

NAME  
SCHOOL

INDEX NUMBER  
DATE

## THERMAL EXPANSION

1. 1995 Q8 P1

One property of a liquid that is considered while construction a liquid – in – glass thermometer is that the liquid expands more than the glass for the same temperature change. State any other two properties of the liquids that are considered (2 marks)

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2. 1995 Q34 P1

State two variables that must be controlled in an experiment for comparing the thermal conductivities of different metal rods of the same diameter (2 marks)

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3. 1996 Q6 P1

Give a reason why a concrete beam reinforced with steel does not crack when subjected to changes in temperature (2 marks)

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4. 1997 Q7 P1

Explain why a glass container with thick walls is more likely to crack than one with a thin wall when a very hot liquid is poured into them.

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5. 1997 Q9 P1

Figure 3 shows two aluminium containers, A and B placed on a wooded table. A and B have equal volumes of hot water initially at the same temperature.



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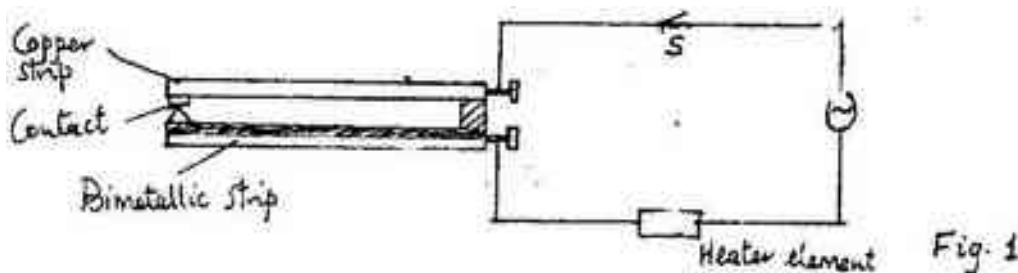
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6. 1997 Q1a P2

Figure 1 shows a circuit diagram for controlling the temperature of a room.



(i) State and explain the purpose of the Bimetallic strip

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(ii) Describe how the circuit controls the temperature when the switch is closed

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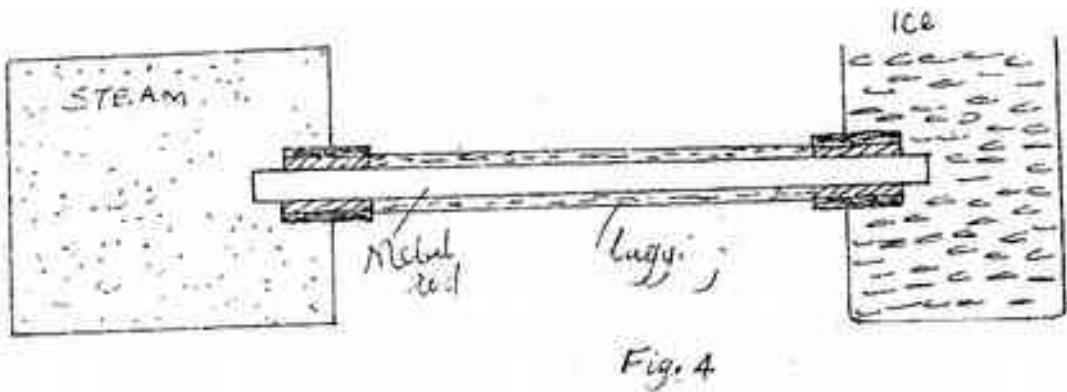
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7. 1998 Q16 P1

In figure 4 one end of a metal rod is placed in steam and the other end in melting ice. The length of the rod in between is lagged.



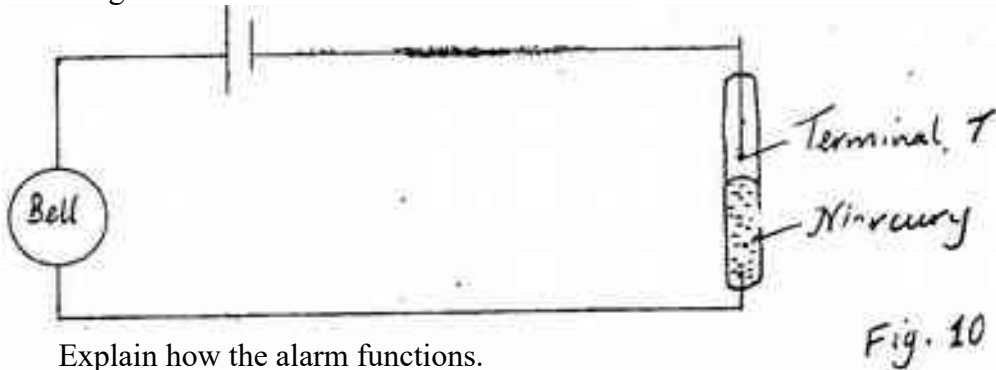
State two factors that determine the rate at which ice melts.

