The Properties and Temperature – 2020 IGCSE 0625

1. Nov/2020/Paper_11/No.16

When a bridge is built, a gap is left between each concrete slab.

Why are these gaps left?

A Concrete expands on warm days.

B Concrete contracts on warm days.

C The gaps expand on warm days.

D The gaps contract on cold days.

2. Nov/2020/Paper_11/No.17

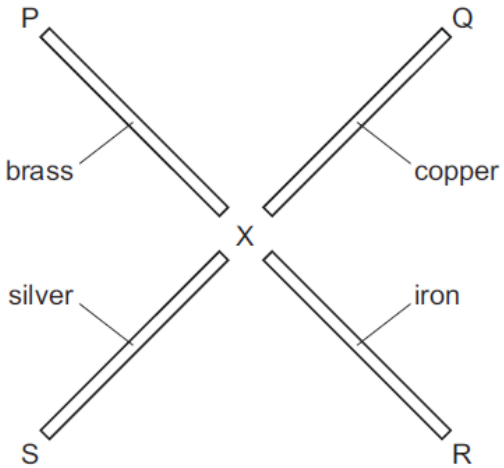
The table shows the melting and boiling points of four different substances.

Which substance becomes a liquid when placed in a beaker of boiling water?

	melting point / °C	boiling point / °C
A	10	90
B	40	150
C	105	230
D	110	320

3. Nov/2020/Paper_11/No.18

The diagram shows four rods. Each rod is made of a different metal.



Wax is used to attach small metal balls at the rod ends P, Q, R and S.

Each rod is the same size. They are heated uniformly by a Bunsen burner at point X.

As the rods warm up, the wax melts and the balls fall off.

Why does the ball on the silver rod fall first?

A Silver is the best conductor of heat.

B Silver is the worst conductor of heat.

C Silver is the best radiator of heat.

D Silver is the worst radiator of heat.

4. Nov/2020/Paper_12/No.15

Wet clothes are put out on a line to allow the water in the clothes to evaporate.

Which type of weather would cause the water to evaporate most quickly?

A a cold day with no wind

B a cold day with wind

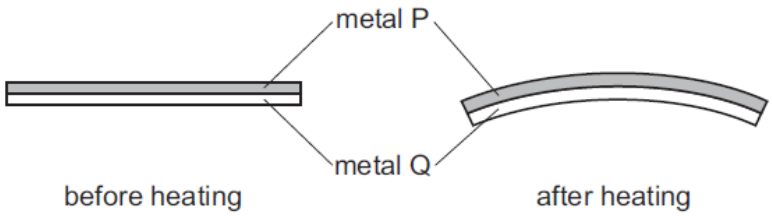
C a hot day with no wind

D a hot day with wind

5. Nov/2020/Paper_12/No.16

A bimetallic strip is used to control the temperature of electrical appliances. It is made of two different metals fixed together.

The diagram shows the shape of the bimetallic strip before and after heating.



Which statement is correct?

A Metal P contracts more than metal Q on heating.

B Metal Q contracts more than metal P on heating.

C Metal P expands more than metal Q on heating.

D Metal Q expands more than metal P on heating.

6. Nov/2020/Paper_12/No.17

Samples of four different substances are heated in turn by the same heater, for the same time duration and in the same conditions. The increase in temperature for each sample is recorded in the table.

Which sample has the highest thermal capacity?

	sample	temperature rise / °C
A	aluminium	6.0
B	copper	8.0
C	mercury	10.0
D	water	5.0

7. Nov/2020/Paper_12/No.18

Thermal energy is supplied at the same rate to four bars made from different materials.

After several minutes, there is a temperature difference between X and Y for each bar.

Which statement identifies the bar with the greatest temperature difference between points X and Y, and gives the correct reason?

A copper because it is a good conductor of thermal energy

B lead because it is the densest metal

C plastic because it is a poor conductor of thermal energy

D wood because it is a good conductor of thermal energy

8. Nov/2020/Paper_13/No.16

Which physical property changes when temperature is measured with a liquid-in-glass thermometer?

A electromotive force

B pressure

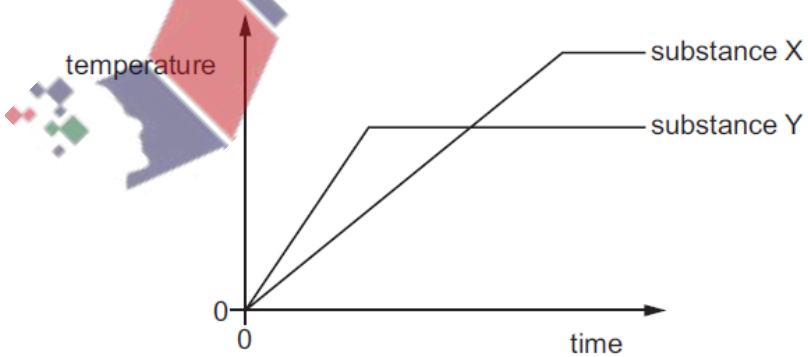
C resistance

D volume

9. Nov/2020/Paper_13/No.17

Two different pure substances X and Y are heated. Both substance X and substance Y are initially in the solid state.

