

**O Level Pure Physics MCQs**

**Temperature Test 1.0**

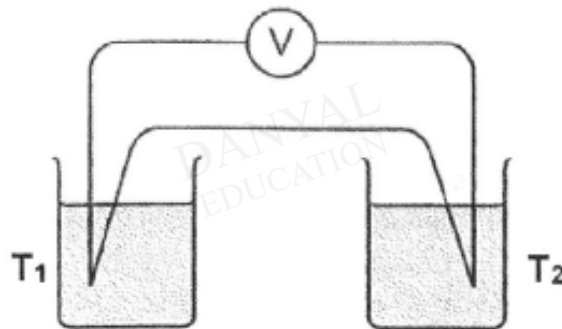
Q1

Which one of the following physical properties does not vary with temperature?

- A mass of a liquid at a constant volume
- B pressure of a fixed mass of gas at a constant volume
- C resistance of an electrical conductor
- D volume of a fixed mass of liquid

Q2

A thermocouple thermometer uses a voltmeter to measure the electromotive force (e.m.f.) generated between two junctions. The junctions are at temperatures  $T_1$  and  $T_2$ .



Which pair of values of  $T_1$  and  $T_2$  will not produce any voltmeter reading?

	$T_1 / ^\circ\text{C}$	$T_2 / ^\circ\text{C}$
A	- 10	- 20
B	- 5	0
C	10	10
D	0	100

Q3

When one junction of a thermocouple is placed in pure melting ice at 0 °C and the other junction in steam at 100 °C, the e.m.f. is 8.0 mV. The cold junction is then removed from melting ice and placed in a liquid at constant temperature. The e.m.f. is now 2.0 mV.

What is the temperature of the liquid?

- A 20 °C                      B 25 °C                      C 55 °C                      D 75 °C

Q4

Which of the following **incorrectly** shows the thermometric property of the thermometer?

	Thermometer	Thermometric property
A	Mercury-in-glass thermometer	Volume of a fixed mass of liquid varies with temperature.
B	Thermocouple	Electromotive force between two junctions at different temperature varies with the temperature difference across the junctions.
C	Constant-volume gas thermometer	Volume of a fixed mass of gas varies with temperature.
D	Resistance thermometer	Resistance of a piece of conducting wire varies with temperature.

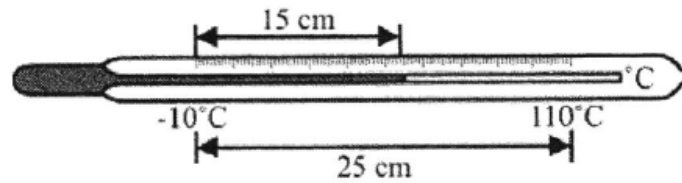
Q5

In calibrating a thermocouple thermometer, one of its junctions is kept in melting ice and the other junction in boiling water. The ammeter reads 600  $\mu$ A and the pointer points to the right. If the junction which was previously in boiling water is now inserted into another substance that is 30°C, what will be the reading on the ammeter and in which direction will the pointer point?

	Ammeter reading/ $\mu$ A	Pointer direction
A	420	Right
B	420	Left
C	180	Right
D	180	Left

Q6

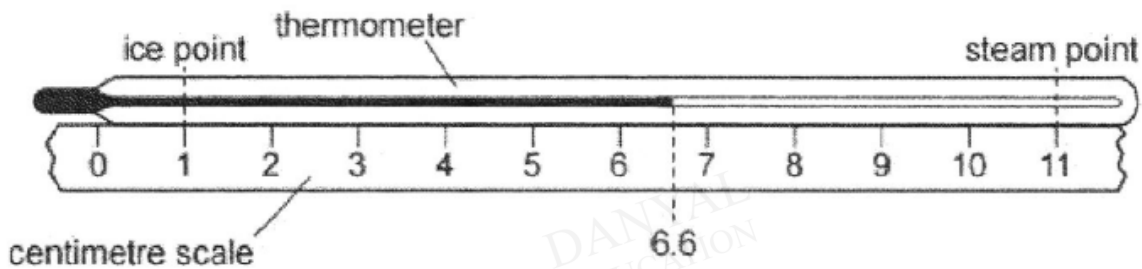
The diagram shows a mercury-in-glass thermometer. The distance between the  $-10^{\circ}\text{C}$  and the  $110^{\circ}\text{C}$  markings is 25 cm. At what temperature is the end of the mercury thread 15 cm from the  $-10^{\circ}\text{C}$  mark?



- A  $50^{\circ}\text{C}$       B  $60^{\circ}\text{C}$       C  $62^{\circ}\text{C}$       D  $72^{\circ}\text{C}$

Q7

A centimetre scale is fixed next to an unmarked mercury-in-glass thermometer. The ice point and the steam point are marked.



What is the temperature shown on the thermometer?

- A  $44^{\circ}\text{C}$       B  $56^{\circ}\text{C}$       C  $60^{\circ}\text{C}$       D  $66^{\circ}\text{C}$

Q8

The lengths of mercury thread in a uniform tube above the bulb of a mercury-in-glass thermometer are as follows:

- 20 mm when the bulb is in melting ice
- 120 mm when the bulb is in steam above boiling water
- 40 mm when the bulb is in sea water

What is the approximate temperature of sea water?

- A  $20^{\circ}\text{C}$       B  $33^{\circ}\text{C}$       C  $40^{\circ}\text{C}$       D  $80^{\circ}\text{C}$

Q9

21. When calibrating a liquid-in glass thermometer, which of the following steps is **not** needed?
- A Choosing two fixed points.
  - B Choosing a thermometric property that varies constantly.
  - C Ensuring that the room temperature is kept constant.
  - D Ensuring that the thermometer is calibrated at one atmospheric pressure.

Q10

A faulty thermometer with uniform scale reads  $10\text{ }^{\circ}\text{C}$  and  $90\text{ }^{\circ}\text{C}$  when placed in melting ice and steam over boiling water respectively.

What should be the true temperature if the thermometer reads  $36\text{ }^{\circ}\text{C}$ ?

- A  $26.0\text{ }^{\circ}\text{C}$                       B  $36.0\text{ }^{\circ}\text{C}$                       C  $32.5\text{ }^{\circ}\text{C}$                       D  $45.0\text{ }^{\circ}\text{C}$

**Answers**

**Temperature Test 1.0**

Q1 A

Q2 C

Q3 D

Q4 C

Q5 C

Q6 C

Q7 B

Q8 A

Q9 C

Q10 C

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