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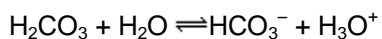
Include file name: Chemistry_Worksheet_0041

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Question 1

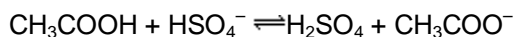
What are the Brønsted acids in the following reaction?



- a. H_2CO_3 and H_2O
 - b. HCO_3^- and H_2CO_3
 - c. H_3O^+ and H_2CO_3
 - d. H_2O and H_3O^+
 - e. H_2O and HCO_3^-
-

Question 2

Identify the conjugate base of CH_3COOH in the following reaction:



- a. HSO_4^-
 - b. SO_4^{2-}
 - c. CH_3COO^-
 - d. H_2SO_4
 - e. OH^-
-

Question 3

One liter of an aqueous solution contains 6.02×10^{21} H_3O^+ ions. Therefore, its H_3O^+ ion concentration is _____.

- a. 0.01 mole per liter
 - b. 0.1 mole per liter
 - c. 1 mole per liter
 - d. 6.02×10^{21} mole per liter
 - e. 6.02×10^{23} mole per liter
-

Question 4

The OH^- concentration in $7.5 \times 10^{-3} \text{ M Ca(OH)}_2$ is _____.

- a. $7.50 \times 10^{-3} \text{ M}$
- b. $1.50 \times 10^{-2} \text{ M}$
- c. $1.30 \times 10^{-12} \text{ M}$
- d. $1.00 \times 10^{-7} \text{ M}$
- e. $1.00 \times 10^{-14} \text{ M}$

Question 5

What is the OH^- ion concentration in $5.2 \times 10^{-4} \text{ M HNO}_3$?

- a. $1.9 \times 10^{-11} \text{ M}$
 - b. $1.0 \times 10^{-7} \text{ M}$
 - c. $5.2 \times 10^{-4} \text{ M}$
 - d. zero
 - e. $1.0 \times 10^{-4} \text{ M}$
-

Question 6

Determine the pH of a KOH solution made from 0.251 g KOH and enough water to make $1.00 \times 10^2 \text{ mL}$ of solution.

- a. 1.35
 - b. 2.35
 - c. 7.00
 - d. 11.65
 - e. 12.65
-

Question 7

Calculate the pH of $3.5 \times 10^{-3} \text{ M HNO}_3$.

- a. -2.46
 - b. 0.54
 - c. 2.46
 - d. 3.00
 - e. 3.46
-

Question 8

Calculate the pH of a 0.14 M HNO_2 solution that is 5.7 percent ionized.

- a. 0.85
 - b. 1.7
 - c. 2.1
 - d. 11.9
 - e. 13.1
-

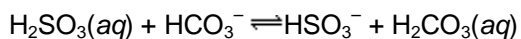
Question 9

Acid strength decreases in the series: strongest $\text{HSO}_4^- > \text{HF} > \text{HCN}$. Which of the following species is the weakest base?

- a. HF
 - b. SO_4^{2-}
 - c. F^-
 - d. CN^-
-

Question 10

Predict the direction in which the equilibrium will lie for the following reaction:



$$K_a \text{H}_2\text{SO}_3 = 1 \times 10^{-2}$$

$$K_a \text{H}_2\text{CO}_3 = 4.2 \times 10^{-7}$$

- a. to the right
 - b. to the left
 - c. in the middle
-

Question 11

Calculate the pH of a 0.021 M NaCN solution, given $K_a(\text{HCN}) = 4.9 \times 10^{-10}$.

- a. 1.68
 - b. 3.18
 - c. 5.49
 - d. 7.00
 - e. 10.82
-

Question 12

If the pH of an acid rainstorm is approximately 3.0, how many times greater is the $[\text{H}^+]$ in the rain than in a cup of coffee with a pH 5.0?

- a. 1000
 - b. 100
 - c. 20
 - d. 1.67
 - e. 0.60
-

Question 13

In which one of the following solutions will acetic acid have the greatest percent ionization?

- a. 0.1 M CH_3COOH
- b. 0.1 M CH_3COOH dissolved in 1.0 M HCl
- c. 0.1 M CH_3COOH plus 0.1 M CH_3COONa
- d. 0.1 M CH_3COOH plus 0.2 M CH_3COONa

Question 14

Which of the following is the most acidic solution?

