The Mid Lab Exam

Question 1 / 15

Which of the following pair of liquids are not miscible?

1. ○ salt + nonpolar
2. ○ salt + polar
3. ○ Non-polar + non-polar
4. ○ All of the above will be miscible
5. ○ All of the above will be immiscible

Next

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Question 1 / 15

At limiting reactant experiment, if sufficient washing of the precipitate, the actual yield is:

1. ○ decrease
2. ○ increase
3. ○ no effect
4. ○ None of the above

Next

remove unwanted substance in magnesium oxide empirical formula experiment, we added few drops of water to convert this unwanted substa

1. ⃝ MgO
2. ⦿ Mg(OH)2
3. ⃝ Mg3N2
4. ⃝ MgO2

Next

Question 1 / 15

If the magnesium oxide ash is not dried completely the reported value of (Mg to O) mole ratios is not effected

1. ⃝ true
2. ⦿ false

Next

Question 2 / 15

In the Limiting Reactant Experiment, a few drops of $BaCl_2 \cdot 2H_2O$ are added and turbidity is appeared, this means:

1. ⊙ Both of Na_3PO_4 and $BaCl_2 \cdot 2H_2O$ are excess.
2. ⊙ Na_3PO_4 is the limiting reactant and $BaCl_2 \cdot 2H_2O$ is the excess.
3. ⊙ $BaCl_2 \cdot 2H_2O$ is the limiting reactant and Na_3PO_4 is the excess.
4. ⊙ More information are required to determine the limiting reactant.

Next

السؤال التالي

Question 2 / 15

20.0 g of a unknown mixture containing $Na_3PO_4.12H_2O$ and $BaCl_2.2H_2O$ is dissolved in distilled water. The mass of $Ba_3(PO_4)_2$ precipitated is 8.00. Calculate the % of each salt present in the mixture if $BaCl_2$ is the limiting reactant?

1. ⊙ 48.5, 51.5 respectively
2. ⊙ 40.1, 59.9 respectively
3. ⊙ 51.5, 48.5 respectively
4. ⊙ 36.4, 36.6 respectively
5. ⊙ 32.8, 67.2 respectively

Next

Question 3 / 15

A sample of phosphorous is placed in a 10.05 g crucible and gives 10.24 g then heated red hot to form a white oxide compound. After heating, the crucible and product weigh 10.39 g. what is the empirical formula of this metal oxide compound?

1. ○ PO
2. ○ PO2
3. ○ P2O
4. ○ P2O3

Next

Question 3 / 15

A sample of phosphorous is placed in a 12.66 g crucible and gives 13.33 g then heated red hot to form a white oxide compound. After heating, the crucible and product weigh 13.51 g. what is the empirical formula of this met

1. ○ PO
2. ○ PO2
3. ● P2O
4. ○ P2O3

Next

Question 4 / 15

At limiting reactant experiment, if Insufficient washing of the precipitate, the actual yield is:

1. ○ increase
2. ○ no effect
3. ○ None of the above
4. ○ decresse

Next

Question 5 / 15

Which of the following statements is correct?

1. ○ The hottest part of the burner is the bottom most part.
2. ○ The bottom graduation mark on 50-mL burette is marked 50-mL.
3. ○ Point your test tube at your face when heating anything to watch what happening exactly, unless directed not to do so.
4. ○ When dealing with flammable material, heat with direct flame but take the necessary precautions.

Next

الصفحة السابقة

Question 3 / 15
The correct order of decreasing accuracy of volumetric measurement tools is?

1. ⃝ Graduated cylinder, pipette, beaker, burette.
2. ⃝ Burette, graduated cylinder, pipette, beaker.
3. ⃝ Beaker, graduated cylinder, burette, pipette
4. ⃝ Volumetric Pipette, burette, graduated cylinder, beaker.

Next

Question 4 / 15
Which of the following statements is correct?

1. ⃝ The hottest part of the burner is the bottom most part.
2. ⃝ Point your test tube at your face when heating anything to watch what happening exactly, unless directed not to do so.
3. ⃝ When dealing with flammable material, heat with direct flame but take the necessary precautions.
4. ⃝ The bottom graduation mark on 50-mL burette is marked 50-mL.

Next

Question 6 / 15

To remove unwanted substance in magnesium oxide empirical-formula experiment, we added few drops of water to convert this unwanted substance to:

1. $\bigcirc$ MgO
2. $\bigcirc$ Mg(OH)2
3. $\bigcirc$ Mg3N2
4. $\bigcirc$ MgO2

Next

Question 5 / 15

A gaseous compound is composed of 77.7% of carbon and 22.3% of hydrogen. . Determine the empirical formula of the compound ?

