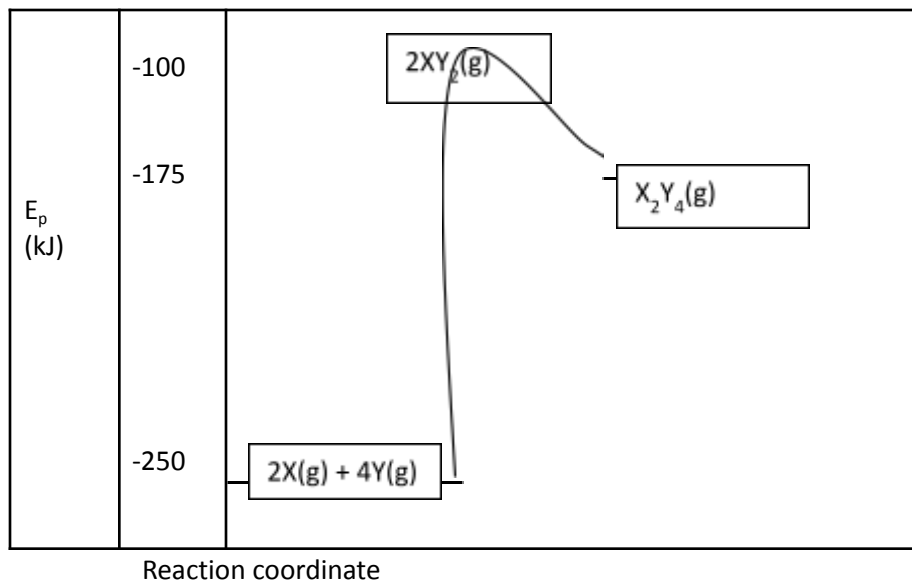


1. Consider the energy diagram given below

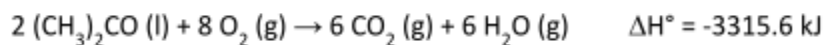
Reaction #1



The minimum energy that the reactants must achieve before the reaction can proceed is _____ kJ. This energy is called the activation energy.

a	-100
b	+100
c	-175
d	+150

Use the following information to answer the next **three questions**.



2. The molar amount of acetone, $(\text{CH}_3)_2\text{CO} (\text{l})$, that must be burned to raise the temperature of 300 g of water from 22.0°C to 45.0°C is
- $1.74 \times 10^{-2} \text{ mol}$
 - $3.49 \times 10^{-2} \text{ mol}$
 - $3.41 \times 10^{-2} \text{ mol}$
 - $1.67 \times 10^{-2} \text{ mol}$

3. The molar heat of combustion of acetone is
- 3315.6 kJ/mol
 - 1657.8 kJ/mol
 - 1657.8 kJ/mol
 - 3315.6 kJ/mol
4. Rewrite the above reaction with the molar heat of combustion as part of the reaction.
- $2 (\text{CH}_3)_2\text{CO} (\text{l}) + 8 \text{O}_2 (\text{g}) \rightarrow 6 \text{CO}_2 (\text{g}) + 6 \text{H}_2\text{O} (\text{g}) + 3315.6 \text{ kJ}$
 - $2 (\text{CH}_3)_2\text{CO} (\text{l}) + 8 \text{O}_2 (\text{g}) + 3315.6 \text{ kJ} \rightarrow 6 \text{CO}_2 (\text{g}) + 6 \text{H}_2\text{O} (\text{g})$
 - $(\text{CH}_3)_2\text{CO} (\text{l}) + 4 \text{O}_2 (\text{g}) \rightarrow 3 \text{CO}_2 (\text{g}) + 3 \text{H}_2\text{O} (\text{g}) + 1657.8 \text{ kJ}$
 - $(\text{CH}_3)_2\text{CO} (\text{l}) + 4 \text{O}_2 (\text{g}) + 1657.8 \text{ kJ} \rightarrow 3 \text{CO}_2 (\text{g}) + 3 \text{H}_2\text{O} (\text{g})$
-
5. Which of the following equations represents the balanced chemical equation for the decomposition of calcium oxide and the energy transfer during the reaction?
- $2 \text{CaO} (\text{s}) + 634.9 \text{ kJ} \rightarrow 2 \text{Ca} (\text{s}) + \text{O}_2 (\text{g})$
 - $\text{CaO} (\text{s}) + 634.9 \text{ kJ} \rightarrow \text{Ca} (\text{s}) + \frac{1}{2} \text{O}_2 (\text{g})$
 - $2 \text{CaO} (\text{s}) \rightarrow 2 \text{Ca} (\text{s}) + \text{O}_2 (\text{g}) + 634.9 \text{ kJ}$
 - $\text{CaO} (\text{s}) \rightarrow \text{Ca} (\text{s}) + \frac{1}{2} \text{O}_2 (\text{g}) + 634.9 \text{ kJ}$
6. Numerical response question. Left justify the answer in the boxes provided.

