

P3 Quick Revision Questions

H = Higher tier only

SS = Separate science only

Question 1

.... of 30

- Name the three states of matter

Answer 1

.... of 30

Solid, liquid and gas

Question 2

.... of 30

- What does density compare?

Answer 2

.... of 30

Mass of materials with the same volume

Question 3

.... of 30

- Why do solids have a higher density than liquids and gases?

Answer 3

.... of 30

The particles in a solid are more tightly packed

Question 4 of 30

- What is the equation for density?

Answer 4

.... of 30

$$\rho = m/V$$

ρ = density (kg/m³)

m = mass (kg)

V = volume (m³)

Question 5

.... of 30

- Calculate the mass of 5 m^3 of water. The density of the water is 1000 kg/m^3

Answer 5

.... of 30

$$\begin{aligned}m &= \rho V \\ &= 1000 \text{ kg/m}^3 \times 5 \text{ m}^3 \\ &= 5000 \text{ kg}\end{aligned}$$

Question 6

.... of 30

- If a 2cm^3 cube of soft rubber had a mass of 8.82g, its volume would be $2\text{cm} \times 2\text{cm} \times 2\text{cm}$ (8cm^3), what is the density?

Answer 6

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$$\begin{aligned} & 8.82\text{g}/8.0\text{cm}^3 \\ & = 1.1\text{g}/\text{cm}^3 \end{aligned}$$

Question 7

.... of 30

- Define sublimating

Answer 7

.... of 30

The change from solid to gas without going through the liquid state

Question 8

.... of 30

- What happens to the speed of the molecules in a liquid as it warms up?

Answer 8

.... of 30

The speed increases

Question 9

.... of 30

- How can sweating help reduce the body temperature?

Answer 9

.... of 30

The evaporation of sweat from our skin produces cooling. The faster molecules with more energy escape from the surface and leave the slower molecules with less energy.

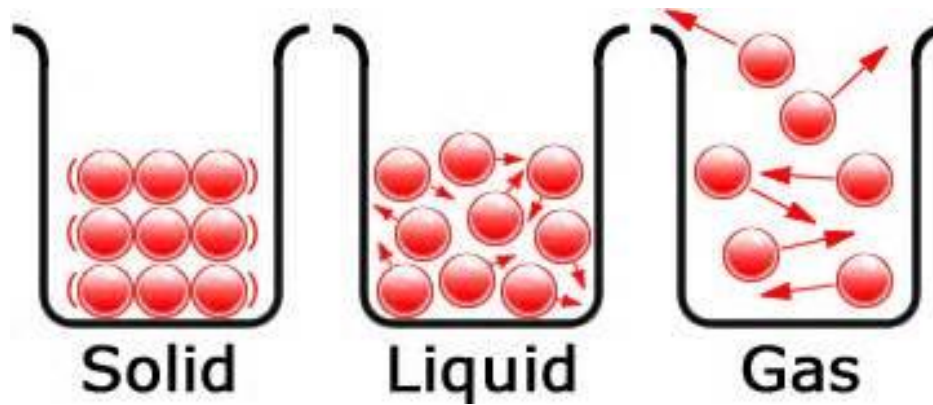
Question 10

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- Draw models of particles in the three states of matter

Answer 10

.... of 30



Question 11

.... of 30

- Define the internal energy

Answer 11

.... of 30

The internal energy of a system is the total kinetic energy and potential energy of all the particles in the system

Question 12

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- What are two changes occur to particles when a liquid is heated?

Answer 12

.... of 30

More kinetic energy

Attract each other more strongly

Question 13

.... of 30

- When a liquid is heated, its temperature increases. What does the temperature rise depend on?