1. $\bigcirc$ C2H2
2. $\bigcirc$ CH3
3. $\bigcirc$ CH4
4. $\bigcirc$ C3H8

Next

Question 7 / 15

A 20 g of $Na3PO4.12H2O$ and 20 g of $BaCl2.2H2O$ is dissolved in water. A precipitate of $Ba3(PO4)2(s)$ weighing 5.86g is produced. Calculate the % yield of $Ba3(PO4)2(s)$, where: [(FM) of $Na3PO4.12H2O = 380.2$ g/mole; (FM) of $BaCl2.12H2O = 244.2$ g/mole; (FM) of $Ba3(PO4)2$ = 602.2 g/mole)]

1. ☐ 36.04%
2. ◯ 63.04%
3. ◯ 73.44%
4. ◯ 37.44%

Next

Question 5 / 15

A gaseous compound is composed of 77.7% of carbon and 22.3% of hydrogen. . Determine the empirical formula of the compound ?

1. ◯ C2H2
2. ◯ CH3
3. ◯ CH4
4. ◯ C3H8

Next

Question 6 / 15
In the Limiting Reactant Experiment, a few drops of $BaCl_2 \cdot 2H_2O$ are added and turbidity is appeared, this means:

1. Na_2SO_4 is the limiting reactant and $BaCl_2 \cdot 2H_2O$ is the excess.
2. Both of Na_3PO_4 and $BaCl_2 \cdot 2H_2O$ are excess.
3. More information are required to determine the limiting reactant.
4. $BaCl_2 \cdot 2H_2O$ is the limiting reactant and Na_3PO_4 is the excess.

Next

Question 7 / 15
Which of the following statements is not correct with respect to the safety rules?

1. Never taste or smell chemical or solution unless your laboratory told you to do so.
2. The reagent bottles on the side shelves should not be used by the student.
3.
   If more than suggested amount of solid chemical is dispensed from a reagent bottle, the excess should be returned to the reagent bottle.
4. Do not point your test tube at your face when heating anything to watch what happening exactly.

Next

TOSHIBA

Question 15 / 15

Which of the following statements is correct ?

1. ○ The boiling point is the temperature at which the vapor pressure of the liquid is equal to the atmospheric pressure
2. ○
   If the boiling point is recorded while the bubble escaping from the capillary tube (after the heat is removed), the recorded boiling point will be too low
3. ○ The boiling point of the substance increase as the intermolecular forces between molecules decrease
4. ○
   If the boiling point is recorded after the liquid enters the capillary tube (after the heat is removed), the recorded boiling point will be too high.
5. ○ As the temperature increases the vapor pressure of the liquid decreases

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Question 9 / 15

A sample of phosphorous is placed in a 10.05 g crucible and gives 10.24 g then heated red hot to form a white oxide compound. After heating, the crucible and product weigh 10.39 g. what is the empirical formula of this metal oxide compound?

1. ○ PO
2. ○ PO2
3. ○ P2O
4. ○ P2O3

Next

Question 8 / 15

the effect of Mg3N2 if it is decomposed on the reported (Mg to oxygen) mole ratio is not effected

1. ○ true
2. ○ false

[Next]

انتهاء الحلقة

Question 10 / 15

Which of the following pair liquids are miscible?

1. ○ Polar + polar
2. ○ Non-polar + polar
3. ○ Non-polar + non-polar
4. ○ 1 and 3 will be miscible
5. ○ All of the above will be miscible

[Next]

Question 9 / 15

A gaseous compound is composed of 75.8% of carbon and 24.2% of hydrogen. I. Determine the empirical formula of the compound ?

1. ○ CH4
2. ○ C2H8
3. ○ C2H3
4. ○ C3H5

Next

Question 11 / 15

If you used 10 ml pipette to take10 ml of four unknown liquid substances A, B, C and D you find that the weight of the 10 ml of each substance is the following: A = 8.9g , B = 9.2g , C = 9.1g, D=9.0g . The order of density decreasing of these liquids is :

1. ○ B, D, C, A
2. ○ A, B, C, D
3. ○ C, B, A, D
4. ○ C, A, B, D
5. ○ B, C, D, A

Question 10 / 15

Which of the following statements is correct ?

1. ⃝ The boiling point is the temperature at which the vapor pressure of the liquid is higher than the atmospheric pressure.