- a. 0.10 M CH₃COOH and 0.10 M CH₃COONa
- b. 0.10 M CH₃COOH
- c. 0.10 M HNO₂
- d. 0.10 M HNO₂ and 0.10 M NaNO₂
- e. 0.10 M CH₃COONa

Question 15

Calculate the pH of a solution that is 0.410 M in HOCl and 0.050 M in NaOCl.

$K_a(\text{HOCl}) = 3.2 \times 10^{-8}$.

- a. 0.39
- b. 3.94
- c. 6.58
- d. 7.49
- e. 8.40

Question 16

You are asked to go into the lab and prepare an acetic acid – sodium acetate buffer solution with a pH of 4.00 ± 0.02 .

What molar ratio of CH₃COOH to CH₃COONa should be used?

$$\frac{\text{CH}_3\text{COOH}}{\text{CH}_3\text{COONa}} =$$

- a. 0.18
- b. 0.84
- c. 1.19
- d. 5.50
- e. 0.10

Question 17

Over what range of pH is a HOCl – NaOCl buffer effective?

- a. pH 2.0 – pH 4.0
 - b. pH 7.5 – pH 9.5
 - c. pH 6.5 – pH 8.5
 - d. pH 6.5 – pH 9.5
 - e. pH 1.0 – pH 14.0
-

Question 18

Assuming equal concentrations of conjugate base and acid, which one of the following mixtures is suitable for making a buffer solution with an optimum pH of 4.6 – 4.8?

- a. $\text{CH}_3\text{COO}_2\text{Na} / \text{CH}_3\text{COOH}$ ($K_a = 1.8 \times 10^{-5}$)
 - b. $\text{NH}_3 / \text{NH}_4\text{Cl}$ ($K_a(\text{NH}_4^+) = 5.6 \times 10^{-10}$)
 - c. $\text{NaOCl} / \text{HOCl}$ ($K_a = 3.2 \times 10^{-8}$)
 - d. $\text{NaNO}_2 / \text{HNO}_2$ ($K_a = 4.5 \times 10^{-4}$)
 - e. NaCl / HCl
-

Question 19

You have 500.0 mL of a buffer solution containing 0.20 M acetic acid (CH_3COOH) and 0.30 M sodium acetate (CH_3COONa). What will the pH of this solution be after the addition of 20.0 mL of 1.00 M NaOH solution?

$K_a = 1.8 \times 10^{-5}$

- a. 4.41
 - b. 4.74
 - c. 4.56
 - d. 4.92
 - e. 5.07
-

Question 20

For which type of titration will the pH be basic at the equivalence point?

- a. Strong acid versus strong base
 - b. Strong acid versus weak base
 - c. Weak acid versus strong base
 - d. All of the above
 - e. None of the above
-

Question 21

50.00 mL of 0.10 M HNO_2 (nitrous acid) was titrated with 0.10 M KOH solution. After 25.00 mL of KOH solution was added, what was the pH in the titration flask? (Given $K_a = 4.5 \times 10^{-4}$)

- a. 2.17
 - b. 3.35
 - c. 2.41
 - d. 1.48
 - e. 7.00
-

Question 22

The molar solubility of tin iodide (SnI_2) is 1.28×10^{-2} mol/L. What is K_{sp} for this compound?

- a. 8.4×10^{-6}
- b. 1.28×10^{-2}
- c. 4.2×10^{-6}

- d. 1.6×10^{-4}
 - e. 2.1×10^{-6}
-

Question 23

The solubility product for CrF_3 is $K_{\text{sp}} = 6.6 \times 10^{-11}$. What is the molar solubility of CrF_3 ?

- a. $1.6 \times 10^{-3} M$
 - b. $1.2 \times 10^{-3} M$
 - c. $6.6 \times 10^{-11} M$
 - d. $2.2 \times 10^{-3} M$
 - e. $1.6 \times 10^{-6} M$
-

Question 24

The K_{sp} for Ag_3PO_4 is 1.8×10^{-18} . Determine the Ag^+ ion concentration in a saturated solution of Ag_3PO_4 .