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8. 1998 Q31 P1

Fig 10 shows a fire alarm circuit.



Explain how the alarm functions.

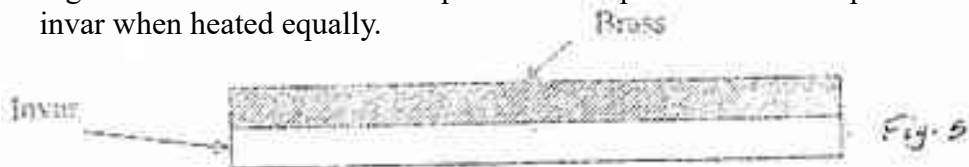
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9. 1999 Q6 P1

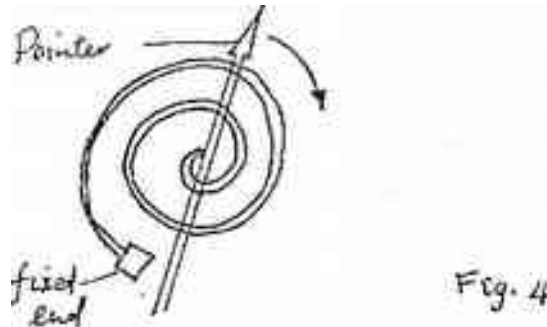
Figure 5 shows a bimetallic strip at room temperature. Brass expands more than invar when heated equally.



Sketch the bimetallic strip after being cooled several degrees below room temperature.

10. 2000 Q7 P1

Fig. 4 shows a bimetallic thermometer.



Explain how a rise in temperature causes the pointer to move in the direction shown.

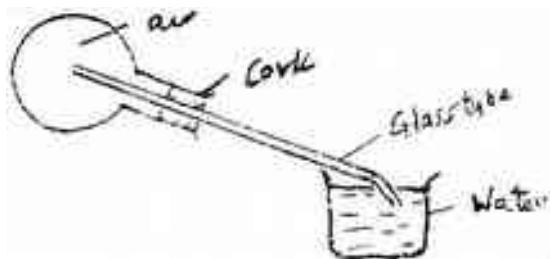
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11. 2001 Q6 P1

Fig. 5 shows a flask fitted with a glass tube dipped into a beaker containing water at room temperature. The cork fixing the glass tube to the flask is airtight.



Use the information and the figure to answer questions 11 and 12. State what is observed when ice- cold water is poured on the flask.

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12. 2001 Q7 P1

Give a reason for the observation in question 11.

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13. 2003 Q6 P1

In the set up shown in Figure 4, it is observed that the level of the water initially drops before starting to rise. Explain this observation

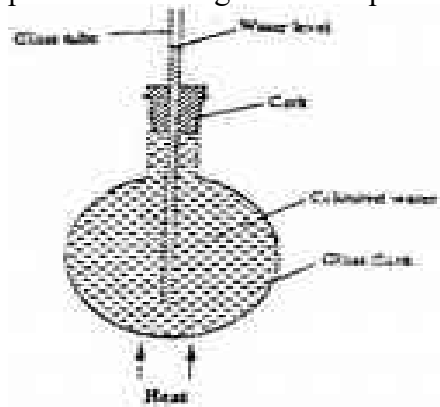


Figure 4

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14. 2004 Q2 P1

The system in figure 2 is in equilibrium at room temperature. The system is taken outside where the temperature is 10°C higher for sometime.

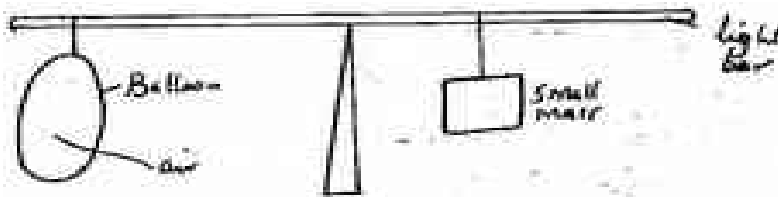


Fig. 2

Explain why it tips to the right immediately it is returned to the room.

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15. 2004 Q4 P1

Give a reason why water is not a suitable liquid for use in a barometer.