2. ⃝

   If the boiling point is recorded while the bubble escaping from the capillary tube (after the heat is removed), the recorded boiling point will be too low.

3. ⃝ The boiling point of the substance increase as the intermolecular forces between molecules decrease.

4. ⃝

   If the boiling point is recorded after the liquid enters the capillary tube (after the heat is removed), the recorded boiling point will be too high.

5. ⃝ As the temperature increases the vapor pressure of the liquid increases.

<div align="center">Next</div>

Question 12 / 15

If air is sufficient to react with all the magnesium the reported value of (Mg to O) mole ratios is not effected.

1. ⃝ true
2. ⃝ false

<div align="center">Next</div>

Question 13 / 15

To remove unwanted substance in magnesium oxide empirical-formula experiment, we added few drops of water to convert this unwanted substance to:

1. ○ MgO
2. ○ Mg(OH)2
3. ○ Mg3N2
4. ○ MgO2

Next

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Question 14 / 15

A 20 g of Na3PO4.12H2O and 10.5 g of BaCl2.2H2O is dissolved in water. A precipitate of Ba3(PO4)2 weighing 5.86g is produced. Calculate the % yield of Ba3(PO4)2(s). where: [(FM) of Na3PO4.12H2O = 380.2 g/mole; (FM) of BaCl2.12H2O = 244.2 g/mole; (FM) of Ba3(PO4)2 = 602.2 g/mole)]

1. ○ 96.51%
2. ○ 69.51%
3. ○ 36.10%
4. ○ 63.10%

Next

Question 13 / 15

Which one of the following tools is used to transfer liquids with low accuracy?

1. ⦿ Graduated Cylinder.
2. ○ Pipette.
3. ○ Burette.
4. ○ Spatula.

Next

- Actual Yield = 4.25 g.

$$\% \,Yield \,of \,Ba^{+2} = \frac{4.25}{10} \times 100\% = 42.5\%$$

$$\% \,Yield \,of \,PO_4^{-3} = (100 - 42.5)\% = 57.5\%$$

Some questions about experiment :

Q) What's the effect of heating the solution on the particle size of $Ba_3(PO_4)_2$ ppt ?
Ans: It makes a coagulation.

Q) WHY Don't boil the solution?
Ans: To minimize the lost of the mass.

Q) WHY Using distilled water?
Ans: To Avoid the reactions of the unknowns.

Q) What's the effect on the Actual Yield of $Ba_3(PO_4)_2$ If:
1) Using a Coarse paper ? Decrease.
2) Insufficient washing of the ppt with water ? Increase.
3) The ppt was NOT dried completely ? Increase.
4) Washing of ppt with acid OR Washing the soln by acid? Decrease.

> % Yield direct with Actual Yield (علاقة طردية)

Determination of the L.R. :

1) Test for excess PO_4^{-3} OR Limiting Ba^{+2} :
Add 2 drops of 0.5 M $BaCl_2$ OR Barium to the solution :
- If a ppt is formed then PO_4^{-3} is the excess & Ba^{+2} is the L.R.
- If a ppt is NOT formed then PO_4^{-3} is the L.R. & Ba^{+2} is the excess.

2) Test for excess Ba^{+2} OR Limiting PO_4^{-3} :
Add 2 drops of 0.5 M Na_2SO_4 OR Phosphate to the solution :
- If a ppt is formed then Ba^{+2} is the excess & PO_4^{-3} is the L.R.
- If a ppt is NOT formed then Ba^{+2} is the L.R. & PO_4^{-3} is the excess.

حل أسئلة شاشات وسنوات

Q1: Given the equation $1A + 3B \rightarrow C + D$ by reacting 1 Mole of A with 2 Moles of B, Which of the following is true?

1) A is L.R. because of it's higher molar mass.
2) B is L.R. because of it's higher molar mass.
3) A is L.R. because you have fewer Moles of A than B.

4) B is L.R. because you have fewer Moles of B than A.
5) B is L.R. because you need 3 Moles of B and you have 2.

Q2: In the L.R. of salt mixture exp. to test for LIMITING Ba^{+2} ion:

1) Add few drops of Barium ion 0.5 M to supernatant ppt will appeared.
2) Add few drops of Phosphate ion 0.5 M to supernatant ppt will appeared.
3) Add few drops of Barium ion 0.5 M to supernatant ppt will NOT appeared.

