Name:_____ Class:_____ Date:_____

Unit 2 - Matter and Energy

Refrigeration and Air Conditioning Technology

1. A solid material exerts a pressure or force ____.
   a. in all directions b. downward only
   c. outward and downward d. outward only

ANSWER: b
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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2. A liquid material exerts a pressure or force ____.
   a. in all directions b. downward only
   c. outward and downward d. outward only

ANSWER: c
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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3. A vapor material exerts a pressure or force ____.
   a. in all directions b. downward only
   c. outward and downward d. outward only

ANSWER: a
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
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4. If the temperature remains constant and the volume that a gas occupies increases, the pressure will ____.
   a. decrease
   b. increase
   c. remain the same
   d. cannot be determined from the information given

ANSWER: a
POINTS: 1
REFERENCES: Gas Laws
QUESTION TYPE: Multiple Choice

Unit 2 - Matter and Energy
Refrigeration and Air Conditioning Technology

HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

5. The volume of gas varies inversely with the absolute pressure, provided the temperature remains constant. This is called ____.

a. Charles' Law b. Tom's Law
c. Boyle's Law d. Dalton's Law

ANSWER: c
POINTS: 1
REFERENCES: Gas Laws
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 11:27 AM

6. 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

ANSWER: a
POINTS: 1
REFERENCES: Gas Laws
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 11:28 AM

7. 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

ANSWER: d
POINTS: 1
REFERENCES: Gas Laws
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 11:28 AM

8. 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.
ANSWER: c
POINTS: 1
REFERENCES: Power
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 3:48 PM

9. The unit used to measure electrical power is the ____.
a. volt b. ampere
c. watt d. ohm
ANSWER: c
POINTS: 1
REFERENCES: Electrical Power
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 11:30 AM

10. One watt of electrical energy is equal to ____.
a. 3.1416 Btu/h b. 3.413 Btu/h
c. 3.3416 Btu/h d. 3.3146 Btu/h
ANSWER: b
POINTS: 1
REFERENCES: Electrical Power
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 11:31 AM

11. How many watts of electrical power are equal to 1 horsepower?
a. 33000. b. 15000.
c. 746. d. 660.
ANSWER: c
POINTS: 1
REFERENCES: Electrical Power
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/19/2015 3:49 PM

12. Specific volume is the term used to indicate the space a weight of gas will occupy.
    a. True
    b. False

ANSWER: True
POINTS: 1
REFERENCES: Specific Volume
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

13. As heat is applied to a closed container containing a gas, the pressure inside the container will decrease.
    a. True
    b. False

ANSWER: False
POINTS: 1
REFERENCES: Gas Laws
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

14. An example of a fossil fuel is hydrogen.
    a. True
    b. False

ANSWER: False
POINTS: 1
REFERENCES: Conservation of Energy
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

15. A law of conservation of energy states that energy is neither created nor destroyed.
    a. True
    b. False

ANSWER: True
POINTS: 1
REFERENCES: Conservation of Energy
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM

DATE MODIFIED: 3/12/2015 12:21 PM

16. Heat is a form of energy because of the motion of molecules.

a. True
b. False

ANSWER: True
POINTS: 1
REFERENCES: Energy Contained in Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

17. A material that occupies space and has mass is called _____.

ANSWER: matter
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

18. Matter exists in three states: _____, _____, and _____.

ANSWER: solid, liquid, gas
solid, gas, liquid
gas, liquid, solid
gas, solid, liquid
liquid, gas, solid
liquid, solid, gas
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 6:52 PM

19. The law that states that "energy is neither created or destroyed, but can be converted from one form to another" is called the _____.

ANSWER: law of conservation of energy
POINTS: 1
REFERENCES: Conservation of Energy
QUESTION TYPE: Completion
HAS VARIABLES: False

Unit 2 - Matter and Energy
Refrigeration and Air Conditioning Technology

DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/21/2015 4:26 PM

20. Most of the energy we use comes from something we already have on Earth. The only "new" energy we get comes from the _____.
ANSWER: sun
POINTS: 1
REFERENCES: Conservation of Energy
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

21. _____ ft-lb of work is accomplished when an 800-lb condensing unit is lifted to the top of a 40-ft building.
ANSWER: 32,000
32000
Thirty two thousand
POINTS: 1
REFERENCES: Energy Used as Work
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 6:53 PM

22. One horsepower of work energy equals the amount of work done when lifting _____ pounds to the height of _____ foot in _____ minute.
ANSWER: 33,000, 1, 1
33000, 1, 1
Thirty three thousand, one, one
POINTS: 1
REFERENCES: Power
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 6:55 PM

23. The unit of measurement of electrical power is the _____.
ANSWER: watt
watt (W)
POINTS: 1
REFERENCES: Electrical Power-The Watt
QUESTION TYPE: Completion
HAS VARIABLES: False

Unit 2 - Matter and Energy
Refrigeration and Air Conditioning Technology

DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 6:59 PM

24. One pound of ice at 20°F exerts its force downward. After absorbing 200 Btus, what direction(s) will the force be exerted? After absorbing 2000 Btus?
ANSWER: In the first case, force is exerted outward and downward; in the second, in all directions.
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

25. Define an atom.
ANSWER: An atom is the smallest part of a material.
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

26. Define a molecule.
ANSWER: A molecule consists of atoms and cannot be broken down further without changing the chemical composition of the substance.
POINTS: 1
REFERENCES: Matter
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

27. Define density.
ANSWER: The mass to volume relationship of a material.
POINTS: 1
REFERENCES: Density
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

28. Define specific gravity.
ANSWER: The ratio of the density of a cubic foot of a material as compared to a cubic foot of water in liquid

form.
POINTS: 1
REFERENCES: Specific Gravity
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

29. Define specific volume.
ANSWER: The volume in cubic feet that a one pound quantity of vapor will occupy.
POINTS: 1
REFERENCES: Specific Volume
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 7:00 PM

30. Define power.
ANSWER: The rate of doing work.
POINTS: 1
REFERENCES: Power
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 3/12/2015 12:21 PM

Match the gas law with its properties.
a. Boyle’s law
b. Charles' law
c. Dalton's law
REFERENCES: Gas Laws
QUESTION TYPE: Matching
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 7:02 PM

31. V1 / T1 = V2 / T2
ANSWER: b
POINTS: 1

32. PTOTAL = PSUBSTANCE 1 + PSUBSTANCE 2
ANSWER: c
POINTS: 1

33. P1 × V1 = P2 × V2
ANSWER: a
POINTS: 1

Match the following terms with their proper units and/or formulas.
a. Specific volume
b. hp
c. Specific gravity
d. Density
e. 1 kW
f. Work

REFERENCES: Energy Used as Work
Electrical Power-The Watt
Specific Volume
Specific Gravity
Power
Density
QUESTION TYPE: Matching
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
DATE MODIFIED: 12/11/2015 7:06 PM

34. Force × Distance
ANSWER: f
POINTS: 1

35. 3413 Btu/h
ANSWER: e
POINTS: 1

36. ft3/lb
ANSWER: a
POINTS: 1

37. No units
ANSWER: c
POINTS: 1

38. 33,000 ft-lb/min
ANSWER: b
POINTS: 1

39. lb/ft3
ANSWER: d

Name:_____ Class:_____ Date:_____

Unit 2 - Matter and Energy
Refrigeration and Air Conditioning Technology

POINTS: 1