Boiler Exam Study Guide Questions

boiler exam study guide 1

1.0.433: The pressure at the base of a vertical foot of water is ____ psi.
2.1 ½ times the safety valve setting: When performing a hydrostatic test, the pressure on the boiler should be increased to ____.
3.1 ½ to 2 times the safety valve setting: A boiler steam pressure gauge should have a range of ____.
4.2 ½: The maximum size of the bottom blowdown line and the surface blowdown line is ____".
5.3: During startup, the boiler vent should remain open until a pressure of approximately ____ psi is on the boiler.
6.6: No. ____ fuel oil must be heated to reach the required temperature for combustion.
7.6: No. ____ fuel oil must be heater in order to be pumped.
8.6: Fuel oil heaters must be used when burning No. ____ fuel oil.
9.8.3: Water weighs approximately ____ lb/gal.
10.15: In order to burn 1 lb of fuel, approximately ____ lb of air are needed.
11.15 psi: A low pressure steam boiler has a maximum allowable working pressure (MAWP) of up to ____.
12.20,000 lb of water/hr: A boiler generating 20,000 lb of steam/hr must be supplied with at least ____.
13.21; 79: Air needed for the combustion of fuel is made up of approximately ____% oxygen and ____% nitrogen.
14.75% to 85% of the line pressure: The automatic nonreturn valve on a boiler being cut in on a line should be opened when the steam pressure on the boiler reaches ____.
15.a boiler explosion: A sudden drop in boiler steam pressure without a corresponding drop in boiler water temperature could result in ____.
16.a continuous flow of steam: Superheater tubes are protected from warping or burning out by ____.
17.a firetube boiler: Because of the large volume of water, the boiler most likely to cause a boiler explosion is ____.
18.a firetube boiler (high or low pressure): Stays and braces are needed to prevent bulging in ____.
19.a hydrostatic test: After a boiler has had major repair work made on its steam or water side or has developed a low water condition, it should be subjected to ____.
20.a large pressure drop: An indication of a dirty fuel oil strainer would be ____ across the strainer.
21.a loss of air for combustion and lower boiler efficiency: If air supplied for combustion mixes with gases of combustion, it could lead to ____.
22.a nonadhering sludge: Chemicals added to the boiler water change the scale-forming salts into ____.
23.a possible furnace explosion: The purpose of a flame failure control is to protect the boiler from ____.
24.a prepurge period: To eliminate the danger of a furnace explosion during startup, the firing sequence must first allow for ____.
25.a secondary means of determining water level in a boiler.: Try cocks are ____.
26.a siphon: The boiler steam-pressure gauge is protected from high temperatures by ____.

27.a spinning cup and high velocity air: The rotary cup burner atomizes fuel oil using ____.
28.a variety of fluids: Flow meters measure the rate of flow of ____.
29.above the feedwater pump(s): The open feedwater heater is located ____.
30.air: The positioning combustion control system used on older boilers cannot function without ____ pressure.
31.air damper, butterfly valve, and modulating motor and linkage: The air-to-gas ratio is maintained by a(n) ____.
32.air or gases to flow: Draft is defined as a difference in pressure that causes ____.
33.allow one strainer to be cleaned without securing the boiler: On the fuel oil system, the purpose of the duplex strainers on the suction line between the tank and fuel oil pump is to ____.
34.ambient temperature: The cold lime-soda process softens the boiler water at ____.
35.American Society of Mechanical Engineers (ASME): Safety valve connections must be approved by the ____.
36.an accumulation of combustible gases: A furnace explosion can be caused by ____.
37.an accumulation test is put on the boiler: If it is necessary to test the relieving capacity of a safety valve, ____.
38.an alkaline detergent solution: New or retubed boilers should be cleaned with ____.
39.anthracite or bituminous coal: The underfeed stoker can burn ____.
40.around the tubes: In a watertube boiler, the heat and gases of combustion pass ____.
41.as an automatic gas shutoff valve: A solenoid valve is a direct-acting valve in the gas system and is used ____.
42.at least 75% of the popping pressure: When testing a safety valve by hand, there must be ____.
43.at the NOWL: Feedwater regulator sensing elements are located ____.
44.atmosphere; inside the boiler setting: Draft in the boiler is measured between two points such as the ____ and ____.
45.B: A fire caused by oil, gas, grease, or paint would be classified as a Class ____ fire.
46.balanced: Draft pressure maintained at a constant pressure is called a ____ draft system.
47.be used for process work and heating: Steam is extracted from the turbine after it has passed through some of the turbine stages to ____
48.before the boiler is cut in on the line: It is good operating procedure to test the safety valve on an incoming boiler by hand ____.
49.before the main safety valves are set to open: Superheater safety valves are set to open ____.
50.between the boiler and the chimney: The induced draft fan is located ____.
51.between the boiler and the slow-opening (screw-type) valve: If a quick-opening valve is used as a bottom blowdown valve, it must be located ____.
52.Bituminous: ____ coal is the type of coal most likely to have problems with spontaneous combustion when being stockpiled.
53.blowdown tanks are used: To protect sewer lines from the high temperature and high pressure coming from the boiler blowdown lines, ____.
54.boiler heating surface: Baffles are designed to direct the gases of combustion so that they come into close contact with the ____.
55.boiler vent: When the steam pressure in the boiler has dropped to 10 psi or 15 psi, the ____ should be opened.
56.boiler water analysis: The most accurate means of deciding the frequency of blowdown of a boiler is determined by a ____.
57.boilers equipped with superheaters: Cyclone separators are used in ____.
58.both forced and induced draft fans: Larger steam boilers that are equipped with air heaters and/or economizers must use ____.