The Final Lab Exam

Which of the following liquids, the experimental procedure of this experiment of determination of molar mass of volatile liquid could not be used to determine its molar mass?

Question 15 / 16

1. ○ Acetone (B.P. = 56 °C).
2. ○ Diethyl ether (B.P. = 45 °C).
3. ○ Carbontetrachloride (B.P. = 120 °C).
4. ○ Ethanol (B.P. = 78 °C).

3

Next

Question 16 / 16

A 2.5 g of NaOH solid was dissolve in 100.00 mL of water (density = 1.00 g/ mL), the change of temperature was 5.0 °C, the heat of solution was - 30.7 KJ/mol, same mass of NaOH was dissolve in 100.00 mL of HCL solution (density = 0.756 g/mL), the initial temperature was 23.00 °C and the heat of neutralization was -47.0 KJ/mol, calculate the final temperature for the second reaction? (Specific heat = 4.184 J/g . °C)

1. ○ 37.5 °C
2. ○ 39.6 °C
3. ○ 41.7 °C
4. ○ 44.0 °C

Previous

In the experiment of determination of the molar mass of a nonvolatile solute, K_f represents:

1. ○ Freezing point depression constant for the solute.
2. ○ Freezing point depression constant for the solution.
3. ○ Freezing point depression constant for the solvent.
4. ○ Freezing point depression constant for the thermometer.

Previous   Next

3

رح يتكرر 😅

In the experiment to determine the molar mass of a volatile liquid if the mass of the flask is measured after the liquid has been vaporized but before the outside of the flask is dried will the molar mass of the unknown liquid be too high or too low?

1. ○ Too low because the volume of the flask will be measured as less than it should be when it is filled with water to determine its volume.
2. ○ Too low because the water would be measured as part of the mass of the volatile liquid.
3. ○ Too high because the water would be measured as part of the mass of the volatile liquid.
4. ○ Too high because the volume of the flask will be measured as more than it should be when it is filled with water to determine its volume.

Previous   Next

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إسقاط علامة

stion 8 / 16

ich one of the following cases will cause an increase in the freezing point depression of
solvent?

○ Dissociation of the solute.
○ Association of the solute.
○ Evaporation of the solute.
○ Adding of insoluble solute.

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1

😅 رح يتكرر

Question 7 / 16

An Erlenmeyer flask weighs 40.13g when clean and dry. 138.24g when filled with wate
25.0 °C (d= 0.9970 g/ml) and 40.31g when filled with a gaseous substance at 720.4 tor
25.0 °C. What is the molar mass (g/mol) of the gas? [R = 0.082 L.atm $mol^{-1}.K^{-1}$ = 8.3
$.K^{-1}$]
$J.mol^{-1}$

1. ○ 42.8
2. ○ 35.8
3. ○ 47.2
4. ○ 20.8

3

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Question 14 / 16

n the experiment of Calorimetry, which one of the following statements is incorrect?
1. In exothermic reaction, the heat of reaction is positive.
2. The unit of the specific heat is J/g. °C
3. Calorimeter is an instrument used to measure the heat of reaction.
4. If final temperature is smaller than the initial temperature, the reaction is endothermic reaction.

Previous   Next

رح يتكرر لكن ركز بالكلمات لأنه في واحد نفسه بس كلمة بتغير كلشي 😅

Question 14 / 16

An Erlenmeyer flask weighs 40.13 g when clean and dry, 138.24g when filled with water at 25.0 °C (d = 0.9970 g/ml) and 40.31 g when filled with a gaseous substance at 740.4 torr and 25.0 °C. What is the molar mass (in g/mol) of the gas? [R = 0.082 L.atm/mol.K = 8.314 J/mol.K]

1. 45.9
2. 44.7
3. 47.2
4. 43.6

1

Question 13 / 16

If the freezing point of the solution had been incorrectly read as 0.3 °C lower than its true freezing point and the freezing point of the pure solvent was correctly read, the effect on the calculated molar mass of the unknown:

1. ○ Too low because ΔT_f is inversely proportional to the molar mass.

2. ○ Too low because ΔT_f is directly proportional to molar mass.

3. ○ Too high because ΔT_f is directly proportional to molar mass.

4. ○ No effect because the temperature does not change significantly.

| Previous | Next |

1

In the experiment to determine the molar mass of a volatile liquid if the mass of the flask is measured after the liquid has been vaporized but before the outside of the flask is dried. Will the molar mass of the unknown liquid be too high or too low?