- a. $1.6 \times 10^{-5} M$
 - b. $2.1 \times 10^{-5} M$
 - c. $3.7 \times 10^{-5} M$
 - d. $1.1 \times 10^{-13} M$
 - e. $4.8 \times 10^{-5} M$
-

Question 25

Will a precipitate of MgF_2 form when 300 mL of $1.1 \times 10^{-3} M$ MgCl_2 solution are added to 500 mL of $1.2 \times 10^{-3} M$ NaF ? K_{sp} (MgF_2) = 6.9×10^{-9}

- a. Yes, $Q > K_{\text{sp}}$
 - b. No, $Q < K_{\text{sp}}$
 - c. No, $Q = K_{\text{sp}}$
 - d. Yes, $Q < K_{\text{sp}}$
-

Question 1

Which one of the following is NOT one of the five gaseous components in highest concentration in the atmosphere?

- a. CH_4
 - b. CO_2
 - c. N_2
 - d. Ar
 - e. O_2
-

Question 2

Which region of the atmosphere contains the ozone layer?

- a. thermosphere
- b. mesosphere
- c. stratosphere

d. troposphere

Question 3

Which choice lists two health effects expected from the depletion of the ozone layer?

1. asthma
 2. lung cancer
 3. skin cancer
 4. cataracts
 5. emphysema
-
- a. 1 and 5
 - b. 2 and 3
 - c. 3 and 5
 - d. 3 and 4
 - e. 4 and 5
-

Question 4

The compound CFCl_3 is used as a(n) _____.

- a. enzyme
 - b. anesthetic
 - c. gaseous fuel
 - d. refrigerant
 - e. CFC replacement
-

Question 5

Acid rain is less of a threat to lakes and streams in areas where the rock is limestone (CaCO_3). Which of the following is the equation for neutralization of acid by limestone?

- a. $\text{CaCO}_3 + \text{OH}^- \rightarrow \text{CaOH} + \text{CO}_2$
 - b. $\text{CaCO}_3 + 2\text{H}_3\text{O}^+ \rightarrow \text{Ca}^{2+} + \text{CO}_2 + 3\text{H}_2\text{O}$
 - c. $\text{CaCO}_3 + \text{H}_3\text{O} \rightarrow \text{Ca} + \text{CO}_2 + \text{H}_2\text{O}$
 - d. $\text{CaCO}_3 + \text{OH}^- \rightarrow \text{Ca}^{2+} + \text{CO}_2 + \text{H}_2\text{O}$
 - e. $\text{CaCO}_3 + 2\text{H}_3\text{O}^+ \rightarrow \text{Ca}^{2+} + \text{CO}_2 + 2\text{H}_2\text{O}$
-

Question 6

Peroxyacetyl nitrate, called PAN for short, is a powerful lachrymator. A lachrymator is a(n) _____.

- a. greenhouse gas
 - b. product of incomplete combustion
 - c. agent that induces drowsiness
 - d. tear producer
 - e. cancer causing agent
-

Question 7

Which of the following species has the highest entropy (S°) at 25°C?

- $\text{CH}_3\text{OH}(l)$
 - $\text{CO}(g)$
 - $\text{MgCO}_3(s)$
 - $\text{H}_2\text{O}(l)$
 - $\text{Ni}(s)$
-

Question 8

Which response includes **all** the following processes that are accompanied by an increase in entropy?

- $2\text{SO}_2(g) + \text{O}_2(g) \rightarrow \text{SO}_3(g)$
- $\text{H}_2\text{O}(l) \rightarrow \text{H}_2\text{O}(s)$
- $\text{Br}_2(l) \rightarrow \text{Br}_2(g)$
- $\text{H}_2\text{O}_2(l) \rightarrow \text{H}_2\text{O}(l) + \frac{1}{2}\text{O}_2(g)$

- 1, 2, 3, 4
 - 1, 2
 - 2, 3, 4
 - 3, 4
 - 1, 4
-

Question 9

Arrange the following reactions according to increasing ΔS (lowest \rightarrow highest).

- $\text{H}_2\text{O}(g) \rightarrow \text{H}_2\text{O}(l)$
- $2\text{NO}(g) \rightarrow \text{N}_2(g) + \text{O}_2(g)$
- $\text{MgCO}_3(s) \rightarrow \text{MgO}(s) + \text{CO}_2(g)$

- $1 < 2 < 3$
 - $2 < 3 < 1$
 - $3 < 2 < 1$
 - $2 < 1 < 3$
 - $1 < 3 < 2$
-

Question 10

Arrange the following reactions according to increasing ΔS .