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From the list below choose statement(s) that is/are true for cellular respiration.
The order of your answers is not significant

- $\text{CO}_2 (\text{g})$ is a reactant
- $\text{CO}_2 (\text{g})$ is a product
- Liquid water is a reactant
- Liquid water is a product
- Water vapour is a reactant
- Water vapour is a product
- The reaction is endothermic
- The reaction is exothermic
- The energy value is negative
- The energy value is positive

7. In an experiment carried out in a standard high school laboratory, 12.0 grams of NaOH (s) is dissolved in water to make 500 mL solution.

Determine the experimental molar heat of solution for sodium hydroxide given the following observation table.

	Initial Temperature (°C)	Final Temperature (°C)
Trial 1	22.3	28.7
Trial 2	22.4	27.1
Trial 3	21.8	28.4
Trial 4	22.1	28.3

- A. -44.7 kJ/mol
B. -41.7 kJ/mol
C. -2.09 kJ/mol
D. -2.23 kJ/mol
8. Numerical response question. Left justify the answer in the boxes provided.

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Given the theoretical molar heat of solution is -44.5 kJ/mol, and using the experimental value calculated in the previous question, the percent error for this experiment is $\pm$ ____ %. Round the answer to the nearest tenth.

Remember that this is a linked question to #7

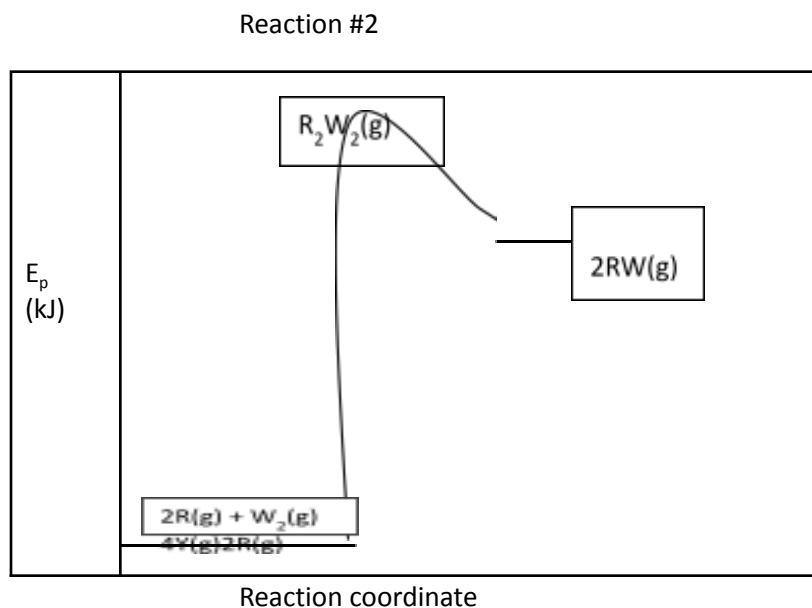
If they chose

B answer is 6.3

C ... answer is 26.3

D answer is 42.7

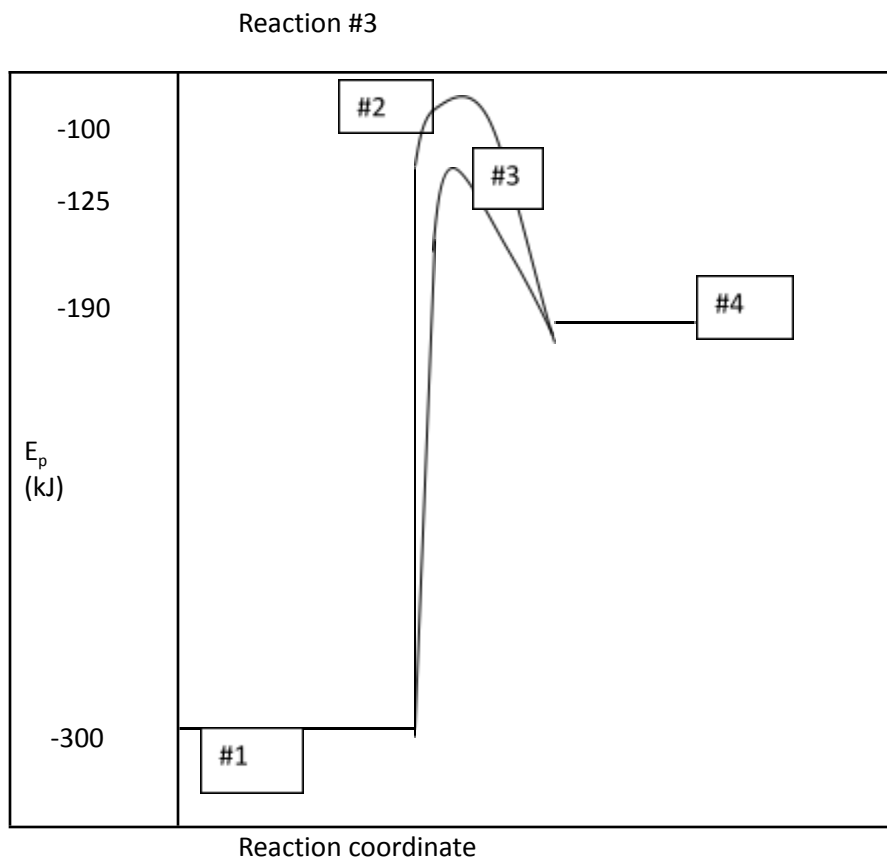
9. Consider the energy diagram given below



In chemical reactions existing bonds break and then reform. In the diagram above, the chemical(s) with the maximum potential energy is/are _____ and the chemical(s) with the maximum kinetic energy is/are _____.

a	$R_2W_2(g)$	$RW(g)$
b	$R_2W_2(g)$	$R(g) + W_2(g)$
c	$RW(g)$	$R_2W_2(g)$
d	$R(g) + W_2(g)$	$RW(g)$

10. Consider the energy diagram for both a catalyzed reaction (path 1 → 3 → 4) and an uncatalyzed reaction (path 1 → 2 → 4) given below



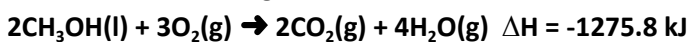
The uncatalyzed reaction diagrammed above is _____ with a ΔH of _____ kJ and the catalyzed reaction is _____ with a ΔH of _____ kJ.