The graph shows how the temperature of each substance changes with time.



What does the graph tell us about the substances?

A Substance X has a lower boiling point than substance Y.

B Substance X has a lower melting point than substance Y.

C Substance Y has a lower boiling point than substance X.

D Substance Y has a lower melting point than substance X.

10. Nov/2020/Paper_21/No.15

A student splashes water on to her face. Here are three statements about the effects.

P The water uses energy to evaporate.

Q The water gains energy from the student.

R The face of the student cools.

Which statements are correct?

A P and Q only **B** P and R only **C** Q and R only **D** P, Q and R

11. Nov/2020/Paper_21/No.16

When a bridge is built, a gap is left between each concrete slab.

Why are these gaps left?

A Concrete expands on warm days.

B Concrete contracts on warm days.

C The gaps expand on warm days.

D The gaps contract on cold days.

12. Nov/2020/Paper_21/No.17

The specific heat capacity of solid P is greater than that of solid Q.

What does this statement mean?

A Less energy is needed to raise the temperature by 1 °C of unit mass of solid P than unit mass of solid Q.

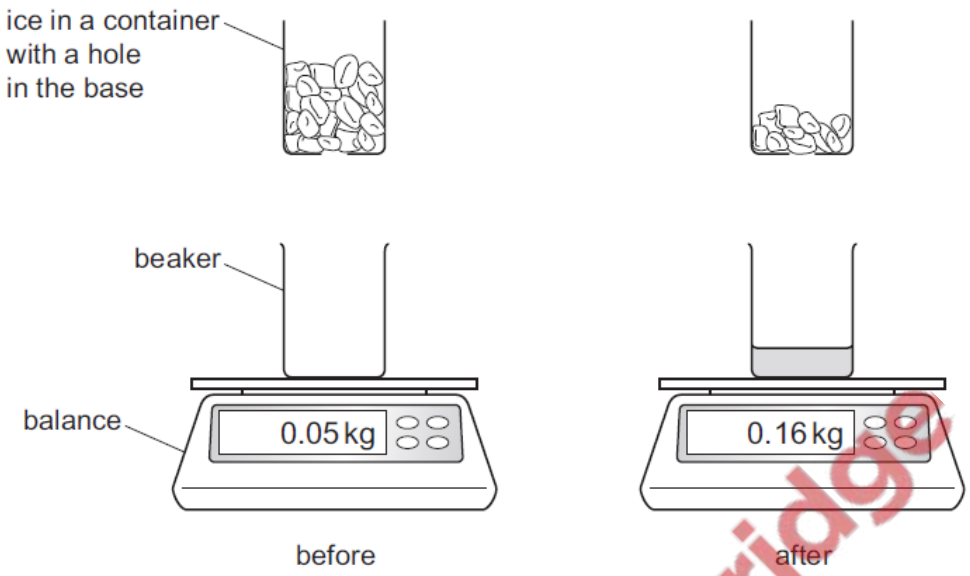
B Less energy is needed to melt unit mass of solid P than unit mass of solid Q.

C More energy is needed to raise the temperature by 1 °C of unit mass of solid P than unit mass of solid Q.

D More energy is needed to melt unit mass of solid P than unit mass of solid Q.

13. Nov/2020/Paper_21/No.18

A student placed a number of ice cubes in a container with a hole in the base. He left them to melt so that the water dripped into a beaker placed on a balance. The student recorded the initial mass of the beaker and the final mass of the beaker and water after five minutes.



The specific latent heat of fusion for water is 334 J / g.

How much energy was absorbed from the surroundings in order to melt the ice?

A 37 J **B** 54 J **C** 37 000 J **D** 54 000 J

14. Nov/2020/Paper_22/No.15

A student splashes water on to her face. Here are three statements about the effects.

P The water uses energy to evaporate.

Q The water gains energy from the student.

R The face of the student cools.

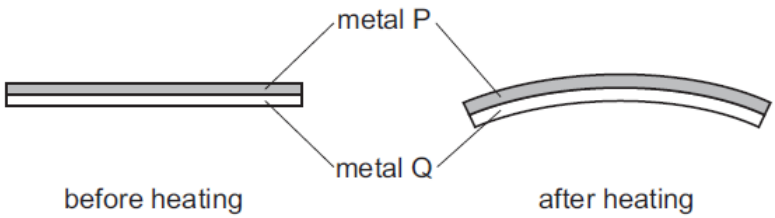
Which statements are correct?