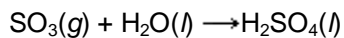
- $\text{CH}_4(g) + \text{H}_2\text{O}(g) \rightarrow \text{CO}(g) + 3\text{H}_2(g)$
- $\text{C}(s) + \text{O}_2(g) \rightarrow \text{CO}_2(g)$
- $\text{H}_2\text{O}_2(l) \rightarrow \text{H}_2\text{O}(l) + \frac{1}{2}\text{O}_2(g)$

- $3 < 2 < 1$
- $2 < 1 < 3$

- c. $2 < 3 < 1$
- d. $3 < 1 < 2$
- e. $1 < 3 < 2$

Question 11

Given the following absolute entropies, determine ΔS° for the reaction



	S° (J/K · mol)
SO_3	256.2
H_2O	69.9
H_2SO_4	156.9

- a. $\Delta S^\circ = 169.3$ J/K
- b. $\Delta S^\circ = 1343.2$ J/K
- c. $\Delta S^\circ = -169.3$ J/K
- d. $\Delta S^\circ = -29.4$ J/K
- e. $\Delta S^\circ = 29.4$ J/K

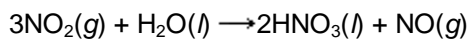
Question 12

A negative sign for ΔG indicates that, at constant T and P , _____.

- a. the reaction is exothermic
- b. the reaction is endothermic
- c. the reaction is fast
- d. the reaction is spontaneous
- e. ΔS must be > 0

Question 13

Given the following free energies of formation, calculate ΔG° for the reaction

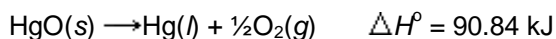


	ΔG_f° (kJ/mol)
$\text{H}_2\text{O}(l)$	-237.2
$\text{HNO}_3(l)$	-79.9
$\text{NO}(g)$	86.7
$\text{NO}_2(g)$	51.8

- a. 8.7 kJ
 - b. 192 kJ
 - c. -414 kJ
 - d. -192 kJ
 - e. -155 kJ
-

Question 14

The element oxygen was prepared by Joseph Priestley in 1774 by heating mercury(II) oxide.



Use the data given below to estimate the temperature at which this reaction will become spontaneous under standard state conditions.

$$S^\circ(\text{Hg}) = 76.02 \text{ J/K} \cdot \text{mol}$$

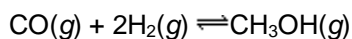
$$S^\circ(\text{O}_2) = 205.0 \text{ J/K} \cdot \text{mol}$$

$$S^\circ(\text{HgO}) = 70.29 \text{ J/K} \cdot \text{mol}$$

- a. 108 K
- b. 430 K
- c. 620 K
- d. 775 K
- e. 840 K

Question 15

At 1500°C, the equilibrium constant is $K_p = 1.4 \times 10^{-7}$ for the reaction

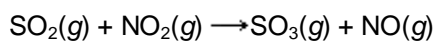


Calculate ΔG° for this reaction at 1500°C.

- a. 105 kJ
- b. 1.07 kJ
- c. -233 kJ
- d. -105 kJ
- e. 233 kJ

Question 16

Given the following free energies of formation, calculate K_p for the reaction below at 298 K.



$$\Delta G_f^\circ \text{ (kJ/mol)}$$

$$\text{SO}_2(g) \quad -300.4 \text{ kJ/mol}$$

$$\text{SO}_3(g) \quad -370.4 \text{ kJ/mol}$$

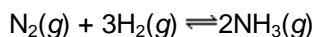
$$\text{NO}(g) \quad 86.7 \text{ kJ/mol}$$

$$\text{NO}_2(g) \quad 51.8 \text{ kJ/mol}$$

- a. 6.99×10^{-7}
- b. 5.71×10^{-8}
- c. 14.2
- d. 475
- e. 1.43×10^6

Question 17

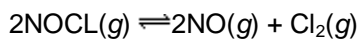
Using tabulated values in the textbook, determine the equilibrium constant K_p for the following reaction at 25°C.



