Thermal Processes – 2019 June

1. 0625/11/M/J/19/No.19
In which does thermal conduction **not** occur?

A a gas

B a liquid

C a solid

D a vacuum

2. 0625/11$12$13, 21,22,23/M/J/19/No.20, 18
The metal surface of a kettle is hot.

What happens to the cool air outside the kettle when it comes into contact with the hot kettle?

A The density of the air decreases and the air falls.

B The density of the air decreases and the air rises.

C The density of the air increases and the air falls.

D The density of the air increases and the air rises.

3. 0625/12,22/M/J/19/No.20,19
Vacuum flasks usually have silvered walls that help to keep the contents of the flask hot.

Why are the walls silvered?

A to absorb thermal energy from the air around the flask

B to increase the rate of convection inside the flask

C to reduce energy loss to the surroundings by conduction

D to reflect thermal radiation back into the flask

4. 0625/13/M/J/19/No.19
A person holds an empty glass beaker and pours hot water into it.

Why does it take a few seconds before his hand starts to feel hot?

A Glass is a poor conductor of heat.

B Water is a poor conductor of heat.

C Glass is a better conductor of heat than water.

D Water is a better conductor of heat than glass.

5. 0625/21/M/J/19/No.19

Some hot water is sealed inside a metal can. The can is in a vacuum in outer space. The hot water slowly cools down.

How does the thermal energy escape into space?

A by conduction then convection

B by conduction then radiation

C by evaporation then convection

D by evaporation then radiation

6. 0625/22/M/J/19/No.17

The handle of a metal saucepan is made of plastic. As the saucepan heats up, the handle gets warmer.

Which statement explains this?

A Molecules of the plastic radiate their energy to other molecules.

B Molecules of the plastic vibrate more and pass on their energy to nearby molecules.

C The free electrons in the plastic transfer the thermal energy along the handle.

D The heated molecules very slowly move along the plastic handle.

7. 0625/23/M/J/19/No.17

Why does a metal rod conduct thermal energy much better than a similar-sized plastic rod?

A The molecules in the plastic are much closer together than the atoms in the metal.

B The molecules in the plastic are much larger than the atoms in the metal.

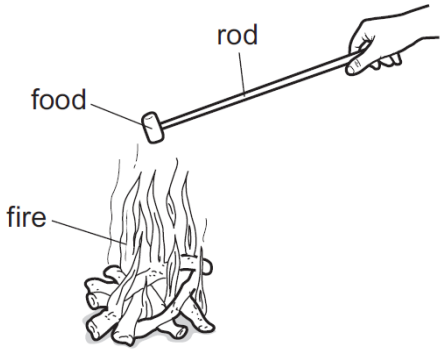
C The molecules in the plastic are much more tightly held together than the atoms in the metal.

D The molecular structure in the plastic contains no free electrons, but the metal has free electrons.

8. 0625/12, 22/F/M/19/No.18, 19

Four campers are warming their food on a fire.

They use different rods, each of the same dimensions, to hold their food near the fire.



Which material is the best choice to prevent their hands from getting too hot?

A aluminium

B copper

C steel

D wood

9. 0625/12/F/M/19/No.19

A beaker of water is heated and thermal energy travels through the water by convection.

What happens to the density of the water when it is heated and how does the water move?

A The density decreases and the heated water moves downwards.

B The density decreases and the heated water moves upwards.

C The density increases and the heated water moves downwards.

D The density increases and the heated water moves upwards.

10. 0625/22/F/M/19/No.20

Two metal cans are identical, except that one has a shiny silver outer surface and the other has a dull black outer surface. They each have 300 g of water at 80 °C sealed inside them. They are both in a vacuum, in the darkness of outer space.

How does the temperature of the water in each one change?

A Neither one will cool down.

B The water in the black can cools more slowly than that in the shiny can.

C The water in the shiny can cools more slowly than that in the black can.

D They both cool down at the same rate.