59.both the pilot and the main flame: The purpose of the scanner is to prove ____.
60.both the pilot and the main flame: The scanner must be installed on the front of the boiler to sight ____.
61.both the suction and discharge sides: Duplex strainers are found on ____ of the fuel oil pump.
62.bottom: A high water level condition in the boiler can be corrected by using ____ blowdown.
63.British thermal units: The heating value of a fuel is expressed in ____.
64.butterfly: The volume of gas to the burner in a high pressure gas system is controlled by a ____ valve.
65.by blowing down the low water fuel cutoff or allowing the water level in the boiler to drop: The low water fuel cutoff control can be tested ____.
66.can come in closer contact with the oxygen for complete combustion: Pulverized coal has the consistency of talcum powder so that it ____.
67.carbon: Anthracite coal has a high ____ content.
68.carbon dioxide, carbon monoxide, and oxygen: The Orsat gas analyzer measures the percentage of ____ in the flue gas.
69.Carbon, sulfur, and hydrogen: ____ is a combustible found in fuel.
70.carryover: Small amounts of water that leave the boiler with the steam is called ____.
71.caustic embrittlement: Cracking of the boiler metal along the seams and tube ends is caused by ____.
72.caustic embrittlement: Boiler water having high alkalinity could develop ____.
73.changing the direction of the steam flow: Steam separators work on the principle of ____.
74.check for the correct boiler water level: Regardless of the type of fuel being used, before lighting off a boiler during a cold start-up, the operator must first ____.
75.check valve can be repaired without taking the boiler off-line: The feedwater stop valve on the feedwater line is located closest to the shell of the boiler so that the ____.
76.chief engineer: Plant emergency procedures should be established by the ____.
77.circulate fuel oil during warm-up, return fuel oil that bypasses the burner, and return fuel oil from the relief valve: The purpose of the fuel oil return line is to ____.
78.cleaned on both the fire and water sides: To prepare a boiler for inspection, the boiler must be ____.
79.closed as soon as: The free-blowing drain between the boiler's automatic nonreturn valve and the main steam stop valve should be ____ the boiler is cut in on the line.
80.closed, locked, and tagged.: When a boiler is being inspected, the two main steam stop valves are ____.
81.cold lime-soda, hot lime-soda, and ion exchange: External feedwater treatment conditions the feedwater before it enters the boiler and can be a(n) ____ process.
82.Complete: ____ combustion is when all the fuel is burned using the minimal amount of excess air.
83.complete combustion: Carbon dioxide (CO_2) in the flue gas indicates ____.
84.complete, perfect, incomplete: ____ is a type of combustion.
85.completely dry: If there is a danger of the boiler freezing, the boiler should be layed up ____.
86.condensate: Steam that has lost its heat and has turned back into water is ____.
87.condensation on the gas side of the air heater: If the temperature of air entering the heater gets too low, it will cause ____.
88.confined space permit: Maintenance work performed inside a boiler requires a(n) ____ that contains procedures to prevent possible injury from hazards.
89.continuous blowdowns: Closer control of boiler water chemical concentrations is maintained by ____.

