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Name:- Raneem yameen   **Reg. NO.:-**

Q1: Answer the following with True or false:-

1- Smoking is allowed in the laboratory (False).
2- Experiments should never be left unattended (True).
3- Pure solid will melt with a broad m. p. range (False).
4- Soluble impurities affect the m. p. range of a solid by making it narrower (False).
5- Never taste any solid or liquid chemical (True).
6- Point your test tube at your neighbor when heating substances (False).

Q2: Determine if the following will (increase, decrease or has no effect on m. p. or m. p. range recording):-

1- Presence of sand in the sample (no effect). increase on the m. p. range
2- Using too much sample in the capillary (increase on m.p. range ·
3- Using a capillary tube thicker than the standard capillaries (decrease). increase. m.p. range .
4- Increasing the rate of heating (~~decrease m.p. range~~ increase m.p.

Q3: fill the blank with the suitable answer:-

1- Melting point is routinely used for :- a- To identification the substance.
                                          b- To cheak the purity of substance.

2- Melting point of a compound depends on __inter molecular forces.__ which hold the individual molecules together in a crystal lattice.

3- Melting point range is affected by a- The size of sample .
                                      b- impurities .

Best Wishes

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Q1: Answer the following with True or false:-

1- Boiling point is not affected by the external pressure (False).

2- Presence of H-bonds in the molecule increases B.P (True).

3- Branching increases the B.P of the Liquid (False).

4- During boiling the vapor is rich with the more volatile liquid (True).

5- If compound A B.P =170 Compound B B.P= 120, so simple distillation is used to separate them from each other (False).

Q2: Assume that we mixed 4 mole of H_2O ($P^0 H_2O$=600mmHg) and 6 mole of ethanol (P^0 ethanol= 850mmHg), calculate the total pressure of the mixture

$$P_{H_2O} = 600 * \frac{4}{10} = 240$$

$$\boxed{P_A = P^o_A * X_A.}$$

$$P_{ethanol} = 850 * \frac{6}{10} = 510.$$

$$P_T = P_{H_2O} + P_{ethanol} = 750\,mmHg.$$

Q3: Cold water in condenser should enter at the lower end and exit from the upper exit

To ensure the condensir fall of water and completely cooling.

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1- A solid compound (X) is soluble in cold H_2O, soluble in cold benzene, but insoluble in hot ligroin. Encircle the right solvent-pair which is suitable for the re-crystallization of compound (X):

a. H_2O + Benzene

b. H_2O + Ligroin

c. Benzene + Ligroin

2- A solid compound (Y) is slightly soluble in cold H_2O (1.0 g/100 mL), and is more soluble in hot H_2O (10 g/100 mL). Encircle the right volume of H_2O which is most suitable to obtain 2.25 g of re-crystallized compound (Y):

a. 500 mL

b. 25 mL

c. 55.55 mL

d. 75 mL

3- The solubility of a solid compound (Z) is as follows:
   0.1 g/ 100 mL cold water and 0.2 g/ 100 mL hot water
   5.0 g/ 100 mL cold ethanol and 10.0 g/ 100 mL hot ethanol
   1.0 g/ 100 mL cold benzene and 10.0 g/ 100 mL hot benzene

a. Benzene

b. Ethanol

c. Water

4- Given that the solubility of compound (A) in hot ethanol is 4.0 g/ 100 mL, and that in cold methanol is 0.4 g/ 100 mL. if 12.0 g of (A) was re-crystallized using 300 mL ethanol, encircle the maximum mass in grams that can be obtained after one re-crystallization:

a. 4.0

b. 2.1

c. 3.8

d. 10.8

5- In the re-crystallization experiment, charcoal is used in order to :

a. Obtain large crystals

b. Get rapid filtration

c. Remove colored impurities

d. Remove insoluble impurities

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Name: رشيد عاصمة   **Reg. NO.:-**

1- Indicate how can you perform each of the following in the lab:

a. Decrease the solubility of an organic compound in the aqueous layer during extraction.

   Salting out.

b. Remove trace amount of water from dichloromethane

   anhydrouse.

c. Isolating small amount of immiscible oil from water

   liquid-liquid extraction.

d. Isolating caffeine from dichloromethane

   evaporating.

e. Removing acidic tannins in the extraction of caffeine from tea leaves

   Solid-liquid extraction   adding Na_2CO_3 (salting out).

2- What are the properties of a suitable solvent for the extraction of an organic solute from an aqueous solution

   a. extract littel or no impurities.
   b. dissolve with desird compound ~~react~~ ~~.........~~ readly. ✗
   c. evaporate from desired compound easly (Volatile).

3- Calculate the mass of compound A extracted by 60 mL of ether from an aqueous solution containing 18 gm of A in 120 mL of water (K_D for A = 4)

$$4 = \frac{x/60}{18/120}$$

$$\downarrow 18-x.$$

$$K_D = \frac{K_{org}}{K_{aq}}$$

$$0.6 = \frac{x}{60}$$

$$x = 36\,g$$

Best Wishes