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| CIE Chemistry IGCSE  Topic 2 - Experimental Techniques  Flashcards | Suggest apparatus that is  suitable for measuring time, temperature and mass |
| Suggest suitable apparatus for measuring volume | What is paper  chromatography used for? |
| How does separation occur in paper chromatography? | Describe how you could use paper chromatography to separate a mixture of food colourings |
|  | Suggest apparatus that is suitable for measuring time, temperature and mass  Time - stopwatch  Temperature - thermometer / temperature probe  Mass - digital mass balance |
| Suggest suitable apparatus for measuring volume  Measuring cylinder Burette  Pipette with pipette filler | What is paper chromatography  used for?  Separating and identifying a mixture of substances. |
| How does separation occur in paper chromatography?  There is a stationary phase (chromatography paper) and a mobile phase (solvent).  Substances have different solubilities in the mobile phase so will travel at different rates causing separation. More soluble substances  travel further. | Describe how you could use paper chromatography to separate a mixture of food colourings  - Draw a pencil line 2 cm .  - Place one dot of 3 known food colourings and one dot of the unknown mixture along the line.  - Place the paper in a beaker.  - Remove the paper from the beaker and mark the height. Dry the paper.  - Observe the chromatogram and record results. |
| Why should pencil be used to draw the line along the bottom of the chromatography paper? | Why should the solvent in the beaker be no deeper than 1cm for paper chromatography? |
| In paper chromatography,  what is the stationary phase? | Use kinetic theory to describe what happens when a solid melts  (extended only) |
| Use kinetic theory to describe what happens when a liquid freezes  (extended only) | Use kinetic theory to describe what happens when a liquid evaporates (extended only) |
| Why should pencil be used to draw the line along the bottom of the chromatography paper?  It is insoluble in the solvent so will not affect the experiment. | Why should the solvent in the beaker be no deeper than 1cm for paper chromatography?  If it is deeper, it will wash away the substances on the chromatography paper. |
| Describe the forces between particles in solids, liquids and gases  Solids - Strong forces of attraction between particles which keeps them in fixed positions.  Liquids - Weaker attractive forces than in solids.  Gases - No intermolecular forces so particles move randomly. | Use kinetic theory to describe what happens when a solid melts (extended only)  Particles in the solid absorb thermal energy when heated and convert into kinetic energy. This causes the particles to vibrate more. The solid then expands until the structure breaks, and it becomes a liquid. |
| Use kinetic theory to describe what happens when a liquid freezes (extended only)  When cooled, the liquid particles slow down. Eventually, the particles move slow enough for forces to hold the particles in a regular solid structure. | Use kinetic theory to describe what happens when a liquid evaporates (extended only)  Particles near the surface of the liquid gain sufficient energy from the surroundings to overcome the forces between molecules and evaporate. |
| Use kinetic theory to describe what happens when a liquid boils  (extended only) | Use kinetic theory to describe what happens when a gas condenses  (extended only) |
| Use kinetic theory to describe what happens during sublimation  (extended only) | Substance A melts at -183oC and boils at -50oC. What state is A at  -90oC? |
| How does pressure affect the motion of gas particles? | How does temperature affect the motion of gas particles? |
| Use kinetic theory to describe what happens when a liquid boils (extended only)  When heated, the particles gain energy and will eventually move fast enough to overcome the forces between them. | Use kinetic theory to describe what happens when a gas condenses (extended only)  When cooled, the gas particles slow down and get closer together. Eventually, the forces between the particles will be great enough for the substance to become a liquid. |
| Use kinetic theory to describe what happens during sublimation (extended only)  Particles on the surface of a solid gain sufficient energy to overcome all forces between them and become a gas. This is similar to evaporation, but occurs with solids  rather than liquids. | Substance A melts at -183oC and boils at -50oC. What state is A at  -90oC?  Liquid |
| How does pressure affect the motion of gas particles?  As pressure increases, the motion of the gas particles increases. | How does temperature affect the motion of gas particles?  As temperature increases, pressure and the kinetic energy of the particles increases which causes the particles to move more. |
| Fluids are what state of matter? | True or false?  ‘Particles in fluids move randomly’ |
| Explain Brownian motion (refer to random molecular bombardment)  (extended only) | What is evidence for the kinetic particle model of matter? |
| State evidence for Brownian motion  (extended only) | Explain the process of diffusion |
| Fluids are what state of matter?  Liquid or gas | True or false?  ‘Particles in fluids move randomly’  TRUE  This is Brownian Motion. |
| Explain Brownian motion (refer to random molecular bombardment) (extended only)  Particles in a fluid move randomly because they are bombarded by other randomly moving particles in the fluid. | What is evidence for the kinetic particle model of matter?  The random motion of particles in a suspension (brownian motion). |
| State evidence for Brownian motion (extended only)  Robert Brown looked at pollen grains moving in water. The random movement of the pollen grains could not be explained until Brownian motion was developed. This explained that there were separate particles moving randomly in water, causing the pollen grains to move randomly. | Explain the process of diffusion  The net movement of particles from an area of high concentration to an area of low concentration. Diffusion is a passive process  (requires no energy). |
| Which states of matter does diffusion occur in? | How does the diffusion rate depend on molecular mass?  (extended only) |
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| Which states of matter does diffusion occur in?  Liquids and gases (fluids).  The particles don’t move in a solid so diffusion isn’t possible. | How does the diffusion rate depend on molecular mass? (extended only)  Particles with a smaller molecular mass have a higher average speed.  The rate of diffusion is quicker for molecules with a smaller molecular mass as they can move to different regions faster. |