90.control the burner firing cycle: The programmer in the ON/OFF control system is used to ____.
91.cut through the boiler tubes in a very short period of time: Steam impinging on boiler tubes would ____.
92.daily testing of boiler water: The frequency of blowing down a steam boiler is best ascertained by the ____.
93.dangerous to use: Fuel oil with a low flash point would be ____.
94.degree of hardness: Rank refers to the ____ of the coal.
95.degrees Fahrenheit: Most thermometers used in a steam plant are calibrated in ____.
96.desired pressure at the burner: A gas pressure regulator is used to control the ____.
97.diameter of steam piston, diameter of water piston, and length of pump stroke: The sequence of three numbers found on the data plate attached to a reciprocating feedwater pump indicates the ____.
98.difference in temperature of a column of gas inside the chimney from a column of air outside the chimney: Natural draft is produced by a(n) ____.
99.economizers and air heaters: To reduce the heat loss of flue gases going to the chimney, boilers are equipped with ____.
100.either a flame failure or a low water condition: If a boiler that was on-line is down because of low steam pressure, the cause is ____.
101.elements present in the coal: An ultimate analysis of coal provides information regarding ____.
102.expansion bends are used: During normal usage, the boiler main steam line expands and contracts. To allow for this ____.
103.extend the life of the equipment, increase overall plant efficiency, and reduce downtime: Preventive maintenance of boiler room equipment can ____.
104.extra: Locations where painting or dipping is performed are examples of a(n) ____ hazard area.
105.feedwater using gases of combustion: An economizer is used in large boiler plants to heat ____.
106.fire: The temperature at which fuel oil will give off a vapor that burns continuously is its ____ point.
107.firetube: A horizontal return tubular (HRT) boiler is a ____ boiler.
108.firetube: The ____ boiler has a large volume of water in relation to horsepower size.
109.flame scanner: Flame failure controls use a ____.
110.flash: The temperature at which fuel oil will give off a vapor that will ignite readily when exposed to an open flame is its ____ point.
111.float in a tapered tube: The rotameter flow meter consists of a ____.
112.flyash: Solid particles created in the combustion process are called ____.
113.foam or dry chemical: A ____ fire extinguisher is the correct type to use on fuel oil fires.
114.forced or induced: Mechanical draft can be classified as ____.
115.formation of scale, oxygen pitting, and carryover: Boiler water must be conditioned to prevent ____.
116.formation of soot and smoke: Gases of combustion that cool on contact with the boiler heating surface before combustion is completed cause a(n) ____.
117.free-blowing drain should be open: During boiler warm-up, to remove any condensate trapped between the two boiler stop valves the ____.
118.fuel oil, coal, and gas: Mechanical draft is used when burning ____.
119.fuel supply; air supply; ratio of air to fuel; removal of combustion gases: The four elements that must be regulated in a combustion control system are ____.

120.fuel; heat; oxygen: The three ingredients needed to start a fire are ____, ____, and ____.
121.gas company representative: Gas leaks should be located and repaired by a ____.
122.gauge pressure plus atmospheric pressure: Absolute pressure is equal to ____.
123.give an overall view of the steam plant operation: Recorders are used to ____.
124.greater than: Pressure at the discharge side of a forced draft fan is ____ atmospheric pressure.
125.hand firing was inefficient in larger-sized boilers: Coal stokers were developed because ____.
126.have a fairly constant steam load: Air heaters can most successfully be used in plants that ____.
127.heat energy: Burning a fuel releases ____.
128.heating surface: The part of a boiler that has the heat and gases of combustion on one side and water on the other side is known as the ____.
129.heating the feedwater and using sodium sulfite: Oxygen present in the boiler water is removed by ____.
130.height of the chimney: The amount of draft available in a natural draft system is dependent on the ____.
131.high ceilings, less floor space, and the use of staybolts: Vertical firetube boilers require ____.
132.high pressure: Air is mixed inside of the burner register in a(n) ____ gas system.
133.high temperature of steam: A siphon protects the steam pressure gauge from ____.
134.highest part of the steam side: The boiler steam-pressure gauge must be connected to the ____of the boiler.
135.highest part of the steam side of the boiler: The boiler vent is located at the ____.
136.highest part of the steam side of the boiler: The modulating pressure control must be connected to the ____.
137.highest part of the steam side of the boiler: the ON/OFF pressure control must be connected to the ____.
138.highest part of the steam side of the drum: To ensure that moisture-free steam goes to the soot blower, the steam line to the soot blower must come off the ____
139.hopper: The thickness of the fuel bed on a chain grate stoker is regulated by a coal ____.
140.hourly readings of all pertinent steam plant data: The operator in charge of a shift must maintain a boiler room log that indicates ____.
141.improper boiler water treatment: Scale buildup on the water side of a steam boiler is caused by ____.
142.impurities that float on the surface of the water: Surface tension on the water in the steam and water drum is increased by ____.
143.in a vertical position: A mercury-tube pressure control will only be accurate when it is installed ____.
144.in high or low pressure plants: A firetube boiler may be used ____.
145.in suspension: Pulverized coal burns ____.
146.in suspension and on grates: Spreader stokers burn coal ____.
147.in the open deaerator feedwater heater: Oxygen and other noncondensable gases are separated form the feedwater ____.
148.inches of water: A diaphragm draft gauge is calibrated in ____.
149.inches or tenths of an inch of a vertical water column: Draft is measured in ____.
150.incomplete: Soot and smoke are the result of ____ combustion.
151.incomplete combustion: Carbon monoxide (CO) in the flue gas indicates ____.
152.increase the rate of combustion: When using mechanical draft, it is possible to ____.
153.indicate gallons of fuel oil in the tank: The pneumercator is used to ____.