- a. 1.5×10^{-6}
- b. 6.6×10^5
- c. 8.28×10^{-2}
- d. 2.60
- e. 13.4

Question 18

Nitrosyl chloride (NOCl) decomposes at elevated temperatures according to the equation



Use the following information to calculate K_p for this reaction at 227°C:

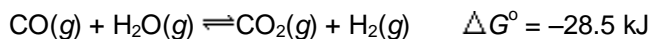
$$\Delta H^\circ = 81.2 \text{ kJ}$$

$$\Delta S^\circ = 128 \text{ J/K}$$

- a. 1.60×10^{-2}
- b. 2.1×10^{-7}
- c. 62.8
- d. 4.9×10^6
- e. 3.20×10^9

Question 19

Determine the equilibrium constant (K_p) for the following reaction at 25°C:



- a. 2.9×10^{-60}
- b. 1.0×10^{-4}
- c. 1.2
- d. 1.0×10^5
- e. 3.4×10^{59}

Question 20

A spontaneous endothermic reaction always _____.

- a. causes the surroundings to get colder
- b. bursts into flame
- c. requires a spark to initiate it
- d. releases heat to the surroundings

Question 1

Consider an electrochemical cell constructed from the following half cells, linked by an external circuit and by a KCl salt bridge:

an Al(s) electrode in 1.0 M Al(NO₃)₃ solution

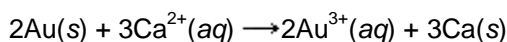
a Pb(s) electrode in 1.0 M Pb(NO₃)₂ solution

What is the balanced overall (net) cell reaction?

- a. $\text{Pb(s)} + \text{Al}^{3+}(\text{aq}) \rightarrow \text{Pb}^{2+}(\text{aq}) + \text{Al(s)}$
 - b. $3\text{Pb(s)} + 2\text{Al}^{3+}(\text{aq}) \rightarrow 3\text{Pb}^{2+}(\text{aq}) + 2\text{Al(s)}$
 - c. $3\text{Pb}^{2+}(\text{aq}) + 2\text{Al(s)} \rightarrow 3\text{Pb(s)} + 2\text{Al}^{3+}(\text{aq})$
 - d. $\text{Pb}^{2+}(\text{aq}) + \text{Al(s)} \rightarrow \text{Pb(s)} + \text{Al}^{3+}(\text{aq})$
-

Question 2

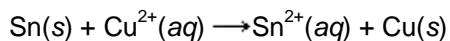
Calculate the value of E°_{cell} for the following reaction:



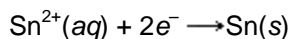
- a. -4.37 V
 - b. -1.37 V
 - c. -11.6 V
 - d. 1.37 V
 - e. 4.37 V
-

Question 3

An electrochemical cell based on the following reaction has a standard cell voltage (E°_{cell}) of 0.48 V.



What is the standard reduction potential of tin?



- a. -0.14 V
 - b. 0.14 V
 - c. -0.82 V
 - d. 0.82 V
 - e. None of the above
-

Question 4

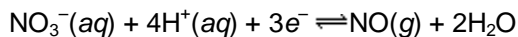
Which chemical species undergoes reduction according to the following cell diagram?



- a. Sn
- b. Sn^{2+}
- c. NO_3^-
- d. NO
- e. Pt

Question 5

In the following half equation, which is the oxidizing agent?



- a. NO_3^-
- b. H^+
- c. e^-
- d. NO
- e. H_2O

Question 6

Which statement is true in regard to a spontaneous redox reaction?

- a. E°_{red} is always negative.
- b. E°_{cell} is always positive.
- c. E°_{ox} is always positive.
- d. E°_{red} is always positive.

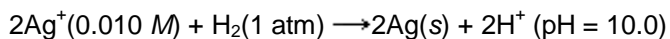
Question 7

Which of the following species is the strongest oxidizing agent under standard state conditions?

