

International College
Middle School
Physical Science Test
Mixtures

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Name: _____

Grade seven _____

February, 2008

Duration: 50 min

Estimated Grade:

/100

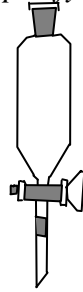
Neatness and clarity of handwriting: (2%)

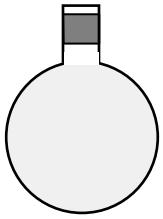
I. Circle the best answer: (20%)

1. A mixture in which the substances are not mixed evenly is called
a. homogeneous b. a solution c. heterogeneous d. precipitated
2. Sterling silver contains 92.5 percent silver and 7.5 percent copper. Which substance is the solute?
a. Solids do not form solutions. c. silver
b. copper d. platinum
3. A solution that contains all the solute it can hold at a given temperature is
a. soluble b. unsaturated c. supersaturated d. saturated
4. Which of the following is a solution?
a. water and sulfur b. muddy water c. water and oil d. salt water
5. As the temperature of a liquid solvent increases, the amount of solute that can dissolve in it _____.
a. decreases by one degree Celsius for every milliliter of solvent b. remains constant
c. decreases d. increases
6. Which solution has the greatest concentration?
a. 12 g solute, 27 g solvent b. 15 g solute, 41 g solvent c. 9 g solute, 18 g solvent
7. Stir 500 g of cesium chloride into 200 g of water at 20°C. If 127 g sink to the bottom of the container, what is the solubility of cesium chloride in water at 20°C?
a. 186.5 b. 373 c. 127 d. 286.5
8. Making candy usually requires heating ingredients so that a large amount of sugar dissolves. If the candy solution cools and extra solute remains dissolved, the solution is _____.
a. saturated b. unsaturated c. supersaturated d. resaturated
9. Glass is mostly made of silica, which is found in sand. If lead is added to silica to make a crystal vase, the silica is known as the _____.
a. solute b. solution c. colloid d. solvent
10. Which of the following is an example of a homogeneous mixture?
a. a bell made of bronze, a well mixed combination of copper and tin metals
b. a medication that must be shaken to mix the substances that have separated
c. concrete in which you can see the sand and mortar that make up the mixture
d. water taken from a river has a layer of sand and silt lying on the bottom when viewed after a few days

II. Name each of the following equipment and specify its function: (16%)









III. Mira put 10 ml of water and 2 g of a different solid into each of four test-tubes. She shook each test-tube. The drawings show the test-tubes after 10 minutes.

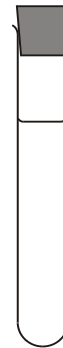
1. Why can the salt and sugar no longer be seen in test-tubes A and C? (3%)



A
salt



B
sand



C
sugar



D
limestone

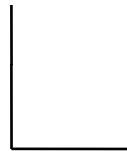
2. What substance(s) can be considered to be insoluble in water? (4%)

3. Using the above information, calculate the concentration of salt in test tube A? (show your work) (8%)

4. Knowing that the solubility of salt is 36g in 100ml of water at 20°C, is the salt solution saturated, unsaturated or supersaturated? Explain. (6%)

IV. A scientist got a certain rock from outer space. He placed the rock in water and stirred it for several minutes. This produced a blue solution with tiny, solid, black particles that settled down.

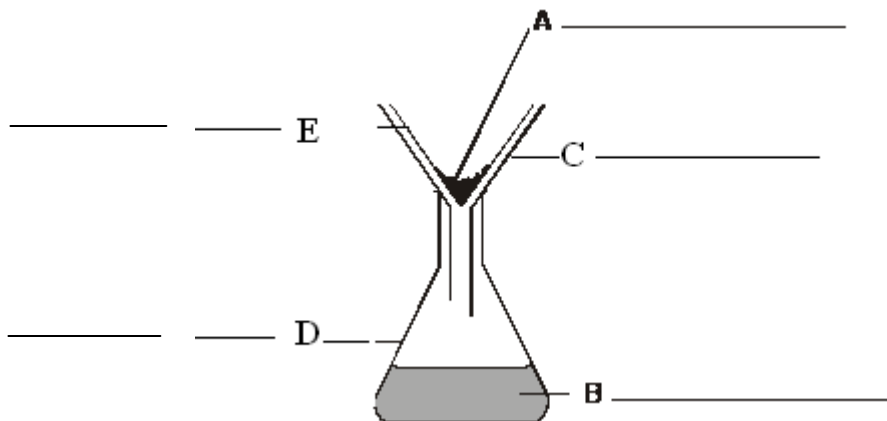
a. Draw and label the mixture using a diagram. (4%)