154.induced: A(n) ____ draft fan must be used to overcome resistance caused by gases of combustion leaving the boiler when an economizer is used.
155.induced: A draft fan located between the boiler and chimney is used in a(n) ____ draft system.
156.induced draft fan: Gases of combustion are pulled from the boiler by the ____.
157.infrared or ultraviolet rays: The flame sensor is sensitive to ____.
158.inlet damper, fan intake vanes, and the fan speed: Combustion air is controlled by ____.
159.installed as close to the shell of the boiler as practical on the main steam line: The ASME code will allow an automatic nonreturn valve to be used as a main steam stop valve. If one is used it must be ____.
160.is converted into pressure: The theory of operation of a centrifugal pump is that the centrifugal force of a rotating element ____.
161.is lowered: When the temperature of fuel oil is raised, its viscosity ____.
162.its corresponding temperature and pressure: Saturated steam is steam at ____.
163.keeping the superheater drain valve open until the boiler is cut in on the line: Boilers equipped with a superheater must be protected during warmup by ____.
164.layed up either wet or dry: Boilers that are out of service for an extended period of time can be ____.
165.live steam and air: In both steam and air atomizing burners, atomization is accomplished by ____.
166.maintain a consistent water level in the boiler: The purpose of a feedwater regulator is to ____.
167.maintain a water level in the feedwater heater if there are insufficient condensate returns: The automatic city water makeup valve found on an open feedwater heater is used to ____.
168.manual reset valve: In a low pressure gas burner, a ____ shuts off the gas supply if a low water condition exists.
169.mercury below: Vacuum gauges are calibrated in inches of ____atmospheric pressure.
170.Mercury-tube: The most common type of pressure control used is the ____type.
171.moisture content, content of volatile matter, and fixed carbon and ash content: A proximate analysis of coal provides information regarding its ____.
172.more Btu per gallon than: Higher numbered fuel oils produce ____ lower numbered fuel oils.
173.more flexible operation: Boilers are equipped with a combination gas/fuel oil burner for ____.
174.more heat energy, thus producing more work: When steam is superheated it has ____.
175.move up while the air goes down: The convection air heater employs a counterflow principle in which the gases of combustion ____.
176.mud drum: Bottom blowdown lines on a watertube boiler are located on the ____.
177.natural: The oldest form of draft used in a boiler is ____ draft.
178.NOWL: As the boiler is cooling down, the boiler operator must maintain the ____.
179.offer no restriction to the flow of steam: The main steam stop valves should be gate valves because they ____.
180.on the discharge side of: Fuel oil heaters must be protected from excessive fuel oil pressure because they are located ____ the fuel pumps.
181.once a shift: The water column and gauge glass should usually be blown down ____.
182.once a shift: The low water fuel cutoff control should be blown down ____.
183.One boiler horsepower: The evaporation of 34.5 lb of water/hr from and at a feedwater temperature of 212°F
184.one lb of water: In order to produce one pound of steam, it is necessary to evaporate ____.
185.one steam and one electric feedwater: A safe and efficient boiler plant should include ____ pump(s).

