



Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

1. The human body gives off heat by which of the following?
 - a. convection
 - b. radiation
 - c. conduction
 - d. all of the above

2. How many Btu's are required to change five pounds of ice at 20°F to steam at 220°F?
 - a. 1,304 Btu/h
 - b. 2,608 Btu/h
 - c. 6,520 Btu/h
 - d. 3,912 Btu/h

3. Which of the following represents a different temperature than the other three?
 - a. 15°C
 - b. 59°F
 - c. 475°K
 - d. 519°R

4. Temperature is an indication of the _____.
 - a. amount of heat in a material
 - b. density of the material
 - c. amount of molecular activity in the material
 - d. weight of the total mass of the material



5. The standard atmospheric pressure at sea level is ____.
 - a. 29.60" Hg
 - b. 29.71" Hg
 - c. 29.83" Hg
 - d. 29.92" Hg

6. The temperature on the Fahrenheit scale where all molecular biology activity stops is ____.
 - a. -450°F
 - b. -460°F
 - c. -0°F
 - d. -462.95°F

7. As the temperature of a material increases, the molecules in the material ____.
 - a. travel farther
 - b. travel faster
 - c. slow down
 - d. travel in more of a parallel direction

8. PSIG indicates ____.
 - a. pounds per square inch absolute gravity
 - b. pounds per square inch absolute gage
 - c. pounds per square inch of pressure absolute
 - d. pounds per square inch of gravity



9. A Bourdon tube is often found in a ____.
 - a. mercury barometer
 - b. aneroid barometer
 - c. pressure gauge
 - d. mercury thermometer

10. At a constant pressure, the volume of a gas varies as to the absolute temperature and at a constant volume the pressure of the gas varies directly with the absolute temperature. This is known as ____.
 - a. Charles' Law
 - b. Tom's Law
 - c. Boyle's Law
 - d. Dalton's Law

11. The total pressure of a confined mixture of gases is the sum of the pressures of each of the gases in the mixture. This is known as ____.
 - a. Charles' Law
 - b. Tom's Law
 - c. Boyle's Law
 - d. Dalton's Law

12. How many watts of electrical power are equal to 1 horsepower?
 - a. 33000
 - b. 15000
 - c. 746
 - d. 660



13. A helicopter is lifting an 800-pound unit at a rate of 200 feet per minute. How many horsepower of work energy is the helicopter using in the process?
- a. 3.863 hp
 - b. 4.517 hp
 - c. 4.848 hp
 - d. 5.209 hp
14. A liquid material exerts a pressure or force ____.
- a. in all directions
 - b. downward only
 - c. outward and downward
 - d. outward only
15. If there is too much primary air, the gas flame can ____.
- a. get blown out
 - b. "liff" off the burner rack
 - c. make noise
 - d. both b and c
16. The orifice is a precisely sized hole in the ____.
- a. manifold
 - b. spud
 - c. burner tube
 - d. combustion chamber



17. In a conventional gas furnace, the hot flue gases are ____.
- a. forced out a PVC vent with a blower
 - b. recycled through a secondary heat exchanger and then vented through a draft diverter
 - c. forced through a type B vent by a blower
 - d. vented by natural convection
18. A direct-spark ignition (DSI) system is designed to ____.
- a. ignite the pilot after a pilot outage
 - b. ignite the pilot when the thermostat calls for heat
 - c. ignite the main burner
 - d. prove the pilot flame
19. The number engraved on the nozzle indicates ____.
- a. how many gallons of air per hour the nozzle will deliver regardless of input pressure
 - b. how many foot pounds of pressure must be used to properly tighten the nozzle
 - c. how many gallons of oil per hour the nozzle will deliver at a given input pressure
 - d. the stock number of the part
20. The grade of fuel used in residential and light commercial units is ____.
- a. No. 1
 - b. No. 2
 - c. No. 4
 - d. No. 6



21. The stack switch or stack relay ____.
- a. starts the fan motor when the thermostat calls for heat
 - b. shuts down the burner if it does not sense heat in the flue products
 - c. cuts off the ignition after the flame has been established
 - d. all of the above
22. The reason for using zone valves on a hydronic heating system is to ____.
- a. allow different areas of the structure to maintain different temperatures
 - b. reduce the chance of a water leak
 - c. prevent unused parts of the house from getting warm, and wasting energy
 - d. both a and c
23. A series loop hydronic system is not desirable for use in a large residence because ____.
- a. all of the heated water will flow to all rooms
 - b. some rooms will overheat before other rooms are warm
 - c. they are extremely noisy
 - d. both a and b
24. In a series loop hydronic heating piping system, ____.
- a. the heated water flows in the same direction in parallel pipes
 - b. the heated water flows in the opposite direction in parallel pipes
 - c. part of the heated water is directed to each terminal unit
 - d. all the heated water flows through all the terminal units



25. A 10 Kw heating element, operating on rated 240 V, will have a Btu/h output of ____.
- a. 29,319
 - b. 31,062
 - c. 34,130
 - d. 35,875



Answers

MULTIPLE CHOICE

1. D
2. C
3. C
4. C
5. D
6. B
7. B
8. B
9. C
10. A
11. D
12. C
13. C
14. C
15. D
16. B
17. D
18. C
19. C
20. B
21. B
22. D
23. A
24. D
25. C