

Deep Run High School

CHEMISTRY I HON: 2(A), 6(A)

Unit 11 Test

Due Date: May 31, 2019

Instructor: Jennifer Krug

Name: _____

Score: / 100

Question 1

Which of the following contains a **homogeneous mixture**?

- ☐ ice water
- ☐ oil and water
- ☐ sand
- ☐ air

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Question 2

Which of the following types of matter can be classified as a **homogeneous mixture**?

- ☐ muddy water
- ☐ bronze metal
- ☐ concrete
- ☐ sodium chloride

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ID: 9556

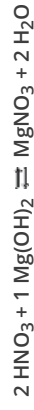
ID: 9556

Due Date: May 31, 2019

Name: _____

Question 3

What is the molarity of a $\text{Mg}(\text{OH})_2$ solution if 23.9 mL is completely titrated by 15.3 mL of 0.500 M HNO_3 ?



- ☐ 0.320 M
☐ 0.160 M
☐ 1.562 M
☐ 0.781 M

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Question 5

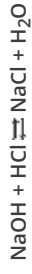
Which of the following is an Arrhenius base?

- ☐ HCl
☐ NH_3
☐ NaCl
☐ NaOH

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Question 4

How many milliliters of 0.15 M NaOH are required to neutralize 20.0 mL of 0.30 M HCl ?



- ☐ 40 mL
☐ 30 mL
☐ 20 mL
☐ 10 mL

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Question 6

Which of the following statements is true?

- ☐ All Brønsted-Lowry acids and bases can be considered Arrhenius acids and bases.
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ID: 9556

Due Date: May 31, 2019

ID: 9556

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Question 7

What is the conjugate base of H_2O ?

- ☐ H_2O_2
- ☐ H_3O^{+1}
- ☐ O^{-2}
- ☐ OH^{-1}

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Name: _____

Question 9

If 50.0 ml of a 1.5 M HCl solution is put into a flask and diluted with water to make 2.0 L of solution, what is the molarity of the final solution?

- ☐ 150 M
- ☐ 37.5 M
- ☐ 60 M
- ☐ 0.0375 M

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Question 8

To what volume should 30 mL of 2.5 M nitric acid be diluted to prepare a .50 M solution?

- ☐ 300 ml
- ☐ 60 ml
- ☐ 150 ml
- ☐ 75 ml

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Question 10

Which solute will be most soluble in hexane?

- ☐ sodium chloride
- ☐ ammonia
- ☐ hydrochloric acid
- ☐ boron trichloride

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ID: 9556

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ID: 9556

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Question 11

If the solution is aqueous, the solvent is

- ☐ a base.
☐ an acid.
☐ water.
☐ ionic.

Question 12

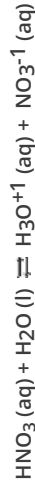
Which of the following shows the correct electrolytic dissociation for lithium hydroxide in water?

- ☐ $2 \text{LiOH (aq)} \rightleftharpoons 2 \text{Li}^{+1} \text{(aq)} + \text{H}_2\text{O (l)}$
☐ $\text{LiOH (s)} \rightleftharpoons \text{Li}^{+1} \text{(aq)} + \text{OH}^{-1} \text{(aq)}$
☐ $\text{Li(OH)}_2 \text{(aq)} \rightleftharpoons \text{Li}^{+1} \text{(aq)} + \text{H}_3\text{O}^{+1} \text{(aq)}$
☐ $\text{Li(OH)}_2 \text{(aq)} \rightleftharpoons \text{Li}^{+1} \text{(aq)} + 2 \text{OH}^{-1} \text{(aq)}$

Name: _____

Question 13

Which of the following is the correct dissociation constant for nitric acid?



- ☐ $K_a = \frac{[\text{HNO}_3]}{[\text{H}_3\text{O}^{+1}][\text{NO}_3^{-1}]}$
☐ $K_a = \frac{[\text{HNO}_3][\text{H}_2\text{O}]}{[\text{H}_3\text{O}^{+1}][\text{NO}_3^{-1}]}$
☐ $K_a = \frac{[\text{H}_3\text{O}^{+1}][\text{NO}_3^{-1}]}{[\text{HNO}_3]}$
☐ $K_a = \frac{[\text{HNO}_3][\text{NO}_3^{-1}]}{[\text{H}_3\text{O}^{+1}][\text{H}_2\text{O}]}$

ID: 9556

Due Date: May 31, 2019

ID: 9556

Due Date: May 31, 2019

Name: _____

Question 14

If a solution has a hydrogen ion concentration of $1.0 \times 10^{-3} \text{ M}$, what is the pOH of the solution?

