   d. reed valves
   ANS: C  PTS: 1

127. The thickness of the margin on a new Briggs & Stratton valve is:
   a. 1/64”  
   b. 1/32”  
   c. 1/16”  
   d. 1/8”
   ANS: B  PTS: 1
128. 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”
   ANS: D   PTS: 1

129. What causes valves to stick?
   a. gum accumulation
   b. old oil
   c. wrong viscosity of oil
   d. air filter clogged
   ANS: A   PTS: 1

130. _________ 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
     ANS: D   PTS: 1

131. Valve overlap is when both valves are:
     a. closed
     b. open
     c. both a and b
     d. neither a nor b
     ANS: B   PTS: 1

132. 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
     ANS: C   PTS: 1

133. 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
     ANS: B   PTS: 1

134. Which of the following is not a part of the valve system?
     a. keeper
     b. retainer
     c. spring
     d. ring
     ANS: D   PTS: 1

135. What is another name for a valve tappet?
     a. valve lifter
     b. valve lobe
     c. valve shaft
     d. valve pin
     ANS: A   PTS: 1

136. What pushes against the valve tappets to make them move?
     a. cam gear
     b. cam lobes
     c. crankshaft
     d. connecting rod
     ANS: B   PTS: 1
137. 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

   ANS: D  PTS: 1

138. 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

   ANS: A  PTS: 1

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

   ANS: B  PTS: 1

140. 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

   ANS: B  PTS: 1

141. 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

   ANS: C  PTS: 1

142. 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

   ANS: C  PTS: 1

143. The overhead valve design compared to the L-head design can increase fuel efficiency by as much as ________.
   a. 5% b. 10%
   c. 25% d. 50%

   ANS: C  PTS: 1

144. 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

   ANS: A  PTS: 1

145. 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. valves
   c. L-head engines
b. 2-cycle engines
d. OHV engines
ANS: D  PTS:  1

146. The basic purpose of a carburetor is to:
a. equalize 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

147. 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

148. 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

149. Which part of the carburetor controls engine speed?
a. throttle
c. choke
b. venturi
d. float
ANS: A  PTS:  1

150. 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

151. 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

152. 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

153. 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

154. 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

155. 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

156. 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

157. 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

158. 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

159. 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

160. 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

161. 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

162. 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

163. 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

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

ANS: B PTS: 1

165. 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

166. 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

167. 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

168. 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

169. 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

170. Which type governor works off of centrifugal force?
   a. mechanical
c. pneumatic
   b. air vaned
d. diaphragm

ANS: A PTS: 1

171. Which type governor works off of flyweights?
   a. mechanical
c. pneumatic
   b. air vaned
d. diaphragm

ANS: A PTS: 1

172. 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

173. 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

174. 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

175. 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

176. A foam air cleaner should be cleaned using:
  a. kerosene  c. gasoline
  b. liquid detergent and water  d. either a or b
ANS: D  PTS: 1

177. A dual element filter has a ________ type filter as the pre-cleaner.
  a. neoprene  c. paper
  b. foam  d. cartridge
ANS: B  PTS: 1

178. Single element ________ filters should be oiled to help catch dust particles better.
  a. neoprene  c. paper
  b. foam  d. cartridge
ANS: B  PTS: 1

179. 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

180. 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

181. The proper spark plug gap for most small engines is:
  a. .02”  c. .04”
  b. .03”  d. it doesn’t matter
182. 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

183. 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

184. 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

185. 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

186. 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

187. 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

188. 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

189. API stands for:
   a. American Part Institute   c. American Petroleum Institute
   b. Automotive Part Institute   d. Automotive Petroleum Institute
   ANS: C   PTS: 1

190. The “W” in 10W-30 stands for:
   a. winter   c. way
   b. weight   d. weather
   ANS: A   PTS: 1
191. Which of the following would **not** be found in the crankcase?
   a. oil  
   b. breather  
   c. camshaft  
   d. connecting rod  
   ANS: B  PTS: 1

192. The camshaft opens and closes the:
   a. intake valve  
   b. exhaust valve  
   c. reed valve  
   d. both a and b  
   ANS: D  PTS: 1

193. ________ are off-center enlargements on the camshaft that converts rotary motion to reciprocating motion.
   a. flyweights  
   b. lifters  
   c. lobes  
   d. gears  
   ANS: C  PTS: 1

194. The camshaft has _____ lobes.
   a. 2  
   b. 3  
   c. 4  
   d. 5  
   ANS: A  PTS: 1

195. The camshaft is driven by a ________ on the crankshaft.
   a. lobe  
   b. gear  
   c. spring  
   d. flywheel  
   ANS: B  PTS: 1

