Chapter 16 Practice

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) Metals are good conductors of both heat and electricity due to 1) _____
A) similar thermal and electrical conductive properties.
B) looseness of outer electrons in metal atoms.
C) relatively high densities of metals.
D) high elasticity of metals.
E) both transferring energy easily.

2) Which of these are good conductors? 2) _____
A) feathers.
B) wood.
C) snow.
D) all the above
E) none of the above

3) On a cold day your feet feel warmer on a rug than on a tile floor because a rug 3) _____
A) is usually warmer than tile.
B) is a poorer conductor.
C) for the same mass has more internal energy than tile.
D) all of the above
E) none of the above

4) A block of wood and a block of copper will feel neither hot nor cold to the touch when they each have 4) _____
A) equal temperatures.
B) your temperature.
C) equal conductivities.
D) none of the above

5) A water-filled paper cup held in a flame will not catch fire. This is because 5) _____
A) the inside of the paper is wet.
B) water is an excellent conductor of heat.
C) paper is a poor conductor of heat.
D) the paper cup cannot become appreciably hotter than the water it contains.

6) If you were caught in freezing weather with only a candle for heat, you would be warmer in 6) _____
A) an igloo.
B) a tent.
C) a wooden house.
D) a car.

7) The reason you can walk barefoot on red-hot coals of wood without burning your feet mainly involves 7) _____
A) low temperature of the coals.
B) low conductivity of the coals.
C) mind over matter techniques.

8) Energy transfer by convection is primarily restricted to 8) _____

A) solids.
B) liquids.
C) gases.
D) fluids.
E) none of the above

9) You can safely hold your fingers on both sides of a candle flame due mainly to 9) _____

A) conduction. B) convection.
C) radiation. D) none of the above

10) Blow on your hand with your mouth open. Then do the same with your lips puckered and you'll find 10) _____

A) a difference in temperatures. B) the breath from puckered lips is cooler.
C) both of these D) neither of these

11) Steam that issues from a pressure cooker 11) _____

A) is invisible. B) cools as it expands.
C) both of these D) neither of these

12) At the same temperature, which has greater average speed in the air? 12) _____

A) very light molecules
B) heavier molecules
C) both have equal average speeds.

13) In a mixture of hydrogen gas, oxygen gas, and nitrogen gas, the molecules with the greatest average speed are those of 13) _____

A) hydrogen. B) oxygen. C) nitrogen. D) all the same

14) If no molecular collisions occurred in a sample of gas, temperature of the gas would 14) _____

A) increase. B) decrease. C) be unaffected.

15) If you release a single molecule in an evacuated region it will initially 15) _____

A) fall just as a baseball would.
B) move in any direction.
C) convect upward.
D) be buoyed upward.
E) none of the above

16) The form of heat transfer that doesn't depend on a medium is 16) _____

A) conduction. B) convection.
C) radiation. D) all of the above

17) The higher the temperature of an object, the 17) _____

A) longer the wavelengths it radiates.
B) shorter the wavelengths it radiates.
C) makes no difference in the wavelengths it radiates

18) Objects that radiate relatively well 18) _____

A) absorb radiation relatively well. B) reflect radiation relatively well.

C) both of these D) neither of these

19) When an object absorbs as much as it radiates 19) _____

A) it remains at about the same temperature.

B) it is a net absorber.

C) it is a net radiator.

D) none of the above

20) A liter of hot water will cool to room temperature faster in a 20) _____

A) black pot. B) silver pot.

C) red pot. D) none of the above

21) A bridge is more likely to be ice covered than the roadway on a cold day because 21) _____

A) a bridge is more conducting than ground.

B) a bridge is more commonly wet than ground.

C) heat upwelling from the ground below is absent on a bridge.

D) none of the above

22) The temperature of outer space is 22) _____

A) zero. B) about 2.7 kelvin.

C) meaningless. D) none of the above

23) A photovoltaic cell receives energy input by 23) _____

A) conduction. B) convection.

C) radiation. D) all of the above

24) Both black and white road surfaces radiate energy. At midnight on a starry night the warmer road surface is the 24) _____

A) black surface.

B) white surface.

C) neither, as no noticeable difference.

25) Newton's law of cooling applies to objects undergoing 25) _____

A) cooling. B) warming.

C) both of these D) neither of these

26) A red-hot piece of coal will cool quicker in a 26) _____

A) cold room. B) warm over. C) both the same.

27) Which body glows with electromagnetic waves? 27) _____

A) the Sun B) the Earth

C) you and your classmates D) all of the above

28) Glass in a florist's greenhouse acts as a one-way valve in that it 28) _____

A) lets light energy flow only in one direction.
B) cuts off unwanted radiation.
C) allows high-frequency waves in and blocks low-frequency waves exiting.
D) is transparent only to lower-frequency waves.

29) The heat we enjoy on a sunny day is due mainly to the Sun's 29) _____

A) high surface temperature.
B) relatively close distance.
C) enormous size.
D) none of the above

30) The amount of solar energy per square meter atop the atmosphere at right angles to the Sun's rays is about 30) _____

A) 700 joules.
B) 1000 joules.
C) 1400 joules.
D) much more than 1400 joules.

31) Solar power is the rate at which 31) _____

A) the Sun emits energy.
B) solar energy is received from the Sun.
C) the atmosphere absorbs energy.
D) all of the above
E) none of the above

32) A Thermos bottle has double glass walls with silver coating on the glass surfaces that face each other. The silver coating reduces energy transfer by 32) _____

A) conduction.
B) convection.
C) radiation.
D) all the above
E) none of the above

33) Hydrogen and oxygen molecules in a sample of gas have the same temperature. This means the hydrogen molecules, on average, have the same 33) _____

A) speed and the same kinetic energy.
B) speed, but more kinetic energy.
C) speed, but less kinetic energy.
D) kinetic energy, but more speed.
E) kinetic energy, but less speed.

Answer Key
Testname: CHAPTER 16 PRACTICE HEAT TRANSFER

1) B
2) E
3) B
4) B
5) D
6) A
7) B
8) D
9) B
10) C
11) C
12) A
13) A
14) C
15) A
16) C
17) B
18) A
19) A
20) A
21) C
22) B
23) C
24) B
25) C
26) A
27) D
28) C
29) C
30) C
31) B
32) C
33) D