Question 7 / 16

1. ○ Too low because the volume of the flask will be measured as less than it should be when it is filled with water to determine its volume.
2. ○ Too low because the water would be measured as part of the mass of the volatile liquid.
3. ○ Too high because the water would be measured as part of the mass of the volatile liquid.
4. ○ Too high because the volume of the flask will be measured as more than it should be when it is filled with water to determine its volume.

Next

3

In the experiment of Calorimetry, which one of the following statements is incorrect?

Question 3 / 16

2

1. ○ In exothermic reaction, the heat of reaction has negative sign.
2. ○ The unit of the heat of solution is J/g.0C.
3. ○ Calorimeter is an instrument used to measure the heat of solution.
4. ○ If final temperature is smaller than the initial temperature, the reaction is endothermic reaction.

رح يتكرر لكن ركز بالكلمات لأنه في واحد نفسه بس كلمة بتغير كلشي 😅

Question 5 / 16

A 2.5 g of NaOH solid was dissolved in 100.00 mL of water (density = 1.00 g/ mL), the change of temperature was 15.00 °C, the heat of solution was – 30.7 KJ. Calculate the specific heat of the solution in J/g. °C.

1. ○ 59.90
2. ○ 29.95
3. ○ 19.97
4. ○ 4.18

3

Question 9/16

If the freezing point of the solution had been incorrectly read as 0.3 °C higher than its true freezing point, the effect on the calculated molar mass of the unknown:
1. ○ Too low because the freezing point depression is inversely proportional to the molar mass.
2. ○ Too high because the freezing point depression is inversely proportional to molar mass.
3. ○ Too high because the freezing point depression is directly proportional to molar mass.
4. ○ No effect because the temperature does not change significantly.

2

One mole of an ideal gas at STP will occupy volume equals:

Question 13 / 16

1. ○ 8.314 L
2. ○ 0.0821 L
3. ○ 6.023×10^{23} L
4. ○ 22.4 L

4

Next

إضافة ملاحظة

In the experiment of determination of molar mass of nonvolatile solute, the following data are given:

Question 10 / 16

- Mass of solute = 4.25 g - Mass of water = 50.0 g - Freezing point of pure water = 0.10 $^{\circ}C$ - Freezing point of solution = -2.30 $^{\circ}C$ - K_f = 1.86 $^{\circ}C/m$ Calculate the molar mass (in g/mole) of the solute.

1. ○ 58.1
2. ○ 65.9
3. ○ 60.5
4. ○ 79.9

2

اضافة ملاحظة

In the experiment of determination of the molar mass of a nonvolatile solute, K_f represents:

Question 12 / 16

1. ○ Freezing point depression constant for the solute.
2. ○ Freezing point depression constant for the solution.
3. ○ Freezing point depression constant for the thermometer.
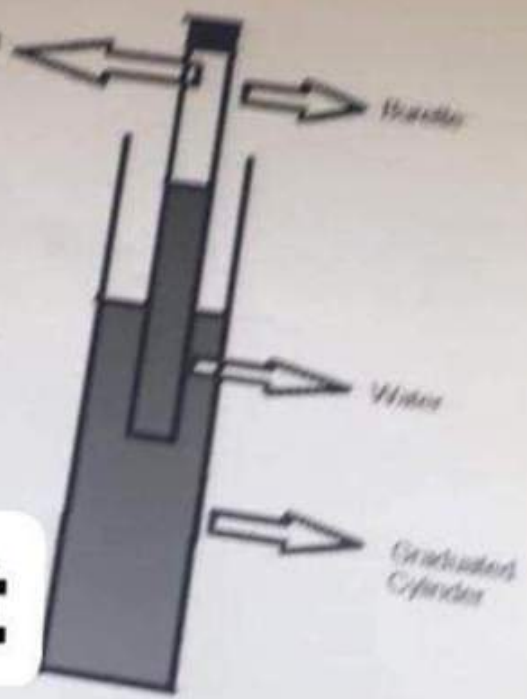4. ○ Freezing point depression constant for the solvent.

4

Next

اضافة ملاحظة

Patm > Ptot

Hydrogen gas that is collected over water

Handle

Water

Graduated Cylinder

Graduated Cylinder

Question 11/16

1. ○ The total pressure inside the burette not equals the atmospheric pressure but it is higher
2. ○ The total pressure inside the burette not equals the atmospheric pressure but it is lower
3. ○ The total pressure inside the burette equals the atmospheric pressure
4. ○ The total pressure inside the burette depends on nature not the quantity of the gas.

