

Chemistry 11

Course Review

KEY

3. Review p.53-58. Answer the following:

- a) Explain how distillation can be used to separate the substances in a solution.

The components of the solution have different boiling points. The temperature is gradually increased so that only one of the substances boils. The vapor from the boiling substance is condensed to a liquid in the condenser. The other substance(s) remain(s) in the flask.

- b) What types of mixtures does paper chromatography work best for?

- small amounts like ink, leaf pigments etc.

see diagram p.54 S.W.

- c) What is the simplest, most economical method of separating suspensions?

filtration

- d) Solvent extraction involves using two different solvents which are (miscible/immiscible) immiscible. A device called a separatory funnel is used.

- e) Explain how a centrifuge separates the components of a suspension.

It spins fast and the more dense materials are forced outward more (toward bottom of test-tube).
see diagram p.56 of S.W.

4. Define a physical change - a change in which

the chemical composition of materials don't change.
Give some examples of physical changes.

- phase changes - freezing, melting, boiling, condensation etc.
- physical mixing
- grinding etc.

5. Define a chemical change - a change in which new chemical substances are formed

Give some examples of chemical changes.

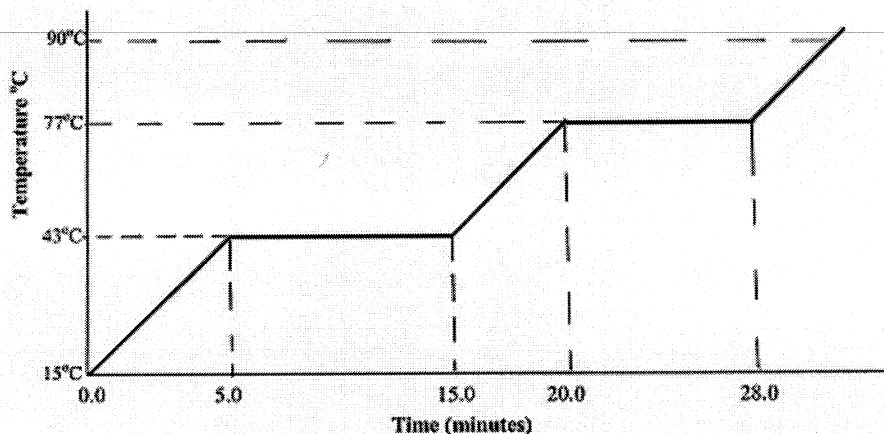
burning (combustion)
cooking
cellular respiration
photosynthesis
neutralization etc.

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6. Given the following graph of Temperature vs. Time for warming substance "X" which starts out as a solid, answer the questions below:



- During time 0.0 – 5.0 minutes, the added heat energy is being used to increase the temperature of the solid
- During time 5.0 – 15.0 minutes, the added heat energy is being used to melt the solid
- During time 15.0 – 20.0 minutes, the added heat energy is being used to warm up the liquid substance "X"
- During time 20.0 – 28.0 minutes, the added heat energy is being used to boil the liquid
- The melting point of substance "X" is 43°C.
- The boiling point of substance "X" is 77°C
- If a greater amount of substance "X" was used, the melting point would be
 - a lower temperature
 - a higher temperature
 - the same temperature
 Answer ③
- What phase is substance "X" at 90°C? gaseous
- Explain WHY the curve levels off between 5.0 min. and 15.0 min.
All of the added heat energy is being used for the process of melting the solid (phase change), so none is available to warm the substance until melting is complete.