REVIEW

Chapter 1 Test: Matter /50 **Name:** KEY **Grp:**

Part 1: True or False (9 marks)

1 All atoms are elements. Yes, True
If not, why not? _____

2. All molecules are compounds. No = some molecules have same atoms, so not a compound
If not, why not? Example O_2 = molecule but not a compound

3. The particles of a solid are always a bit closer than particles in its liquid. T

4. Forces of attraction are weaker between particles of a liquid than for a solid. T

5. A solution is a heterogenous mixture. F

6. Dilution involves decreasing a solution's concentration by adding solvent. T
water

7. Solubility is the maximum amount of solvent that can dissolve a solute. F
Saturation

8. The solubility of oxygen gas in water increases with increasing temperature. F

Part 2:Short Answers (23 marks)

1. Indicate which of the following properties are non-characteristic (NC), characteristic physical properties (CP) or are characteristic chemical properties (CC) of pure substances. (6 marks)

a) mass NC b) density CP c) volume NC d) conductivity CP

e) flammability CC f) solubility CP g) temperature NC h) litmus test CC

i) colour NC j) texture NC k) melting point CP l) limewater test CC

physical chemical p. 23-24

2. Place an M for homogenous mixture and a T for heterogenous mixture for each below (5):

a) soil T b) air M c) steel M d) filtered apple juice M e) granite T

3. In each of the following describe the most appropriate method for obtaining the substances by physical separation. (4) Use Centrifugation, Chromatography, Decantation, Distillation, Evaporation or Filtration. Note: no duplicates; an answer may be use only once.

a) Oil from a mixture of oil and vinegar: decantation

b) Salt from an aqueous salt solution: evaporation

c) Alcohol from an aqueous solution: distillation

d) Red pigment from black ink: chromatography

4. Given the formulas for the following particles of pure substances:

H_2, CO_2, Li, Co, CO, Cu, PbO_2, S_8, $C_6H_{12}O_6$, Fe_2O_3

a) Sort them as atoms or molecules. (4 marks)

Atoms: Co, Cu, Li

Molecules: S_8, H_2, CO_2, CO, $C_6H_{12}O_6$, Fe_2O_3, PbO_2

b) Sort them as elements or compounds. (4 marks)

Elements: H_2, Li, Co, Cu, S_8

d) Compounds: CO_2, CO, PbO_2, $C_6H_{12}O_6$, Fe_2O_3

Part 3: Solve the Following Problems (18 marks) **Show all Formulas, Work and Units!**

(C = m/V, where C: concentration, m: mass of solute and V: volume of solution)

1. If Leah dissolves 16 g of copper sulphate to make 250 ml of solution, what would the concentration of her solution be in g/L? (4 marks)

$C = \frac{16\,g}{0.250\,L} = 64\,\frac{g}{L}$

2. Calculate the mass needed for Daniel to produce 250 ml of an aqueous solution of sodium hydroxide (NaOH) with a concentration of 24 g/L. (4 marks)

$V = 0.250\,L$

$C = 24\,\frac{g}{L}$

$m = \left(24\,\frac{g}{L}\right)(0.250\,L) = 6\,g$

3. What volume of lemonade with a concentration of 75 g/L could be produced from 500 ml of concentrated lemonade with a sugar concentration of 1500 g/L? (4 marks)

* Include the volume of water required to add. (2 marks)

$C_1V_1 = C_2V_2$, where C is concentration and V is volume of solution, 1 before dilution and 2 after.

$V_2 = V_1 + H_2O$

$C_1 = 1500\,\frac{g}{L}$

$V_1 = 0.500\,L$

$C_2 = 75\,\frac{g}{L}$

$V_2 = ?$

$C_1V_1 = C_2V_2$

$(1500)(0.500) = (75)(?)$

$10\,L = ?$

Added

$10\,L - 0.500\,L = 9.5\,L$

4. Alicia prepares salt solutions at the hospital as a nurse's aid. If Alicia needs to make 750 ml of salt solution that has a concentration of 9 % (m/v) what mass of salt does she need? (4 marks)

Hint: convert % m/v to g/L

9 g / 100 mL

$C = \frac{m}{V}$

$C = \frac{9\,g}{0.100\,L} = 90\,\frac{g}{L}$

$V = 0.750\,L$

$m = \left(90\,\frac{g}{L}\right)(0.750\,L) = 67.5\,g$