186.open or closed: Centrifugal feedwater pumps can be started with their discharge valves ____.
187.opened first and closed last: When blowing down a boiler equipped with a quick-opening valve and a screw-type valve, the quick-opening valve is ____.
188.Os&y gate: Main boiler stop valves must be ____ valves.
189.outlet dampers: The gases of combustion leaving a boiler that has natural draft are controlled by ____.
190.oxygen pitting in the boiler: Water temperature that is too low in the open feedwater heater could cause ____.
191.passed through tubes to cause steam to condense, causing a vacuum: A surface condenser has water ____.
192.Perfect: ____ combustion is when all fuel is burned using only the theoretical amount of air supplied.
193.person involved: Reporting accidents is the responsibility of the ____.
194.pitting of boiler metal: Oxygen in the boiler will cause ____.
195.pneumercator: Liquids in a tank may be measured from a remote location using a ____.
196.pop open: Safety valves are designed to ____.
197.positive displacement pump: A turbine feedwater pump differs from a centrifugal feedwater pump in that it is a ____.
198.postpurging: The blower motor control continues to operate after fuel is shut off the burner during ____.
199.pounds of steam per hour capable of discharging under a given pressure: The relieving capacity of a safety valve is measured in ____.
200.pounds per square inch: A steam pressure gauge is calibrated in ____.
201.pour: The lowest temperature at which fuel oil will flow is its ____ point.
202.power-driven fans: Mechanical draft is produced by the ____.
203.pressure buildup, which would cause an oil spill: A clogged vent line on a fuel oil tank being filled with fuel oil could result in a ____.
204.prevent the boiler from exceeding its MAWP: A safety valve will ____.
205.primary: Air that controls the rate of combustion is ____ air.
206.promote safe and efficient operation: Modern steam plants use instrumentation to ____.
207.protect workers and equipment: The primary purpose of establishing a set of plant safety rules is to ____.
208.pump and the discharge valve: A reciprocating feedwater pump must have a safety relief valve located between the ____.
209.purging the furnace: After establishing the proper boiler water level, the burner may be lit after ____.
210.qualified person who is familiar with the contruction and operation of a safety valve: The setting or adjusting of a safety valve should only be done by the ____.
211.reduce turbulence in the gauge glass to get a more accurate reading of the water level in the boiler: The main purpose of a water column is to ____.
212.reduces back pressure and steam flow rate: The vacuum on the exhaust side of the turbine ____.
213.regulate the high and low firing rates of the burner: The purpose of the boiler modulating pressure control is to ____.
214.removed from boiler tubes for better heat transfer: Soot should be ____.
215.rotameter; valve: The types of variable-area flow meters are ____ and ____.
216.rotating, high pressure oil coming out of the plug or sprayer plate: In a pressure atomizing burner, atomization is accomplished by ____.

217.safe and efficient boiler operation: The primary function of a combustion control is to ensure ____.
218.safety and efficiency: Boiler fittings are necessary for ____.
219.safety relief valve must be installed on the discharge line: To protect the turbine pump from excessive pressure, a(n) ____.
220.safety valve: To prevent failure from pressure over the MAWP, all steam boilers must be equipped with at least one ____.
221.safety valve: The most important fitting on a boiler is the ____.
222.safety valve manufacturer or manufacturer's authorized representative: Any repairs to a safety valve should be done by the ____.
223.scale: Deposits of calcium and magnesium carbonates on the boiler heating surface cause ____.
224.scale formation on the tubes: A direct cause of overheating of the boiler tubes is ____.
225.secondary: Air supplied to the burner that is more than the theoretical amount needed to burn fuel is ____ air.
226.secure the fuel, purge the firebox, and then shut down: In the event of a flame failure, the programmer will ____.
227.set the operating steam pressure range of the boiler: The two scales found on the boiler pressure control are used to ____.
228.shuts off the fuel supply: A low water fuel cutoff ____.
229.signs of sludge and water are evident in the tank: A high suction line on a fuel oil tank is used when ____.
230.size, heating value, and ash content: Grade refers to the ____ of the coal.
231.slightly lower than: When cutting a boiler in on a line equipped with two hand-operated steam stop valves, the pressure on the boiler should be ____ line pressure.
232.slightly lower than line pressure: When the boiler is equipped with hand-operated, main steam stop valves, to cut the boiler in on the line, the steam pressure on the incoming boiler should be ____.
233.small package, firetube, and watertube boilers: The ON/OFF control system is usually found on ____.
234.smoke density: Light and a photoelectric cell are sometimes used to indicate ____.
235.smoke density: A Ringelmann chart is used to determine ____.
236.solids, gases, and other pollutants from industrial waste.: Natural water may contain ____.
237.soot: To ensure high heat transfer rates, ____ should be removed from boiler heating surfaces.
238.square inch: Pressure gauges are calibrated in pounds per ____.
239.start and stop the burner on steam pressure demand: The purpose of the boiler pressure control found in the ON/OFF control system is to ____
240.stays: The steam and water drum of watertube boilers is dished (concave) to eliminate the need for ____.
241.steam: A steam siphon ensures that ____ does not enter the boiler pressure control.
242.steam: Superheaters are prevented from overheating by the circulation of ____.
243.steam flow and pressure: The metering combustion control system is sensitive to changes in ____.
244.steam header pressure: The positioning combustion control system is sensitive to changes in the ____.
245.steam, feedwater, fuel, and draft: The four systems required to operate a steam boiler are ____.

