

Name _____

[/test-bank-refrigeration-and-air-conditioning-technology-8e-tom-dayk](#)

Chapter _____

Date _____

Unit 1 - Heat, Temperature, and Pressure

Refrigeration and Air Conditioning Technology

1. Which of the following represents a different temperature than the other three?

- a. 15°C
- b. 59°F
- c. 475°K
- d. 519°R

ANSWER:

c

POINTS:

1

REFERENCES:

Temperature

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

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2. Of the following choices, the warmest temperature is ____.

- a. 20°C
- b. 303°K
- c. 501°R
- d. 77°F

ANSWER:

b

POINTS:

1

REFERENCES:

Temperature

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

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3. Temperature can be thought of as ____.

- a. the amount of heat in a material
- b. the density of the material
- c. a description of the level of heat
- d. the weight of the total mass of the material

ANSWER:

c

POINTS:

1

REFERENCES:

Temperature

QUESTION TYPE:

Multiple Choice

HAS VARIABLES:

False

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4. At standard conditions on the Celsius scale, water will boil at ____.

- a. 100°C
- b. 212°C
- c. 32°C
- d. 0°C

ANSWER:

a

POINTS:

1

REFERENCES:

Temperature

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QUESTION TYPE: Multiple Choice
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5. Pure water boils at a temperature of 212°F at which of the following standard conditions?

- a. 12.696 psia
- b. 13.696 psia
- c. 14.696 psia
- d. 15.696 psia

ANSWER: c
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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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

ANSWER: b
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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7. The temperature on the Celsius scale where all molecular activity stops is ____.

- a. -273°C
- b. -293°C
- c. -460°C
- d. -459.6°C

ANSWER: a
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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8. As the temperature of a material increases, the molecules in the material ____.

- a. stop moving
- b. travel faster

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- c. slow down
- d. travel in more of a parallel direction

ANSWER: b
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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9. The Celsius equivalent of 80°F is ____.

- a. 25.5°C
- b. 26.7°C
- c. 26.3°C
- d. 27.5°C

ANSWER: b
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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10. How many Btus are required to change one pound of ice at 20°F to steam at 220°F?

- a. 1,304 Btu
- b. 2,608 Btu
- c. 6,520 Btu
- d. 3,912 Btu

ANSWER: a
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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11. How many Btus are required to change five pounds of ice at 20°F to steam at 220°F?

- a. 1,304 Btu
- b. 2,608 Btu
- c. 6,520 Btu
- d. 3,912 Btu

ANSWER: c
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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12. How many Btus must be removed from one pound of water at 200°F for it to end up as ice at 30°F?

- a. 144 Btu
- b. 828 Btu
- c. 313 Btu
- d. 526 Btu

ANSWER: c
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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13. The amount of heat needed to change the temperature of a substance will vary with the type of substance. This heat quality is called the ____ of the substance.

- a. sensible heat
- b. specific heat
- c. latent heat
- d. relative heat

ANSWER: b
POINTS: 1
REFERENCES: Specific Heat
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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14. The standard atmospheric pressure at sea level is ____.

- a. 29.60 in. Hg
- b. 29.71 in. Hg
- c. 29.83 in. Hg
- d. 29.92 in. Hg

ANSWER: d
POINTS: 1
REFERENCES: Atmospheric Pressure
QUESTION TYPE: Multiple Choice
HAS VARIABLES: False
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15. PSIG indicates ____.

- a. pounds per square inch gravity pressure
- b. pounds per square inch gauge pressure
- c. pounds per square inch of pressure absolute
- d. pounds per square inch of gravity

ANSWER: b

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POINTS: 1
 REFERENCES: Pressure Gauges
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: False
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16. A Bourdon tube is often found in a(n) ____.

- | | |
|----------------------|------------------------|
| a. mercury barometer | b. aneroid barometer |
| c. pressure gauge | d. mercury thermometer |

ANSWER: c
 POINTS: 1
 REFERENCES: Pressure Gauges
 QUESTION TYPE: Multiple Choice
 HAS VARIABLES: False
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17. Water boils at 212°C.

- | | |
|----|-------|
| a. | True |
| b. | False |

ANSWER: False
 POINTS: 1
 REFERENCES: Temperature
 QUESTION TYPE: True / False
 HAS VARIABLES: False
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18. Water at 0°F has no heat energy or molecular activity.

- | | |
|----|-------|
| a. | True |
| b. | False |

ANSWER: False
 POINTS: 1
 REFERENCES: Temperature
 QUESTION TYPE: True / False
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19. The Fahrenheit scale is used in the English measurement system by the United States.

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- a. True
b. False

ANSWER: True
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: True / False
HAS VARIABLES: False
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20. Temperature difference does not affect heat transfer rate.

- a. True
b. False

ANSWER: False
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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21. The difference in the volume of two substances will determine the heat transfer rate between the substances.

- a. True
b. False

ANSWER: False
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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22. The difference in the level of heat between two substances will determine the heat transfer rate between the substances.

- a. True
b. False

ANSWER: True
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: True / False
HAS VARIABLES: False

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23. The laws of thermodynamics can help us to understand what heat is all about.

- a. True
- b. False

ANSWER: True
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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24. Both sensible heat and latent heat transfers can be read with a thermometer.

- a. True
- b. False

ANSWER: False
POINTS: 1
REFERENCES: Sensible Heat
Latent Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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25. In order for water at 60°F to boil, it must absorb both sensible and latent heat.

- a. True
- b. False

ANSWER: True
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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26. When water at 212°F boils, it is only absorbing latent heat.

- a. True
- b. False

ANSWER: True
POINTS: 1

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REFERENCES: Latent Heat
QUESTION TYPE: True / False
HAS VARIABLES: False
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27. The two common temperature scales used by air conditioning and refrigeration technicians are called _____ and _____.