A P and Q only **B** P and R only **C** Q and R only **D** P, Q and R

15. Nov/2020/Paper_22/No.16

A bimetallic strip is used to control the temperature of electrical appliances. It is made of two different metals fixed together.

The diagram shows the shape of the bimetallic strip before and after heating.



Which statement is correct?

A Metal P contracts more than metal Q on heating.

B Metal Q contracts more than metal P on heating.

C Metal P expands more than metal Q on heating.

D Metal Q expands more than metal P on heating.

16. Nov/2020/Paper_22/No.17

A student writes three statements about thermocouples.

1 They have a small thermal capacity.

2 They respond very slowly to temperature changes.

3 They can measure temperatures above 500 °C.

Which statements are correct?

A 1 only **B** 2 only **C** 1 and 3 **D** 2 and 3

17. Nov/2020/Paper_22/No.18

Four blocks are made from different metals. Each block is heated for five minutes with an identical heater.

Assume there is no energy loss from the blocks.

The table gives the masses of the blocks and the temperature rises.

Which metal has the highest specific heat capacity?

	mass of block / kg	temperature rise / °C
A	2.0	5.0
B	2.0	9.0
C	4.0	5.0
D	4.0	9.0

18. Nov/2020/Paper_23/No.15

A student splashes water on to her face. Here are three statements about the effects.

P The water uses energy to evaporate.

Q The water gains energy from the student.

R The face of the student cools.

Which statements are correct?

A P and Q only **B** P and R only **C** Q and R only **D** P, Q and R

19. Nov/2020/Paper_23/No.17

Which physical property changes when temperature is measured with a liquid-in-glass thermometer?

A electromotive force

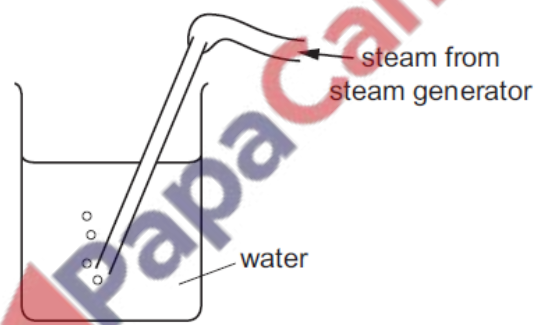
B pressure

C resistance

D volume

20. Nov/2020/Paper_23/No.18

The diagram shows steam being passed into water to raise the temperature of the water.



The specific latent heat of steam is 2200 J / g.

The specific heat capacity of water is 4.2 J / (g °C).

The mass of water being heated is 490 g.

Which mass of steam must be passed into the water to raise the water temperature from 19 °C to 100 °C?

A 19 g **B** 76 g **C** 80 g **D** 95 g

21. Nov/2020/Paper_31/No.6(b)

(b) A student attaches a liquid-in-glass thermometer to a ruler. The thermometer does **not** have a marked scale. Fig. 6.2 shows the arrangement.

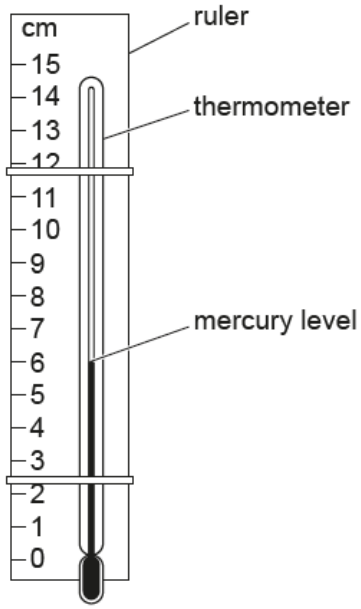


Fig. 6.2

The student places the thermometer in steam. The mercury rises to 11 cm on the ruler.

The student places the thermometer in melting ice. The mercury decreases to 1 cm on the ruler.

Determine the temperature indicated by the mercury level in Fig. 6.2.

temperature = ... °C [3]

22. Nov/2020/Paper_32/No.5

A beaker contains water. Some of the water evaporates.

(a) Describe and explain how the water evaporates. Use your ideas about molecules.

.....

.....

..... [2]

(b) Evaporation changes the temperature of the water that remains in the beaker.

State and explain the change in temperature of the water due to evaporation.

.....

.....

..... [3]

[Total: 5]

23. Nov/2020/Paper_33/No.5(c)

(c) Fig. 5.2 shows a liquid-in-glass thermometer.