246.stop: On the feedwater line near the boiler is a check valve and a stop valve. The valve closest to the shell of the boiler is the ____ valve.
247.superheated steam, gases of combustion, and condensate return: A ____ reading can be read using a thermocouple.
248.supply air for combustion: Blowers are used in a high pressure gas system to ____.
249.suspension: Pulverized coal is burned in ____ in the furnace.
250.temperature: As steam pressure in a boiler increases, there is a corresponding increase in the ____.
251.temperature: Thermocouples measure ____.
252.temperature increases with no increase in pressure: When steam is superheated the ____.
253.tensile: Boiler plates and staybolts are subjected to ____ stress.
254.test the low water fuel cutoff control, inspect and check running auxiliaries for proper lubrication, and check the burner and the fire for correct flame, including the fuel temperature and pressure: The duties of a boiler operator taking over a shift are to ____.
255.the boiler operator cannot always see the chimney to observe smoking conditions: Smoke indicators are often essential because ____.
256.the feedwater pump to become steambound: Water temperature that is too high in the open feedwater heater could cause ____.
257.the immediate superior: When someone finds an unsafe condition in a plant, that person should report it to ____.
258.the use of bypass dampers: Both air and flue gas temperatures are controlled by ____.
259.the water level on all boilers that are on the line by blowing down the water column and gauge glass: When taking over a shift, the boiler operator must first check ____.
260.there is 10 to 15 psi of steam pressure on the boiler: The boiler vent is open when warming up a boiler until ____.
261.thermal: The comparison, or ratio, of heat supplied in fuel to heat absorbed by water is defined as ____ efficiency.
262.thoroughly examined for signs of overheating: A boiler that has experienced a low water condition should be ____.
263.through the tubes: In a firetube boiler, the heat and gases of combustion pass ____.
264.to take and read the readings for remote plants centrally: A primary reason for using thermocouples for measuring temperatures is ____.
265.to the feedwater pump: Water from an open deaerating feedwater heater flows ____.
266.two bottom blowdown valves: According to the ASME code, boilers operating at 100 psi or over must have ____.
267.two main steam stop valves: Boilers in battery equipped with manhole openings must have ____ according to the ASME code.
268.ultimate analysis is used: In order to determine the heating value of coal in Btu per pound, the ____.
269.under and over the fuel bed: To achieve complete combustion in a spreader stoker, air is introduced ____.
270.upper part of the steam and water drum: The dry pipe is located in the ____.
271.using soot blowers: Air heaters must be cleaned to ensure good heat transfer by ____.
272.using the try cocks: When replacing a broken gauge glass, the water level is checked by ____.
273.Venturi effect: The amount of gas drawn into the air stream in a low pressure gas system is controlled by the ____.
274.venturi, orifice plate, and flow nozzle: The differential-pressure flow meter functions by receiving a difference of pressure across a(n) ____.

275.volatile: Bituminous coal has a high ____ content.
276.volume of air passing through the venturi tube: On a boiler burning low pressure gas, the volume (amount) of gas burned is controlled by the ____.
277.warm air is used: To prevent caking and to dry the coal entering the pulverizer, ____.
278.warmed up slowly: In order to prevent uneven expansion of the boiler on a cold startup, the boiler must be ____.
279.warn the operator of high or low water: A whistle valve is used to ____.
280.warns the operator of high or low water: The whistle valve, which is located in the boiler water column, ____.
281.water: Priming is dangerous and could lead to ____ hammer.
282.watertube: The mud drum is the lowest part of the water side of a(n) ____ boiler.
283.watertube: The ____ boiler was developed to provide steam at higher pressures.
284.watertube boilers: Soot blowers are mainly found on ____.
285.waterwalls: To increase the life of a furnace refractory, some watertube boilers are equipped with ____.
286.when both superheated and saturated steam are needed, with a pressure-reducing station, and with feedwater addition to desuperheat the steam: A line desuperheater is typically used ____.
287.year: The ASME code recommends that boilers be inspected internally and externally every ____.