196. The camshaft gear and crankshaft gear has ________ that must be aligned in order for the valves to open and close at the right time.
   a. lobes  
   b. a keyway  
   c. teeth  
   d. timing marks  
   ANS: D  PTS: 1

197. The camshaft gear is ________ as large as the crankshaft gear.
   a. 4 times  
   b. 3 times  
   c. 2.5 times  
   d. 2 times  
   ANS: D  PTS: 1

198. How many revolutions does a camshaft make to one revolution of the crankshaft?
   a. 1/2  
   b. 1  
   c. 1 1/2  
   d. 2  
   ANS: A  PTS: 1

199. How many revolutions does a crankshaft make to each power stroke of the engine?
   a. 1  
   b. 2  
   c. 3  
   d. 4  
   ANS: B  PTS: 1
200. Counterweights are designed into the crankshaft to provide:
   a. more power  
   b. increased engine speed 
   c. engine balancing  
   d. better ignition 
   ANS: C  PTS: 1

201. A ________ is a support base made of concrete that is poured directly into a trench on top of undisturbed soil to support the weight of a building.
   a. foundation 
   b. footing 
   c. threshold 
   d. concrete base 
   ANS: B  PTS: 1

202. The purpose of screeding concrete is to:
   a. have a perfectly smooth finish 
   b. leave a texture 
   c. level the surface by removing excess concrete 
   d. remove all the trash 
   ANS: C  PTS: 1

203. When cement, sand and gravel are mixed with water it is known as:
   a. concrete 
   b. cement 
   c. mortar 
   d. grout 
   ANS: A  PTS: 1

204. When cement and sand are mixed with water it is known as:
   a. concrete 
   b. cement 
   c. mortar 
   d. grout 
   ANS: C  PTS: 1

205. A sack of cement contains:
   a. 1/2 cubic foot 
   b. 1 cubic foot 
   c. 1 1/2 cubic feet 
   d. 2 cubic feet 
   ANS: B  PTS: 1

206. The most common type of cement used around the world that is manufactured from limestone and clay is:
   a. Portland cement 
   b. American cement 
   c. Limestone cement 
   d. Bentonite cement 
   ANS: A  PTS: 1

207. A sack of cement weighs:
   a. 50 lbs. 
   b. 75 lbs. 
   c. 94 lbs. 
   d. 100 lbs. 
   ANS: C  PTS: 1

208. The common size of a cement block used in agricultural construction is:
   a. 4” x 4” x 12” 
   b. 8” x 8” x 12” 
   c. 6” x 6” x 16” 
   d. 8” x 8” x 16” 
   ANS: D  PTS: 1
209. The most common size of a mortar joint is:
   a. 3/8”  
   b. 1/2”  
   c. 3/4”  
   d. 7/8”

   ANS: A  PTS: 1

210. When laying a concrete block wall start at:
   a. the corner and work toward the center  
   b. any point you desire  
   c. the corners and work toward the center  
   d. the corner and work toward the other corner

   ANS: C  PTS: 1

211. Each row of concrete blocks is called a:
   a. layer  
   b. line  
   c. row  
   d. course

   ANS: D  PTS: 1

212. One cubic yard of concrete contains ____ cubic feet.
   a. 9  
   b. 36  
   c. 27  
   d. 54

   ANS: C  PTS: 1

213. The footing should be placed:
   a. below the frost line  
   b. above the frost line  
   c. on the frost line  
   d. it doesn’t matter

   ANS: A  PTS: 1

214. A 1-2-3 mixture of concrete means:
   a. one part sand, two parts gravel and 3 parts cement  
   b. one part gravel, two parts sand and 3 parts cement  
   c. one part cement, two parts sand and 3 parts gravel  
   d. one part cement, two parts gravel and 3 parts sand

   ANS: C  PTS: 1

215. Smoothing or finishing concrete is called:
   a. screeding  
   b. troweling  
   c. planing  
   d. edging

   ANS: B  PTS: 1

216. Concrete has high ______ strength.
   a. compression  
   b. tensile  
   c. internal  
   d. external

   ANS: A  PTS: 1

217. Concrete has low ______ strength.
   a. compression  
   b. tensile  
   c. internal  
   d. external

   ANS: B  PTS: 1
218. A groove cut into concrete to allow for expansion due to temperature changes is called a/an:
   a. temperature groove  c. expansion joint
   b. expansion gap        d. expansion groove
ANS: C    PTS: 1

219. Which of the following would not increase the tensile strength of concrete?
   a. steel fibers          c. reinforcement wire
   b. reinforcement bars    d. gravel
ANS: D    PTS: 1

220. Which of the following increases the compression strength of concrete?
   a. steel fibers          c. reinforcement wire
   b. reinforcement bars    d. gravel
ANS: D    PTS: 1