- ☐ 11
☐ 3
☐ 1
☐ 7

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Name: _____

Question 16

How many grams of NaNO_3 are needed to prepare 500.0 ml of a 1.50 M solution?

- ☐ 0.750 g
☐ 63800 g
☐ 39.8 g
☐ 63.8 g

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Question 17

A 0.67 L solution of ammonium sulfate, $(\text{NH}_4)_2\text{SO}_4$, contains 0.81 mole of the solute. What is the approximate molarity of the solution?

- ☐ 0.83 M
☐ 1.2 M
☐ 1.5 M
☐ 0.54 M

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Question 15

What is the $[\text{OH}^{-1}]$ in a sample of lime juice with a pH of 2.0?

- ☐ $1 \times 10^{-7} \text{ M}$
☐ $1 \times 10^{-2} \text{ M}$
☐ $1 \times 10^{-12} \text{ M}$
☐ $1 \times 10^{-10} \text{ M}$

/1

ID: 9556

Due Date: May 31, 2019

ID: 9556

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Name: _____

Question 18

What is the molarity of a solution that contains 28 grams KOH dissolved in 100 ml water?

- ☐ 0.28 M
☐ 5.0 M
☐ 280 M
☐ 0.005 M

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Name: _____

Question 19

A student used a conductivity apparatus to determine the electrolytic properties of several substances. Based on the data collected in a table, which substances are strong electrolytes.

Substances	Observations
HCl	Bright light
CH ₃ OH	No light
MgCl ₂	Faint light
NaOH	Bright light
CH ₃ COOH	Faint light
CCl ₄	No light

- ☐ HCl, MgCl₂, and CH₃COOH
☐ CH₃OH and CCl₄
☐ CCl₄, CH₃OH, NaOH
☐ NaOH and HCl

/1

ID: 9556

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ID: 9556

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Question 20

Which of the acids listed in the table is the weakest electrolyte?

Acid	Formula	Acid Dissociation Constant, K_a
Hydrofluoric acid	HF	6.8×10^{-4}
Hypochlorous acid	HClO	3.0×10^{-8}
Hydrocyanic acid	HCN	4.9×10^{-10}
Acetic acid	$\text{HC}_2\text{H}_3\text{O}_2$	1.8×10^{-5}

- ☐ Hypochlorous acid
- ☐ Hydrofluoric acid
- ☐ Acetic acid
- ☐ Hydrocyanic acid

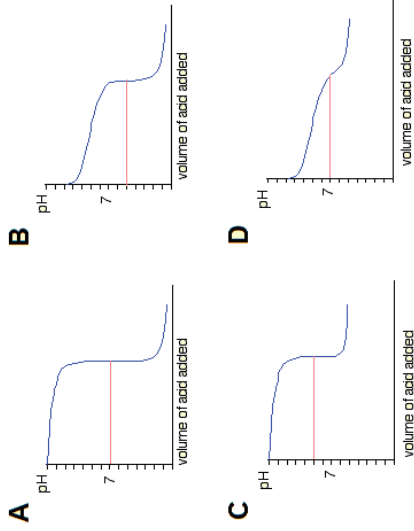
Question 25

When blue litmus paper is dipped into an acidic solution, it will turn

- ☐ red.
- ☐ white.
- ☐ black.
- ☐ green.

Question 21

Which of the following represents a titration curve for a strong acid and a weak base?

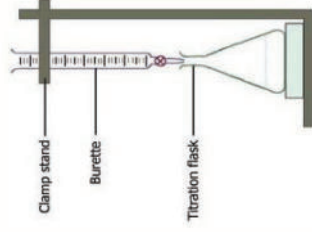


- ☐ A
- ☐ B
- ☐ C
- ☐ D

Name: _____

Question 22

The solution of unknown concentration, called the _____, is added to the titration flask.



- ☐ titrant
- ☐ analyte
- ☐ standard
- ☐ indicator

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Name: _____

Question 23

The $[\text{H}_3\text{O}^+]$ in a solution with a pH of 4.0 compared to the $[\text{H}_3\text{O}^+]$ in a solution with a pH of 6.0 is

- ☐ half as great.
- ☐ one-tenth as great.
- ☐ one hundred times as great.
- ☐ twice as great.

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Question 24

A 1.0 M aqueous solution of which substance would have the **lowest** pH?

- ☐ $\text{Ba}(\text{OH})_2$
- ☐ NaF
- ☐ HCl
- ☐ NH_3

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