- a. $\text{Ag}^+(aq)$
- b. $\text{H}_2(g)$
- c. $\text{H}^+(aq)$
- d. $\text{Cl}_2(g)$
- e. $\text{Al}^{3+}(aq)$

Question 8

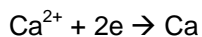
Calculate the cell emf for the following reaction:



- a. 1.04 V
 - b. 1.27 V
 - c. 0.92 V
 - d. 0.56 V
 - e. 0.80 V
-

Question 9

A current of 2.50 A was passed through an electrolytic cell containing molten CaCl_2 for 4.50 hours. How many moles of calcium metal should be deposited?



$$(4.50 \text{ hrs})(3600 \text{ s / hr})(2.50 \text{ C / s})(1 \text{ mol e} / 96485 \text{ C})(1 \text{ mol Ca} / 2 \text{ mol e}) = 0.210 \text{ mol}$$

- a. $5.83 \times 10^{-5} \text{ mol}$
 - b. 0.210 mol
 - c. 0.420 mol
 - d. 0.840 mol
 - e. $1.95 \times 10^9 \text{ mol}$
-

Question 10

How long will it take to produce 78 g of Al metal by the reduction of Al^{3+} in an electrolytic cell with a current of 2.0 A?

$$78 \text{ g} (1 \text{ mol Al} / 26.98 \text{ g})(3 \text{ mol e} / \text{mol Al})(96485 \text{ C} / \text{mol e})(1 \text{ s} / 2 \text{ C}) = 418,000 \text{ s} = 116 \text{ hr}$$

- a. 0.01 s
 - b. 420 s
 - c. 13 h
 - d. 116 h
 - e. $1.0 \times 10^{12} \text{ s}$
-

Question 11

According to the band theory, which of the following provide(s) an explanation for the high electrical conductivity of metals?

- 1. a partly filled conduction band
 - 2. a valence band overlapping an empty conduction band
 - 3. a filled valence band
 - 4. a large gap between the valence band and the conduction band
-
- a. 1 and 2
 - b. 1 and 3
 - c. 3
 - d. 3 and 4
 - e. 4
-

Question 12

Which one of the following elements would form *p*-type semiconductors when added to silicon crystals?

- a. C
- b. P
- c. As

- d. Ga
 - e. Mg
-

Question 13

The electron configuration of an Fe^{2+} ion is _____.

- a. $[\text{Ar}]4s^24d^4$
 - b. $[\text{Ar}]4s^23d^6$
 - c. $[\text{Ar}]3d^8$
 - d. $[\text{Ar}]3d^6$
 - e. $[\text{Ar}]3d^8$
-

Question 14

How many 3d electrons does a Mn^{2+} ion have?

- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
-

Question 15

In the complex ion $[\text{Fe}(\text{CN})_6]^{4-}$, the oxidation number of Fe is _____.

- a. +1
 - b. +2
 - c. +3
 - d. -4
 - e. +6
-

Question 16

In the complex ion $[\text{Co}(\text{en})_2\text{Br}_2]^+$, the oxidation number of Co is _____.

- a. +1
 - b. +2
 - c. +3
 - d. -2
 - e. -1
-

Question 17

A bidentate ligand always _____.

- a. has bonds formed to two metal ions
 - b. has a charge of 2+ or 2-
 - c. forms complex ions with a charge of 2+ or 2-
 - d. has two donor atoms
 - e. has medical uses
-

Question 18

Which one of the following is a monodentate ligand?

- a. CN^-
 - b. EDTA
 - c. $\text{C}_2\text{O}_4^{2-}$ (oxalate ion)
 - d. $\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2$ (ethylenediamine)
-

Question 19

The best name for $[\text{Co}(\text{en})_2\text{Br}_2]\text{Br}$ is _____.

- a. cobalt(III)bis(ethylenediamine) bromide
 - b. dibromobis(ethylenediamine)cobalt(III) bromide
 - c. dibromidedi(ethylenediamine)cobalt(III) bromide
 - d. dibromodiethylenediaaminocobalt(III) bromide
 - e. tribromobis(ethylenediamine)cobalt(III)
-

Question 20

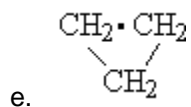
The correct formula for the dichlorobis(ethylenediamine)chromium(III) ion is _____.

- a. $[\text{Cr}(\text{en})_2\text{Cl}_2]^{3+}$
- b. $[\text{Cr}(\text{en})\text{Cl}_2]^+$
- c. $[\text{Cr}(\text{en})_2\text{Cl}_2]^{2+}$
- d. $[\text{Cr}(\text{en})_2\text{Cl}_2]^+$
- e. $[\text{Cr}(\text{en})_3\text{Cl}_2]^+$

Question 1

Which one of the following formulas is that of an unsaturated hydrocarbon?