2

In the experiment of determination of molar volume of Hydrogen gas, you given the following data:

Question 15 / 16

- Mass of Mg - 0.025 g. (atomic mass of Mg = 24.30 g/mole) - Volume of the gas in the calibrated part = 33.5 mL. - Volume of the gas in the uncalibrated part = 8.20 mL. - Room temperature = 18.60 °C. - Atmospheric pressure = 630.0 torr. - Water's temperature = 22.50 °C. - Vapor pressure of water = 19.00 torr at t = 22.50 °C. Calculate the molar volume of Hydrogen gas (in L/mole) at STP.

1. ○ 31.4
2. ○ 19.1
3. ○ 25.4
4. ○ 30.5

4

In the experiment of determination of molar volume of Hydrogen gas, you given the following data:

Question 4 / 16

- Mass of Mg - 0.040 g. (atomic mass of Mg = 24.30 g/mole) - Volume of the gas in the calibrated part = 33.5 mL. - Volume of the gas in the uncalibrated part = 8.20 mL. - Room temperature = 18.60 °C. - Atmospheric pressure = 630.0 torr. - Water's temperature = 22.50 °C. - Vapor pressure of water = 19.00 torr at t = 22.50 °C. Calculate the molar volume of Hydrogen gas (in L/mole) at STP.

1. ○ 31.4
2. ○ 19.1
3. ○ 22.4
4. ○ 38.1

2

Next

In the experiment of determination of molar mass of nonvolatile solute, the following data are given:
- Mass of solute = 8.25 g
- Mass of water = 80.0 g
- Freezing point of pure water = 0.10 °C
- Freezing point of solution = -2.30 °C
- K_f = 1.86 °C/m

Calculate the molar mass (g/mole) of the solute.
1. ○ 58.1
2. ○ 65.9
3. ○ 60.5
4. ○ 79.9

4

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One mole of an ideal gas at STP will occupy volume equals:
1. ○ 8.314 L
2. ○ 22.4 L
3. ○ 0.0821 L
4. ○ 6.023 x 10^{23} L

2

Previous

إضافة ملاحظة

رح يتكرر 😅

Question 1 / 16

Which of the following liquids, the experimental procedure of this experiment of determination of molar mass of volatile liquid cannot be used to determine its molar mass?

1. ○ Carbontetrachloride CCl_4 (B.P. = 120°C).

2. ○ Diethyl ether (B.P. = 45°C).
3. ○ Ethanol (B.P. = 78°C).
4. ○ Acetone (B.P. = 56°C).

Next

1

Question 1 / 16

1

In which of the following cases, the calculated molar mass of a volatile liquid will be lower than the actual value:

1. ○ The measured volume of the vapour was mistakenly larger than the true value
2. ○ The temperature used in the calculation was higher than the actual boiling point of water under lab. conditions
3. ◉ The flask was not dried well before weighing.
4. ○ The measured atmospheric pressure was less than the actual pressure in the lab
5. ○ The measured density of the vapor was more than the actual one

Next

https://exam2-vm.hu...

Question 16 / 16

A solution of 1.25 g of erythritol in 50.0 g of water freezes at -0.773 °C. What is the molecular weight of erythritol (1.86 °C/molal).

1. ○ 120
2. ○ 60
3. ◉ 80
4. ○ 100
5. ○ 160

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ion 13 / 16

used 10 ml pipette to take 10 ml of four unknown liquid substances A, B, C and D you find that the weight of the 10 each substance is the following: A = 8.9g , B = 9.2g , C = 9.0g, D = 9.1g . The order of density decreasing of these is :

◉ B, D, C, A
○ A, B, C, D
○ C, B, A, D
○ C, A, B, D
○ D, A, B, C

1

Question 10 / 20

In the freezing point depression experiment, which of the following factors will decrease
calculated molar mass of the solute:
1. The solute has not been totally dissolved in the solvent.
2. The solution freezing point was erroneously higher than it should be.
3. Some of the solution lost during the experiment.
4. Some solute adheres to the test tube wall.
5. None of the above

Ideally, the freezing point depression depends on:

Question 1 / 16

1. The number of particles of solute.
2. The type of particles of solute.
3. Both the number and type of particles of solute and solvent.
4. Neither the number nor type of particles.

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2

Question 11 / 16

Ideally, the freezing point depression depends on:

1. ○ The type of particles of solute.
2. ○ The number of particles of solute.
3. ○ Both the number and type of particles of solute and solvent.
4. ○ Neither the number nor type of particles.

