



Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words**[4]**

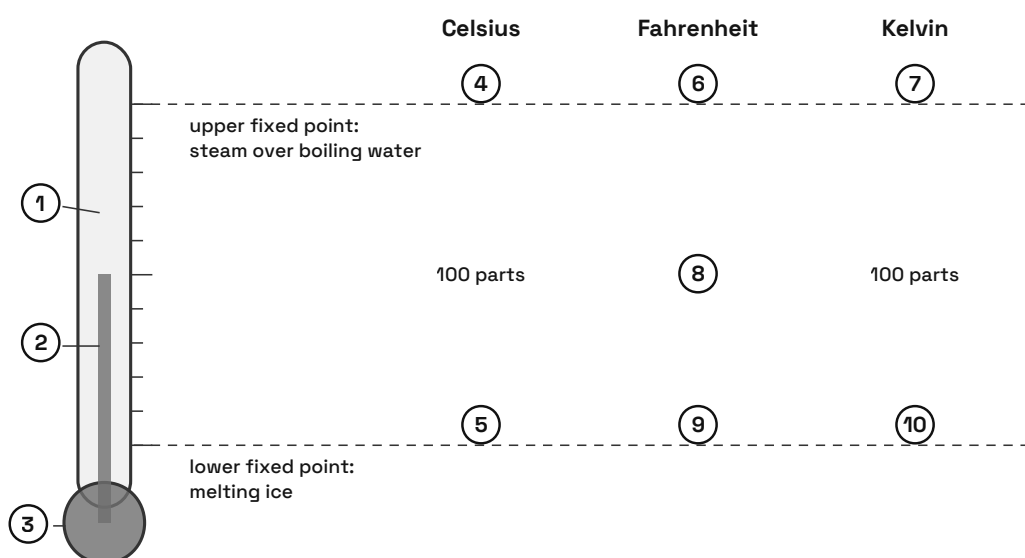
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

4 °C anomalous expansion average calibration calorimeter heat
specific heat capacity temperature thermal equilibrium total

Thermal energy is the _____ kinetic energy of all the molecules of a substance, while _____ is a measure of their average kinetic energy. Thermal energy that flows from a hotter object to a cooler one because of a difference in temperature is called _____. It stops flowing when both objects reach _____. The heat needed to raise the temperature of 1 kg of a substance by 1 °C is its _____. Water has its smallest volume and greatest density at _____, an unusual behavior called the _____ of water. Marking the scale on a thermometer is called _____.

2 Label the diagram**[5]**

The diagram shows a liquid-in-glass thermometer and its fixed points on three scales. Write the name or the number that belongs in place of 1 to 10. Each carries 0.5 mark.



- | | | |
|-----------|----------|----------|
| 1. _____ | 2. _____ | 3. _____ |
| 4. _____ | 5. _____ | 6. _____ |
| 7. _____ | 8. _____ | 9. _____ |
| 10. _____ | | |



3 Multiple choice

[5]

Choose the correct option for each of the following questions.

- i. Which statement defines heat? [1]
- a. the total kinetic energy of the molecules
 - b. the average kinetic energy of the molecules
 - c. the sum of the kinetic and potential energy of the molecules
 - d. the energy transferred because of a difference in the average kinetic energy of molecules
- ii. Which has more thermal energy: a teaspoon of water at 90 °C, or a swimming pool of water at 25 °C? [1]
- a. the teaspoon, because it is hotter
 - b. the pool, because it has vastly more molecules
 - c. both the same, because both are water
 - d. neither has any thermal energy
- iii. The specific heat capacity of a substance depends on: [1]
- a. its mass
 - b. its volume
 - c. its temperature
 - d. the nature of the substance
- iv. Which of these is an effect of water's high specific heat capacity? [1]
- a. in coastal areas, the sea heats up faster than the land during the day
 - b. in coastal areas, the sea cools faster than the land at night
 - c. in coastal areas, the land heats up more slowly than the sea in the daytime
 - d. in coastal areas, the land cools faster than the sea at night
- v. What is the best way to fit a wide pipe into a narrower pipe? [1]
- a. heat both pipes
 - b. cool both pipes
 - c. heat the wider pipe and cool the narrower one
 - d. cool the wider pipe and heat the narrower one

4 Very short answers

[3]

Write very short answers to the following questions.

- a. Write the SI unit of specific heat capacity. [1]
-
-
- b. Change 27 °C into kelvin. [1]
-
-
- c. Why is a clinical thermometer shaken before it is used again? [1]
-
-



5 Short answers

[6]

Write short answers to the following questions.

- a. Give a reason: water pipes crack in cold places in winter.

[2]

- b. Give a reason: water is kept in a car's radiator to cool the engine.

[2]

- c. Write any two differences between heat and temperature.

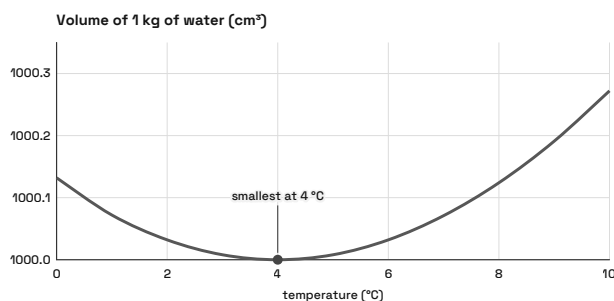
[2]

6 Long answer

[4]

Write a long answer to the following question.

Study this graph of the volume of 1 kg of water against its temperature, and answer.



- What is this special property of water called?
- How does the volume change when water is heated from 0 °C to 10 °C?
- At what temperature is the density of water the greatest? Why?
- Why do fish survive under the ice of a frozen lake?



[6]

a. How much heat is needed to raise the temperature of 500 g of water from 15 °C to 85 °C? (Specific heat capacity of water = 4,200 J/kg °C)

Answer:

- [4]

[illegible]

Answer:

[2]

Imagine water that kept getting denser right down to 0 °C, and ice that sank. What would happen to a lake in winter?

(not marked)

Pair	My guess: which gets hotter?	What I found	Why?
a steel plate and a ceramic plate			
a plastic chair and a wooden chair			
a tray of dry sand and a tray of wet soil			
a steel vessel and a glass vessel			