ANSWER: Fahrenheit, Celsius
Celsius, Fahrenheit
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Completion
HAS VARIABLES: False
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28. The Fahrenheit absolute scale is called the _____ scale.

ANSWER: Rankine
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Completion
HAS VARIABLES: False
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29. The Celsius absolute scale is called the _____ scale.

ANSWER: Kelvin
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Completion
HAS VARIABLES: False
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30. PSIA at sea level under standard conditions is _____.

ANSWER: 14.696 psi
POINTS: 1
REFERENCES: Temperature
QUESTION TYPE: Completion
HAS VARIABLES: False
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31. Heat that changes the temperature of a substance is called _____ heat.

ANSWER: sensible
POINTS: 1
REFERENCES: Sensible Heat
QUESTION TYPE: Completion
HAS VARIABLES: False
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32. In _____ heat or hidden heat, heat is known to be added, but no temperature rise is noticed.

ANSWER: latent
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: Completion
HAS VARIABLES: False
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33. Raising the vapor temperature above the boiling point is called _____.

ANSWER: superheating
POINTS: 1
REFERENCES: Latent Heat
QUESTION TYPE: Completion
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
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34. Earth's atmosphere exerts a weight or pressure of _____ psi at sea level.

ANSWER: 14.696
POINTS: 1
REFERENCES: Atmospheric Pressure
QUESTION TYPE: Completion
HAS VARIABLES: False
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35. Atmospheric pressure in inches of mercury (in. Hg) decreases _____ in. per 1000 feet increase in elevation.

ANSWER: 1
one

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POINTS: 1
REFERENCES: Atmospheric Pressure
QUESTION TYPE: Completion
HAS VARIABLES: False
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36. A gauge that reads pressures above and below atmospheric pressure is known as _____ gauge.

ANSWER: compound
POINTS: 1
REFERENCES: Pressure Gauges
QUESTION TYPE: Completion
HAS VARIABLES: False
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37. Define a Btu.

ANSWER: The amount of heat required to raise the temperature of 1 pound (lb) of water 1°F.
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
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38. What does the first law of thermodynamics state?

ANSWER: The first law of thermodynamics states that energy can be neither created nor destroyed, but can be converted from one form to another.
POINTS: 1
REFERENCES: Introduction to Heat
QUESTION TYPE: Subjective Short Answer
HAS VARIABLES: False
DATE CREATED: 3/12/2015 12:21 PM
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39. Explain heat transfer by conduction.

ANSWER: Heat transfer by conduction can be explained as the energy actually traveling from one molecule to another.
POINTS: 1
REFERENCES: Conduction
QUESTION TYPE: Subjective Short Answer

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HAS VARIABLES: False

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40. What are the most common fluid mediums in the heating and air-conditioning trades?

ANSWER: The most common fluid mediums in the heating and air-conditioning trades are air and water.

POINTS: 1

REFERENCES: Convection

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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41. Why is radiation the only type of heat transfer that can travel through a vacuum, such as space?

ANSWER: Because it is not dependent on matter as a medium of heat transfer.

POINTS: 1

REFERENCES: Radiation

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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42. What is the difference between a mercury barometer and an aneroid barometer?

ANSWER: The mercury barometer compares atmospheric pressure against the weight of a mercury column. The aneroid barometer compares atmospheric pressure against pressure inside closed bellows.

POINTS: 1

REFERENCES: Atmospheric Pressure

QUESTION TYPE: Subjective Short Answer

HAS VARIABLES: False

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Match the temperature in degrees Celsius with the correct equivalent Fahrenheit temperature.

a. 32°F

b. 1.4°F

c. 212°F

d. 50°F

e. -49°F

f. 77°F

REFERENCES: Temperature

QUESTION TYPE: Matching

HAS VARIABLES: False

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43. 100°C	
ANSWER:	c
POINTS:	1
44. 0°C	
ANSWER:	a
POINTS:	1
45. 25°C	
ANSWER:	f
POINTS:	1
46. -45°C	
ANSWER:	e
POINTS:	1
47. 10°C	
ANSWER:	d
POINTS:	1
48. -17°C	
ANSWER:	b
POINTS:	1

Match the temperature in degrees Fahrenheit with the correct equivalent Celsius temperature.

- a. 35°C
- b. -10°C
- c. 200°C
- d. 80°C
- e. 15°C
- f. 50°C

REFERENCES: Temperature
QUESTION TYPE: Matching
HAS VARIABLES: False
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49. 392°F	
ANSWER:	c
POINTS:	1

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50. 59°F

ANSWER:

e

POINTS:

1

51. 122°F

ANSWER:

f

POINTS:

1

52. 14°F

ANSWER:

b

POINTS:

1

53. 95°F

ANSWER:

a

POINTS:

1

54. 176°F

ANSWER:

d

POINTS:

1

Match the pressures in psia to the correct equivalent. (Use 15 as the conversion between psia and psig.)

- a. 5 psig
- b. 30 in. Hg vacuum
- c. 70 psig
- d. 10 psig
- e. 10 in. Hg vacuum
- f. 14 in. Hg vacuum

REFERENCES:

Pressure Gauges

QUESTION TYPE:

Matching

HAS VARIABLES:

False

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55. 10 psia

ANSWER:

e

POINTS:

1

56. 85 psia

ANSWER:

c

POINTS:

1

57. 8 psia

ANSWER:

f

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POINTS: 1

58. 0 psia

ANSWER: b

POINTS: 1

59. 20 psia

ANSWER: a

POINTS: 1

60. 25 psia

ANSWER: d

POINTS: 1