Thermal physics

Cambridge IGCSE Physics

> *The syllabus introduces every one with the words “recall and use”, and 0625 provides no formula sheet in any paper. Compiled by GioPhysics from the published syllabus. This is an independent study aid, not a Cambridge document; the official syllabus is the authority.*

2.1.3 Gases and the absolute scale of temperature

CORE

Kelvin and Celsius

$$T\ (\text{in K}) = \theta\ (\text{in °C}) + 273$$

$\theta\ (\text{in °C}) = T\ (\text{in K}) - 273$

- T — absolute temperature (K)
- θ — temperature (°C)

−273 °C is absolute zero, where particles have least kinetic energy.

SUPP.

Pressure and volume of a fixed mass of gas

$$pV = \text{constant}$$

$p_1V_1 = p_2V_2$

- p — pressure (Pa)
- V — volume (m^3)

For a fixed mass of gas at constant temperature. You may also be asked to represent this graphically.

2.2.2 Specific heat capacity

SUPP.

Specific heat capacity

$$c = \Delta E / (m\Delta\theta)$$

$\Delta E = mc\Delta\theta$ · $\Delta\theta = \Delta E / (mc)$

- c — specific heat capacity (J/(kg °C), J/(g °C))
- ΔE — energy supplied (J)
- m — mass (kg, g)
- $\Delta\theta$ — temperature rise (°C)

2.2.3 Melting, boiling and evaporation

No equations. 0625 does not examine specific latent heat — melting, boiling and evaporation are described in terms of energy and particles.

2.3 Transfer of thermal energy

No equations. Conduction, convection and radiation are examined qualitatively and through experiment.