b. Would you classify his mixture to be homogeneous or heterogenous? Justify your answer by giving two reasons. (5%)

He then separated the black particles from the blue solution using the apparatus below.

c. Give the name of this method of separation. (3%).....



d. The above diagram shows the results. On the diagram, label the letters. (5%)

Two days later there were blue crystals in the dish, but **no** liquid.



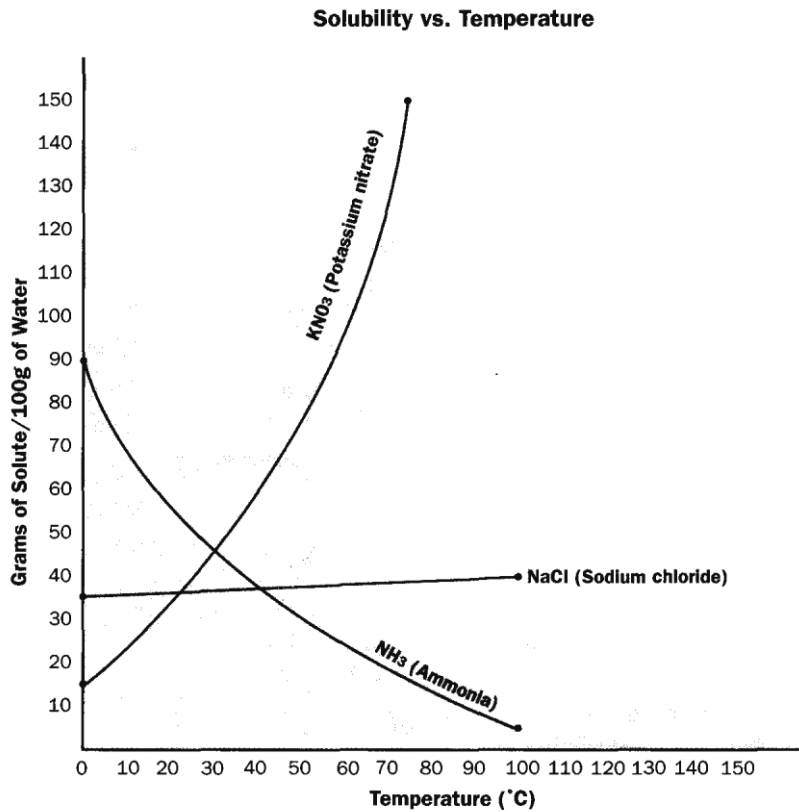
at the start



two days later

e. What happened to the liquid in the dish? (2%)

- V. The graph shows how the solubility of three substances in water changes with temperature. The solubility is the number of grams of the substances which will dissolve in 100 g of water.



- a) Describe how the solubility of each substance changes with temperature.(6%)

Potassium nitrate:

Sodium chloride:

Ammonia:

- (b) Use the information in the graph to answer the questions below.

- (i) What is the solubility of the following substances at 60°C?(4%)

Potassium nitrate g per 100 g of water

Ammonia g per 100 g of water

- (ii) At what temperature are the solubilities of ammonia and potassium nitrate the same? (2%)

..... °C

(iii) What is the largest mass of sodium chloride which can be dissolved in 50 g of water at 60°C? (4%)

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(c) Why is the solubility of these substances in water normally given only for temperatures between 0°C and 100°C? (6%)

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