a	Endothermic	+110	Endothermic	+110
b	Exothermic	-75	Endothermic	+175
c	Endothermic	+200	Endothermic	+175
d	Exothermic	-110	Exothermic	-125

11. Numerical response question. Left justify the answer in the boxes provided.

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Consider the following balanced reaction.

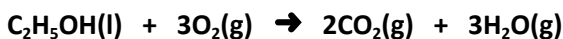


When _____ g of methanol ($\text{CH}_3\text{OH}(\text{l})$) burns 400 g of water will be heated by 75.0°C

12. Numerical response question. Left justify the answer in the boxes provided.

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Use the following equation to answer this question.

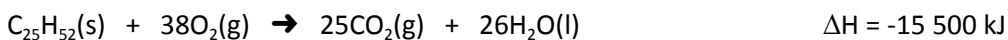


If 1.75 g of ethanol liquid, $\text{C}_2\text{H}_5\text{OH}(\text{l})$, burns the energy released is _____ kJ.

13. Numerical response question. Left justify the answer in the boxes provided.

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Use the following information to answer the next question.



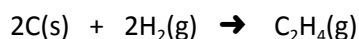
The molar enthalpy of formation for paraffin wax,



14. The reactants of Photosynthesis and the products of Cellular Respiration respectively are.

- A. $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{g})$
- B. $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{g})$ and $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$
- C. $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$ and $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{l})$
- D. $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{g})$ and $\text{CO}_2(\text{g})$, $\text{H}_2\text{O}(\text{g})$

15. During the reaction represented below, the products have i__ potential energy than the reactants because the reaction is ii_____.



- | i | ii |
|---------|-------------|
| A. More | Exothermic |
| B. More | Endothermic |
| C. Less | Exothermic |
| D. Less | Endothermic |

16. Use the following information to answer the next question.

Simple sugars are found in a variety of fruits and natural occurring substances. One such sugar is glucose, $C_6H_{12}O_6(s)$.