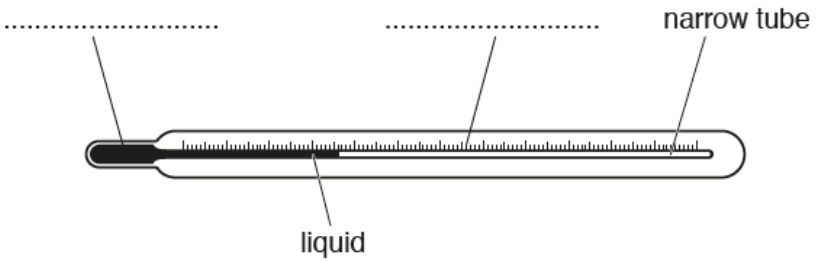


Fig. 5.2

(i) Add the missing labels to Fig. 5.2. [2]

(ii) The thermometer in Fig. 5.2 is designed to measure a range of temperatures from 0 °C to 100 °C.

State the name of a suitable liquid for use in this thermometer.

..... [1]

(iii) Describe and explain the changes in the thermometer in Fig. 5.2 when the temperature of the liquid increases.

.....

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..... [2]

24. Nov/2020/Paper_42/No.4

Fig. 4.1 shows a thermometer.

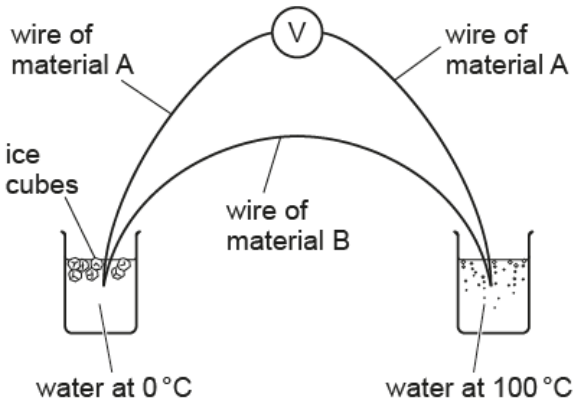

Fig. 4.1

The voltmeter reading is 5.4 mV.

(a) State the name of this type of thermometer.

..... [1]

(b) Fig. 4.2 shows the same thermometer used to measure the temperature of liquid X.

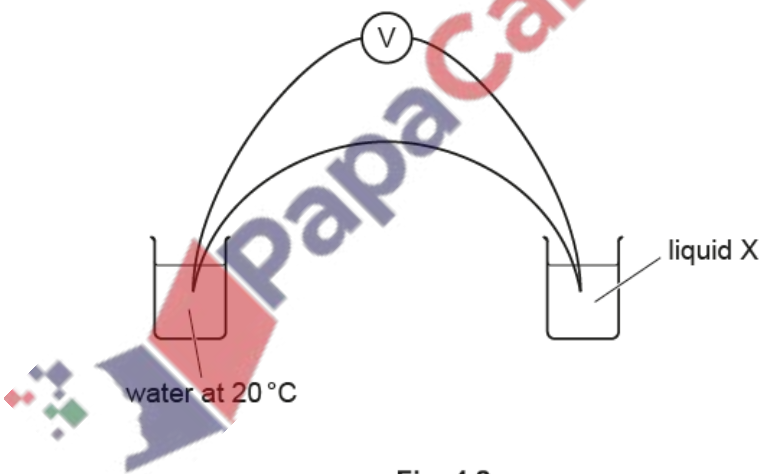

Fig. 4.2

With the setup in Fig. 4.2, the voltmeter reading is 1.7 mV.

Calculate the temperature of liquid X measured by the thermometer.

temperature = ... [2]

(c) Suggest an application for which this type of thermometer is more suitable than a liquid-in-glass thermometer.

..... [1]

[Total: 4]

25. Nov/2020/Paper_42/No.5

(a) (i) Define specific latent heat.

.....

..... [2]

(ii) Explain the melting of a solid in terms of molecules and energy.

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..... [2]

(b) An electrical heater is used to heat a liquid to its boiling point. Fig. 5.1 shows the apparatus.

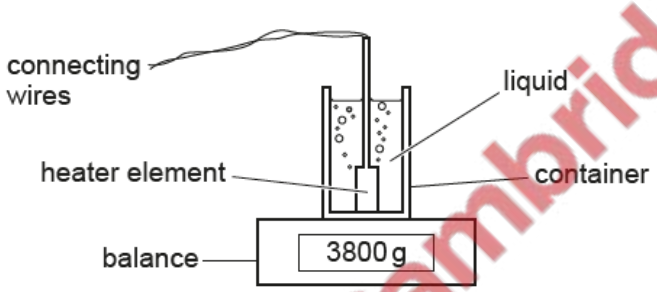

Fig. 5.1

When the liquid is boiling, the heater supplies 1.26 MJ of thermal energy. The mass reading shown on the balance decreases from 3800 g to 2300 g.

Calculate the specific latent heat of vaporisation of the liquid.

specific latent heat = ... [3]

(c) State and explain a precaution to improve the accuracy of the value of specific latent heat calculated in **(b)**.

.....

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.....

..... [2]

[Total: 9]