221. The process of which concrete hardens by adding water is called:
   a. hardening             c. dilution
   b. dehydration          d. hydration
ANS: D    PTS: 1

222. ________ ________ are used to attach roof plates or sills to masonry work.
   a. U bolts              c. Anchor bolts
   b. Eye bolts            d. Long bolts
ANS: C    PTS: 1

223. The narrow space between adjacent stones, bricks or blocks that is filled with mortar is called a:
   a. cement joint         c. mortar groove
   b. mortar gap           d. mortar joint
ANS: D    PTS: 1

224. A board about 3’ square where mortar is placed and ready for the use of the bricklayer is called a:
   a. brickboard           c. mortar tray
   b. mortarboard          d. squareboard
ANS: B    PTS: 1

225. A temporary structure made of metal pipes or tubes that allows brick layers or construction workers to perform their jobs at certain heights is called a:
   a. scaffold             c. lift
   b. ladder               d. construction platform
ANS: A    PTS: 1

226. A square of shingles equals:
   a. 3 bundles            c. 8 bundles
   b. 5 bundles            d. 10 bundles
ANS: A    PTS: 1

227. The size of a standard asphalt shingle is:
   a. 12” x 24”            c. 10” x 24”
b. 12” x 36”

d. 10” x 36”

ANS: B PTS: 1

228. How many tabs does a standard asphalt shingle have?
a. 1  
b. 2

c. 3  
d. 4

ANS: C PTS: 1

229. How many nails are recommended to be put in a standard asphalt shingle in low wind areas?
a. 3  
b. 4
c. 6  
d. 8

ANS: B PTS: 1

230. How many nails are recommended to be put in a standard asphalt shingle in high wind areas?
a. 3  
b. 4
c. 6  
d. 8

ANS: C PTS: 1

231. How many inches of shingle should be exposed on the first row of shingles?
a. 2  
b. 5
c. 4  
d. 3

ANS: D PTS: 1

232. How many inches of shingle should be exposed on each row after the first one?
a. 2  
b. 5
c. 4  
d. 3

ANS: B PTS: 1

233. What is the name of the material that is used to back up the first course of shingles and fill in the space between the tabs?
a. starter strip  b. backing strip
c. fill-in strip  d. weather proof strip

ANS: A PTS: 1

234. Instead of using the standard material that is made to back up the first course of shingles that fills in the space between the tabs, what else could be used?
a. flashing  b. a shingle turned the normal direction
c. inverted shingle  d. ridge cap

ANS: C PTS: 1

235. What must be used under shingles for underlayment?
a. felt  b. tar
c. roll roofing  d. metal flashing

ANS: A PTS: 1

236. A section of land contains _____ acres.
a. 40  
b. 80
c. 640  
d. 160
237. 1/4 section of land contains _____ acres.
a. 40 c. 640
b. 80 d. 160
ANS: D PTS: 1

238. A township has _____ sections.
a. 24 c. 48
b. 36 d. 64
ANS: B PTS: 1

239. A township has _____ acres.
a. 10,000 c. 23,040
b. 15,000 d. 43,560
ANS: C PTS: 1

240. A township is:
a. 10 sq. miles c. 30 sq. miles
b. 15 sq. miles d. 36 sq. miles
ANS: D PTS: 1

241. A section of land is:
a. 1 sq. mile c. 10 sq. miles
b. 5 sq. miles d. 40 sq. miles
ANS: A PTS: 1

242. 1 mile is _____ feet.
a. 5,000 c. 640
b. 5,280 d. 750
ANS: B PTS: 1

243. 1 rod is _____ feet.
a. 16.5 c. 25
b. 20 d. 50
ANS: A PTS: 1

244. 1 chain is _____ feet
a. 10 c. 66
b. 40 d. 70
ANS: C PTS: 1

245. 1 chain is _____ rods.
a. 10 c. 6
b. 8 d. 4
ANS: D PTS: 1
246. 1 chain is _____ links.
   a. 25  c. 100
   b. 50  d. 120
   ANS: C   PTS: 1

247. The main line in the rectangular survey system that runs east and west is called the:
   a. Base Line  c. Township Line
   b. Principal Meridian  d. Range Line
   ANS: A   PTS: 1

248. The main line in the rectangular survey system that runs north and south is called the:
   a. Base Line  c. Township Line
   b. Principal Meridian  d. Range Line
   ANS: B   PTS: 1

249. Lines in the rectangular survey system that run east and west every 6 miles is called:
   a. Base Lines  c. Township Lines
   b. Principal Meridians  d. Range Lines
   ANS: C   PTS: 1

250. Lines in the rectangular survey system that run north and south every 6 miles is called:
   a. Base Lines  c. Township Lines
   b. Principal Meridians  d. Range Lines
   ANS: D   PTS: 1