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16. 2004 Q5 P1

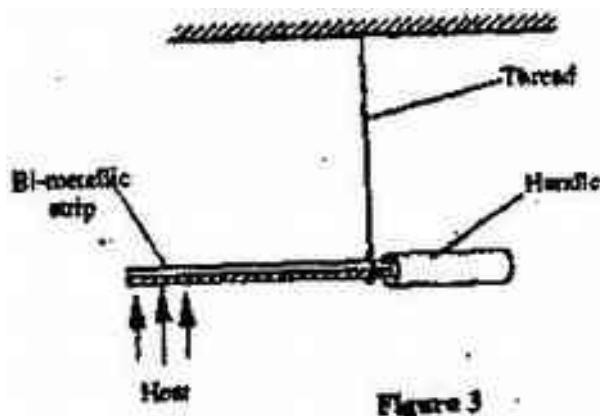
The temperature of water in a measuring cylinder is lowered from about 20° c to 0°. On the axes provided, sketch the graph of the Volume against temperature assuming the water does not freeze.

Volume

Temperature

17. 2006 Q4 P1

Figure 3 shows a bimetallic strip with a wooden handle, suspended horizontally using a thin thread.



The strip is heated at the point shown. Explain why the system tips to the right

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18. 2008 Q4 P1

Water is known to boil at 100°C. A student heated some water and noticed that it boiled at 101°C.

State two possible reasons for this observation. (2 marks)

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19. **2008 Q5 P1**

Fig: 2 shows a flask filled with water. The flask is fitted with a cork through which a tube is inserted. When the flask is cooled, the water level rises slightly, then falls steadily.

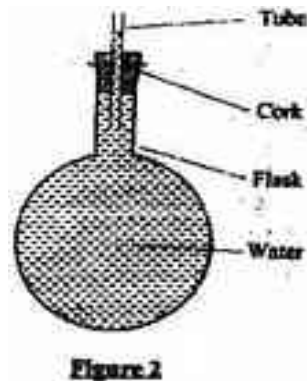


Figure 2

Explain observation.

(3 marks)

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20. **2009 Q6 P1**

A Clinical thermometer has a constriction in the bore just above the bulb. State the use of this constriction. (1 mark)

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21. **2010 Q3 P1**

When a liquid is heated in a glass flask, its level at first falls, then rises. Explain this observation.

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22. **2010 Q5 P1**

Some water in a tin can was boiled for some time. The tin can then sealed and cooled. After some time it collapsed. Explain this observation.

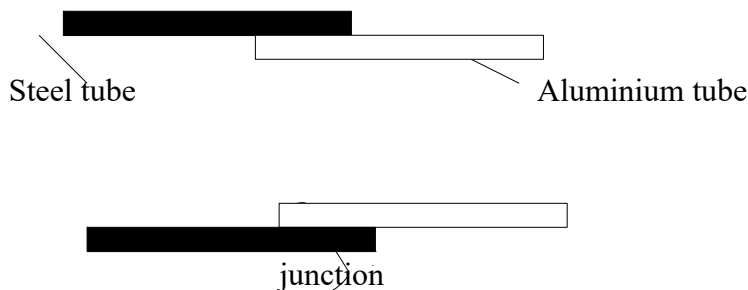
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23. 2011 Q4 P1

Figure 3 shows an aluminium tube tightly stuck in a steel tube.



**Figure 3**

Explain how the tubes can be separated by applying a temperature change at the junction given that aluminium expands more than steel for the same temperature rise. (2 marks)

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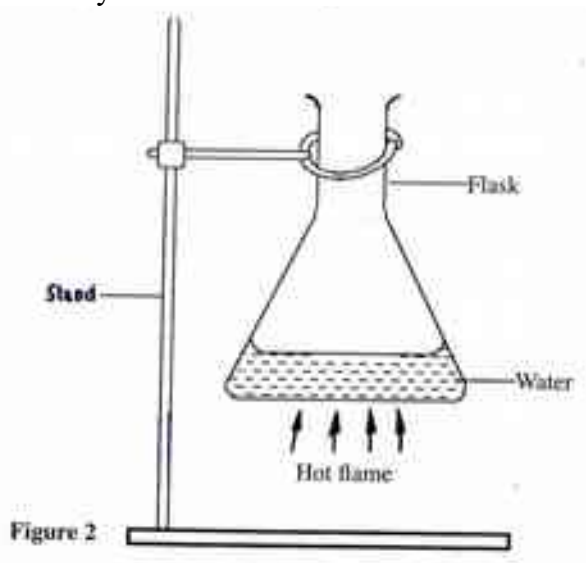
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24. 2012 Q5 P1

Figure 2 shows a flat bottomed flask containing some water. It is heated directly with a very hot flame.



Explain why the flask is likely to crack

(2 marks)

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