- a. $\text{CH}_3\text{—CH}_2\text{—CH}_3$
- b. $\text{CH}_3\text{—CH=CH}_2$
- c. $\text{CH}_3\text{—CH}_2\text{—OH}$
- d. $\text{CH}_3\text{—O—CH}_2\text{—CH}_3$



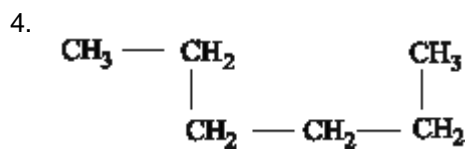
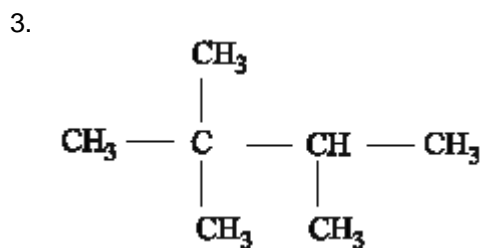
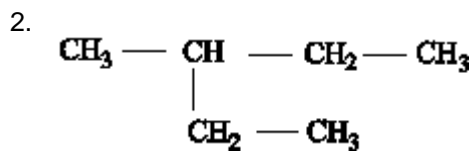
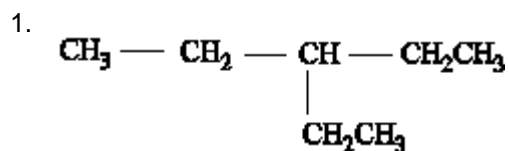
Question 2

Which one of the following hydrocarbons does NOT have isomers?

- a. C_7H_{16}
 - b. C_6H_{14}
 - c. C_5H_{10}
 - d. C_4H_8
 - e. C_3H_8
-

Question 3

Which of the following are structural isomers of hexane?



- a. 1 and 2
 - b. 1 and 3
 - c. 2 and 3
 - d. 2 and 4
 - e. 3 and 4
-

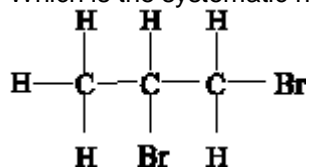
Question 4

The compound that has a triple bond between one pair of carbon atoms is called a(n) _____.

- a. alkane
 - b. chlorofluorocarbons
 - c. alkyne
 - d. alkene
 - e. alcohol
-

Question 5

Which is the systematic name for the compound represented below?



- a. 2,3-dibromopentane
 - b. 1,2-dibromopentane
 - c. 2,3-dibromopropane
 - d. 1,2-dibromopropane
 - e. 1,2-propane dibromide
-

Question 6

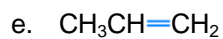
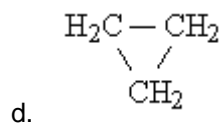
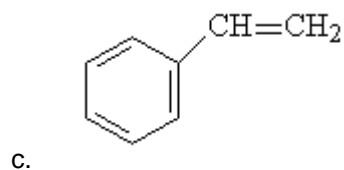
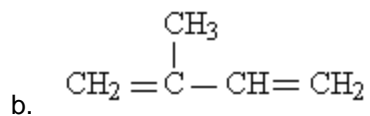
The reaction of an alcohol and a carboxylic acid yields a(n) _____.

- a. hydrocarbon
 - b. ester
 - c. ether
 - d. aldehyde
 - e. ketone
-

Question 7

Polystyrene results from the polymerization of _____.

- a. $\text{CF}_2=\text{CF}_2$



Question 8

A protein is _____.

- a. a polysaccharide
- b. a saturated ester of glycerol
- c. one of the units composing a nucleic acid
- d. a polymer of amino acids
- e. an aromatic hydrocarbon

Question 9

An amino acid is a compound that contains at least _____.

- a. one amino group and one amide group
- b. two amino groups and one carboxylic acid group
- c. one hydroxyl group and one methyl group
- d. one carboxylic acid group and one amino group
- e. one methyl group and one amide group

Question 10

Which of the following is a product of the hydrolysis of DNA?

- a. acetic acid
- b. glucose
- c. adenine
- d. ribose
- e. water