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رح يتكرر 😅

إضافة ملاحظة

Q6) In the freezing point depression experiment, which of the following factors will increase the calculated molar mass of the Solute:-

1) The solute has been totally dissolved in the solvent. → No effect.
2) The solution freezing pt was erroneously lower than it should be. $\Delta TF = T_{solvent} - T_{solution} \to \Delta TF \uparrow$, $M.M \downarrow$ lower than it should
3) Some of the solvent evaporated during the experiment mass solvent $\downarrow$ $M.M \uparrow$
4) Some solute adheres to the test tube. mass $\downarrow$ $M.M \downarrow$
5) None of the above. $M.M = \dfrac{KF \cdot mass\ solute}{Mass_{solvent} \cdot \Delta TF}$

Q7) In the concentration cell, which of the following statements is not correct?

1) Electrons will flow from the lower Concentration to the higher One.
2) The anode is the lower concentration electrode.
3) The standard potential is One. → Zero
4) The two half cells contain the same solution that differ in the concentrations only
5) The cathode is the higher Concentration electrode.

. 1,2,4,5   * مادة السؤال رقم ٣٥ عدد ذكر على كانت الإجابة الصحيحة

Q8) A 1g Sample of solid (NaOH , Mwt. ≈ 40 g/mol) is dissolved in 100 mL of water in a Calorimeter the temperature of water was raised from 22.3°C to 23.8°C, Calculate the heat of the Solution in kJ/mol (Sp = 4.184 J/g°C`, and density of the solution 1g/ml)

1) -25.46   2) -9.19
                        3) -12.07   4) -17.97   5) -35.5

$\Delta H = - \dfrac{mass_{solution} \times Sp \times \Delta T}{moles\ solute}$: $\dfrac{-(100+1) \times 4.184 \times (23.8-22.3)}{1/40}$

= -25.46   Page 43

Q4) Among the following, which element can reduce

X (+0.16)

صار إختزال الـ X صار ـ
سؤال العناصر اللي بتأكسد؟

1) Cu^{+2} (+0.31) v   2) Al^{+3} (+1.66 $\bar{V}$)   3) Pb^{+2} (-0.13$\bar{V}$)

4) Zn^{+2} (-0.76) V   5) Cr^{+2} (+0.45) $\bar{V}$

ـ هـون بدي أدور على العنصر اللي عبد إختزاله أقل من عبد إختزال الـ X

لأنه °E الإفقر ال الأكبري اللي ☒رح تكون ذهبن الإخترال و الذمبني

رح تكون ذهبن التأكسر بس بدي أنتبه

X (+0.16) v <u>لوله عبد إختزال.</u> X^{+n} (-0.16) $\bar{V}$

كا يعطيني عنصر وعبد ║ كون عاطيني عبد النأكس   محورته: أيون وعبد   هاد عبد الأخترال

أكبر فقط من عبد إختزال الـ Zn^{+2}

Q5) Calculate the amount of heat Liberated by dissolving 0.03 mol of $AlCl_3$ (M.wt = 133.33 g/mol) in 100 g water? If you know that the heat of solution is -321 kJ/mol

1) -7.38 kJ   2) -12.84 kJ   3) -6.42 kJ   4) -9.63 kJ

5) -5.33 kJ

سؤال مباشر أعطاك ΔH بوحدة kJ/mol

حوله ل ΔH (kJ)

$$\Delta H_{kJ} = \Delta H_{kJ/mol} \times mol$$

$$= -321 \times 10^3_{kJ} \times 0.03_{mol} = -9.63 \text{ kJ}$$

→ Test banks :-

Q₁) A solution of 1.25 g of erythritol in 50 g of water freezes at -0.773°C, what is the molecular weight of erythritol? $K_f = 1.86°C/molal$

1) 120   2) 60   3) 80   4) 100   5) 160

$$\Delta T_f = K_f \cdot \frac{Mass\ Solute\ (g)}{M.M \times Mass\ solvent\ (kg)}$$

$$\rightarrow M.M = \frac{1.86\ (1.25)}{(0+0.773)(0.05)}$$

$$= 60.15$$

Q₂) In which of the following cases, the calculated molar mass of a volatile Liquid will be lower than the actual Value :-
$M.M\downarrow$

1) The measured volume of the vapor was mistakenly larger than the true value. $V\uparrow\ M.M\downarrow$

2) The temperature used in the calculations was higher than the actual boiling pt. of water under lab. conditions. $T\uparrow\ M.M\uparrow$