Answer 13

.... of 30

Mass of liquid

The liquid

Energy input into the system

Question 14

.... of 30

- Define specific heat capacity

Answer 14

.... of 30

The energy needed to raises the temperature of
1kg of the substance by 1°C

Question 15

.... of 30

- Give the equation for the change in thermal energy

Answer 15

.... of 30

$$\Delta E = mC\Delta\theta$$

ΔE = change in thermal energy in J

m = mass in kg

c = specific heat capacity in J/kg °C

$\Delta\theta$ = temperature change in °C

Question 16

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- How much energy is needed to heat 100g of water from 10°C to 40°C?

Answer 16

.... of 30

$$\Delta E = mC\Delta\theta$$

$$\Delta E = 0.1 \times 4200 \times 30$$

$$\Delta E = 12600\text{J}$$

Question 17

.... of 30

- Define latent heat

Answer 17

.... Of 30

The energy needed for a substance to change a state without a change in temperature

Question 18

.... of 30

- State the equation for the energy for a change of state

Answer 18

.... of 30

$$E = mL$$

E = energy for a change in state (J)

m = mass (kg)

L = specific latent heat (J/kg)

Question 19

.... of 30

- Calculate the energy transferred from a glass of water to just melt 100g of ice cubes at 0°C
 - Specific latent heat (J/kg) of ice to water = 340000J/kg

Answer 19

.... of 30

$$E = mL$$

$$E = 0.1 \times 340000$$

$$E = 34000 \text{ J}$$

Question 20

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- Why is the specific latent heat of vaporisation much greater than the specific latent heat of fusion?

Answer 20

.... of 30

- More energy is required to separate the particles of a liquid so they can form a gas and to push back the atmosphere as the gas forms

Question 21

.... of 30

- What factor of a gas is related to the average kinetic energy of its molecules?

Answer 21

.... of 30

- The temperature of the gas

Question 22

.... of 30 **SS**

- What is pressure equal to?

Answer 22

.... of 30

- The force on a wall (object) divided by the area over which the force acts

Question 23

.... of 30 **SS**

- Define gas pressure

Answer 23

.... of 30

- The total force exerted by all the molecules inside a container that strike a unit area of the container wall

Question 24

.... of 30 **SS**

- If air is sealed into a container and its mass and volume is kept constant. What will an increase in temperature do to the gas?

Answer 24

.... of 30

- Cause an increase in pressure of the gas

Question 25

.... of 30 **SS**

- If the number of particles in a container and the temperature is kept constant. But the volume of the container changes, what happens?

Answer 25

.... of 30

- Volume decreased = pressure increases
- Volume increased = pressure decreases

Question 26

.... of 30 **SS**

- Give the equation for a fixed mass of gas when pressure or volume are changed

Answer 26

.... of 30

- $p_1 \times V_1 = p_2 \times V_2$

Question 27

.... of 30 **SS**

- The pressure of a gas is 1.2×10^5 Pa when its volume is 0.5m^3 . What is its volume when the pressure changes to 2.0×10^5 Pa? The temperature is kept constant.

Answer 27

.... of 30

- $p_1 \times V_1 = p_2 \times V_2$
- $1.2 \times 10^5 \text{ Pa} \times 0.5 = 2.0 \times 10^5 \text{ Pa} \times V_2$
 - $V_2 = 0.3 \text{ m}^3$

Question 28

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- Define work

Answer 28

.... of 30

- The transfer of energy by a force

Question 29

.... of 30

- Why does doing work on a gas using a bicycle bump increase the internal energy of the air in the bicycle tyre?

Answer 29

.... of 30

- The internal energy increases because the kinetic energy of the molecules has increased (by doing the work on the gas)

Question 30

.... of 30 **SS**

- The pressure of a gas is 1.8×10^5 Pa when its volume is 80 cm^3 . Its temperature is constant. Calculate its volume when the pressure becomes 1.2×10^5 Pa

Answer 30

.... of 30

- $p_1 \times V_1 = p_2 \times V_2$
- $1.8 \times 10^5 \times 80 = 1.2 \times 10^5 \times V_2$
 - $V_2 = 120 \text{ cm}^3$