If 1.50 g of glucose is burned in a calorimeter that contains 100 g of water, and the temperature in the calorimeter rises from 22.0°C to 25.0°C , then the experimental molar enthalpy of combustion of glucose is _____ kJ/mol

- A. -8.38×10^{-1}
- B. -2.87×10^2
- C. -1.51×10^2
- D. -1.26×10^3 kJ/mol

17. Consider the two reactions given below.

- I. $\text{Cl}^-(\text{aq}) + 2\text{ClO}_3^-(\text{aq}) \rightarrow 3\text{ClO}_2^-(\text{aq})$
- II. $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$

The two oxidizing agents are _____ and _____.

a	$\text{Cl}^-(\text{aq})$	$\text{CH}_4(\text{g})$
b	$\text{H}_2\text{O}(\text{g})$	$\text{O}_2(\text{g})$
c	$\text{O}_2(\text{g})$	$\text{ClO}_3^-(\text{aq})$
d	$\text{ClO}_2^-(\text{aq})$	$\text{CO}_2(\text{g})$

18. When a metal undergoes oxidation, its oxidation number will _____ because it will _____ electrons.

a	Increase	Gain
b	Decreases	Lose
c	Increases	Lose
d	Decreases	Gain

19. Consider the following statements about oxidation and reduction.

- I. A process involving the gain of electrons
- II. A process involving the loss of electrons
- III. A process where an elemental metal is produced from a compound
- IV. A process where oxygen combines with a metal.

Statement I is the _____ definition of _____ while statement IV is the _____ definition of _____.

a	Operational	Reduction	Theoretical	Oxidation
b	Theoretical	Reduction	Operational	Oxidation
c	Operational	Oxidation	Theoretical	Reduction
d	Theoretical	Oxidation	Operational	Reduction

20. $\text{Ag}^+(\text{aq}) + \text{e}^- \rightarrow \text{Ag}(\text{s})$ is chosen to have an electrical potential of 0 V instead of $2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$.

Under these new conditions the electrical potential for the reduction of $\text{AgI}(\text{s})$ will be _____

- A. -0.15 V
- B. -0.95 V
- C. 0.65 V
- D. 0.95 V

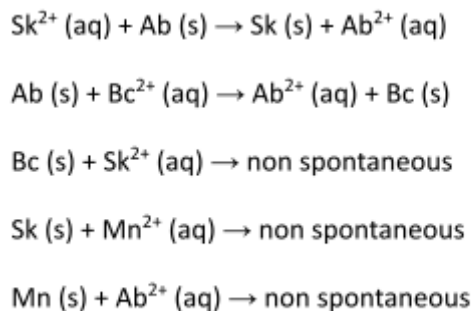
21. Select the cell with the highest standard cell potential.

- A. Gold –copper cell
- B. Zinc – tin cell
- C. Mercury-iron cell
- D. Aluminium-cobalt cell

22. Numerical response question. Left justify the answer in the boxes provided.

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Using the information given below, list the oxidizing agents from strongest to weakest.



- Key:
- | | |
|-----------|--------------------------------|
| 1. Ab (s) | 2. $\text{Ab}^{2+}(\text{aq})$ |
| 3. Bc (s) | 4. $\text{Bc}^{2+}(\text{aq})$ |
| 5. Mn (s) | 6. $\text{Mn}^{2+}(\text{aq})$ |
| 7. Sk (s) | 8. $\text{Sk}^{2+}(\text{aq})$ |

23. Numerical response question. Left justify the answer in the boxes provided.

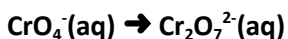
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Use the following information to answer the next question.

The oxidation numbers for chlorine in the chemical species given below will be _____, _____, _____ and _____.

$\text{ClO}_3^-(\text{aq})$	$\text{Cl}_2(\text{g})$	$\text{ClO}^-(\text{aq})$	$\text{ClO}_4^-(\text{aq})$
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24. Consider the unbalanced skeletal half reaction given below



Chromium acts as the _____ agent. If balanced with the lowest whole numbers possible, the half reaction will have _____ electrons, _____ $\text{H}^+(\text{aq})$ and _____ water molecules.

a	Oxidizing	5	6	3
b	Oxidizing	2	2	1
c	Reducing	5	6	3
d	Reducing	2	2	1

25. The cathode of an electrochemical cell is the site at which _____

a	Reduction occurs
b	Cations gain electrons
c	Oxidation occurs
d	Electrons are lost

26. Calcium chloride is widely used as a road salt in winter climates to depress the freezing point of ice. Which of the following half reactions represents the reaction at the anode?

a	$\text{Ca}(\text{s}) \rightarrow \text{Ca}^{2+}(\text{aq}) + 2\text{e}^-$
b	$2\text{Cl}^-(\text{aq}) \rightarrow \text{Cl}_2(\text{g}) + 2\text{e}^-$
c	$2\text{H}_2\text{O}(\text{l}) \rightarrow \text{O}_2(\text{g}) + 4\text{H}^+(\text{aq}) + 4\text{e}^-$
d	$2\text{H}_2\text{O}(\text{l}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g}) + 2\text{OH}^-(\text{aq})$