3) The flask was not dried well before weighing $Mass\uparrow\ M.M\uparrow$

4) The measured atmospheric pressure wass less than the actual pressure. $P\downarrow\ M.M\uparrow$

5) The measured density of the vapor was more than the actual one. $D\uparrow\ M.M\uparrow$

$$M.M = \frac{Mass\ RT}{PV} = \frac{DRT}{P}$$

Q₃) A conical flask weighs 40.1305 g when clean, dry, evacuated, 138.2410 g when filled with water at 25 C and 40.2487 g when filled with a gaseous substance at 300 torr and 96 C. what is the molar mass (g/mol) of the gas?

1) 92.2   2) 63.2   3) 27.4   4) 35.7   5) 42.5

Mass solute = 40.2487 - 40.1305 = 0.1182 g

Volume water = 138.2410 - 40.1305 = 98.1105 ml
Assume density 1g/ml

$P = \frac{300}{760}$

$M.M = \frac{Mass\ RT}{PV} = 92.2$

Q9) If the freezing point of the solution had been incorrectly read 0.3°C higher than it's true freezing point and the freezing point of ~ the pure solvent was correctly read, the effect on, the calculated molar mass of the unknown

1) Too high because change in temperature direct Propotional to molar mass.

2) Too Low because change in temperature direct propotional to molar mass.

3) Too low because change in temperature inversly Propotional to molar mass

4) Too high because change in temperature inversly Propotional to molar mass.

5) No effect because the temperature does not change Significantly

$$\downarrow \Delta T_f = T_{solvent} - T_{solution} \uparrow$$
$$\text{so } \Delta T_f \downarrow$$

$$M.M_a = \underset{inversly}{\underbrace{\frac{Mass \cdot K_f}{\Delta T_f \cdot Mass}}}_{solute \atop solvent}$$

$$\Delta T_f \downarrow , M.M \uparrow$$

Q10) Among the following, the weakest oxidizing agent is:

1) Cu^{+2} (+0.34V)
2) Al (-0.66V)
3) Pb^{+2} (-0.13v)
4) Zn^{+2} (-0.76 v)
5) Cr^{+2} (-1.45 V)

مش اقوى كل في مطلوب

Cu^{+2} (+0.54 V)
Al^{+3} (+0.66 U)
Pb^{+2} (-0.13U)
Zn^{+2} (-0.76U)
Cr^{+2} (1.45)

أضعف
عامل حوكمد
أقل مب
أفترال .

The Sulfate ion can be detected by :-

1. Adding $BaCl_2$ Solution in acidic media and a white ppt. will appear.
2. Adding $BaCl_2$ Solution in basic media and a whit ppt. will appear.
3. Adding HCl Solution, a gas will change the wet red litmus to blue.
4. Adding NaOH Solution, a gas will change the wet blue Litmus to red
5. Adding NaOH Solution, ammonia smell can be detected.

Ans: 1

Q15) The Cl^- can be detected by :-
1. Sodium oxalate
2. Potasium thiocyanate
3. Silver nitrate + acid
4. Barium chloride + acid   Ans: 3
5. Hydrochloric acid.

Q16) When an unknown react with sodium $\overset{NaOH}{\text{hydroxide}}$ solution, it evolved a gas which convert the wet red litmus paper to blue. The resulted aqueous layer from the previous reaction was treated with hydrochloric acid solution and Carbon dioxide evolved immediately as a result of reaction, The $\overset{H_2CO_3}{\text{unknown}}$ is :-
1. $CaCl_2$ 2. $Ca(HCO_3)_2$ 3. NH_4Cl 4. NH_4HCO_3

Ans: 4

Q17) An unknown salt give a gas that convert the Litmus Paper from red to blue when deteted with Sodium hydroxide and a pale yellow precipitate when reacted with silver nitrate in acidic media. The formula of the salt is :-
1. $CaBr_2$ 2. $Fe_2(SO_4)_3$ 3. NH_4HCO_3 4. $FeBr_3$ 5. NH_4Br

Ans: 5

Q18) The iron (III) ion can be detected by :-   Ans: 2
1. Adding $BaCl_2$ Solution, in acidic media and a white ppt. will appear
2. Adding KSCN Solution, and a red color will appear
3. Adding HCl solution, a gas will change the wet red litmus paper to blue
4. Adding NaOH solution, a gas will change the wet blue litmus paper to red
5. Adding HSCN solution, and a white color will appear.