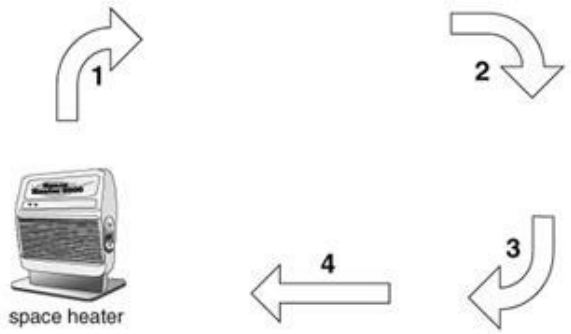
TEST NAME: **Heat Transfer**
TEST ID: **194744**
GRADE: **06**
SUBJECT: **Life and Physical Sciences**
TEST CATEGORY: **School Assessment**

Student: _____

Class: _____

Date: _____

1. **Use the diagram of a convection current to answer the question that follows.**



Which arrow represents the hottest air in this convection current?

A. 1
B. 2
C. 3
D. 4

2. **A carpenter rubs sandpaper on a wooden bench to make the bench smoother. The sandpaper will get warm as it is rubbed on the bench. As a result of the friction between the sandpaper and the bench, thermal energy is converted to**

A. chemical energy that is stored by the sandpaper.
B. radiant energy that is transferred to the bench.
C. potential energy that is stored by the wood.
D. heat energy that is transferred to the air.

3. **Which of the following is the best conductor of heat?**

A. oven mitts
B. a metal bowl
C. a wooden spoon
D. rubber soled shoes

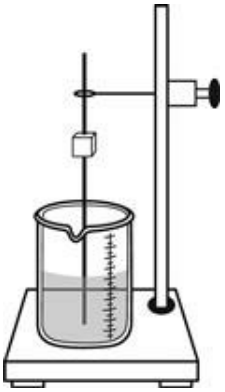
4. **A recent article in a science journal explains the relationship between convection currents and plate tectonics. As fluid within the mantle circulates, it causes crustal plates to move. Which is most likely causing the liquids inside Earth to circulate?**

A. energy transfers
B. global warming
C. tidal variations
D. ocean currents

5. **Sunlight passes through the windows of a car and causes the car seats to get hot. Which type of energy flow is involved in heating the seats?**

   A. conduction
   B. convection
   C. insulation
   D. radiation

6. **A student put a cube of butter on a metal rod. Then he placed the other end of the rod in a beaker of hot water. The setup for the investigation is shown below.**



The butter melted in ten minutes. Which best explains why the butter melted?

   A. Thermal energy heated the metal rod which conducted heat to the butter.
   B. Electrical energy heated the metal rod which conducted heat to the butter.
   C. Chemical energy heated the metal rod which conducted heat to the butter.
   D. Mechanical energy heated the metal rod which conducted heat to the butter.

7. **Jennifer is in a room that has an air temperature of 25ºC (77ºF). Before pouring cold water into a glass, she notices that the ice in the pitcher is melting.**

What would be the best way for Jennifer to describe how thermal energy is being transferred?

   A. Heat moves from the ice to the water.
   B. Cold moves from the ice into the water.
   C. Heat moves from the air into the water.
   D. Cold moves from the water into the room.

8. **Emily made a cup of tea and stirred it with a spoon. The spoon became warm. How was the heat from the tea transferred to the spoon?**

   A. convection
   B. radiation
   C. conduction
   D. evaporation

9. **One end of a metal rod is placed over a flame during an investigation. A thermometer is touching the opposite end of the metal rod. Which best describes what is happening during this investigation?**

   A. Convection carries heat to the thermometer.
   B. Radiant energy warms the thermometer.
   C. Mechanical energy from the flame carries heat to the thermometer.
   D. Heat from the flame is conducted through the metal rod to the thermometer.

10. **The picture below shows a blacksmith lowering red-hot metal into a barrel of water. When the metal is dipped in water, the water boils.**

What causes the water to boil?

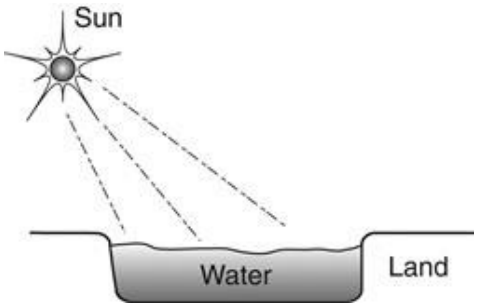
   A. The water is displaced by the hot metal.
   B. Heat from the metal is transferred to the water.
   C. The boiling point of the water is reduced by the metal.
   D. Gases given off by the metal bubble to the surface of the water.

11. **Which picture shows the transfer of heat by conduction?**

A.

B.

C.



D.

12. **A block of ice is placed on a hot sidewalk. The ice melts because**

A. the energy from the ice flows to the sidewalk.
B. the energy from the sidewalk flows to the ice.
C. convection currents flow between the ice and the sidewalk.
D. radiation flows between the ice and the sidewalk.

13. **A class made a solar cooker out of a large can. What color should they paint the can in order to collect the most heat?**

A. black
B. green
C. pink
D. white

14. **Students want to raise the temperature of water in a glass jar. The jar is on a table in full sunlight. The fastest way to increase the temperature without using a hot plate is to place**

A. a straw in the water.
B. clear plastic wrap around the glass.
C. a thermometer in the water.
D. black material around the glass.

15. **When potholders are used to remove hot pans from an oven, the potholders are serving as**

A. conductors.
B. insulators.
C. reflectors.
D. transmitters.

16. **Which of the following materials would best slow the transfer of heat?**

A. aluminum
B. copper
C. glass
D. wood

17. **Which of the following is least likely to allow electricity to flow?**

A. aluminum
B. copper
C. plastic
D. water

18. **Which physical property is important to have in a material used in cookware?**

A. poor conductor of heat
B. good conductor of heat
C. low flexibility
D. high flexibility

19. **The handle of a frying pan is often coated in rubber because rubber provides**

A. heat insulation.
B. electric conduction.
C. a low melting point.
D. a nonstick surface.

20. **Which material best conducts heat and electricity?**

A. metal
B. plastic
C. rubber
D. wood

21. **Metals that easily transfer electricity are called**

A. resistors.
B. magnets.
C. insulators.
D. conductors.

22. **A metal pan will heat up quickly when placed over a gas or electric burner. The metal pan is a good**

A. resistor.
B. insulator.
C. conductor.
D. accelerator.

23. **What best explains why cooking pans have rubber handles?**

A. The rubber in the handles is easy to hold.
B. The rubber in the handles is a good insulator.
C. The rubber in the handles keeps the food in the pan hot.
D. The rubber in the handles keeps the metal in the pan cool.

24. **The following advertisement was placed in the window of a camping supply store.**

"The double-thermal 'Polar Snooze' sleeping bag is here! It will keep you warm for winter camping!"

Based on this advertisement, the best conclusion about Polar Snooze sleeping bags is that they

A. are lightweight.
B. have insulation.
C. make winter camping easy.
D. cost less than other sleeping bags.

25. **A child walks across a carpet and generates an electrical charge. The child will get a slight shock by touching a**

A. metal doorknob.
B. plastic toy.
C. rubber ball.
D. wooden block.