27. Numerical response question. Left justify the answer in the boxes provided.

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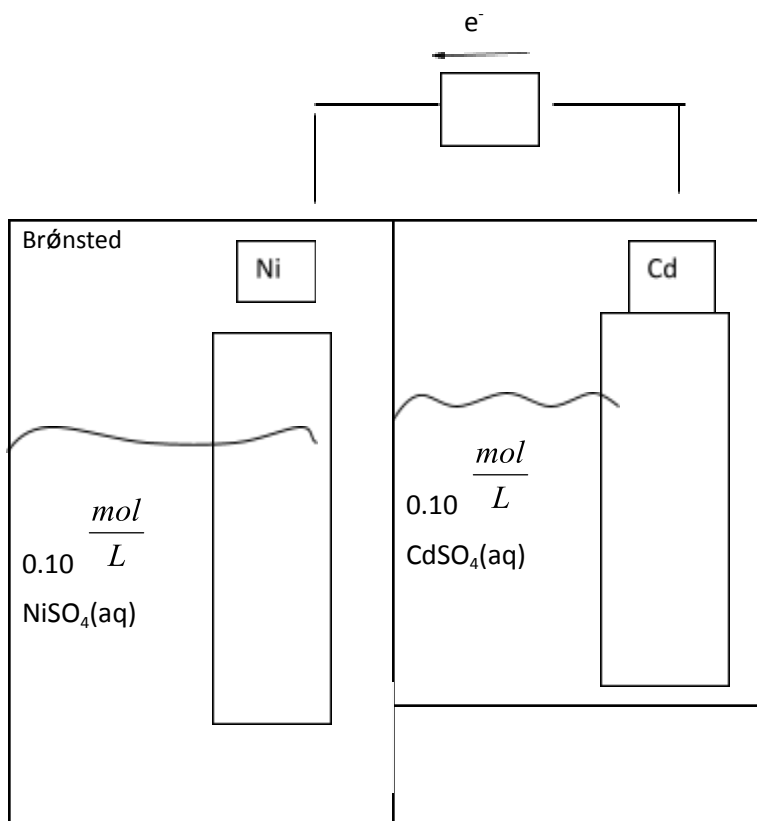
Below is a list of statements about electrochemical cells.

1	Reduction occurs at the anode
2	The oxidizing agent reacts at the cathode
3	Anions leave the anode and pass through the external circuit

4	Anions move through the electrolyte toward the anode
5	Electrons move through the external circuit toward the cathode
6	The cell is primarily endothermic
7	The cell is primarily exothermic
8	The strongest reducing agent is oxidized at the anode.
9	The strongest oxidizing agent is oxidized at the cathode.

The statements above that apply to **both** electrolytic and voltaic cells are ____, ____, ____, and _____. Answers will be accepted in any order.

28. Below is a diagram of an electrochemical cell using a beaker and a porous cup.

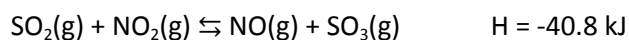


The **oxidation** half-reaction that occurs during the operation of this electrochemical cell is **i** ____ and the reaction occurs at the **ii** ____.

	i	ii
a	$\text{Ni(s)} \rightarrow \text{Ni}^{2+}(\text{aq}) + 2\text{e}^-$	Cathode
b	$\text{Ni(s)} \rightarrow \text{Ni}^{2+}(\text{aq}) + 2\text{e}^-$	Anode
c	$\text{Cd(s)} \rightarrow \text{Cd}^{2+}(\text{aq}) + 2\text{e}^-$	Cathode
d	$\text{Cd(s)} \rightarrow \text{Cd}^{2+}(\text{aq}) + 2\text{e}^-$	Anode

29. Use the following information to answer the next question.

Some of the $\text{SO}_2(\text{g})$ produced from the burning of coal and natural gas can react with $\text{NO}_2(\text{g})$ in the atmosphere according to the equation.



Several factors can influence the equilibrium concentrations of these gases.

1. An increase in temperature
2. A decrease in temperature
3. Increase concentration of $\text{SO}_2(\text{g})$
4. Increase concentration of $\text{SO}_3(\text{g})$
5. Increase concentration of $\text{NO}_2(\text{g})$
6. An increase in pressure
7. An increase in volume
8. Addition of a catalyst

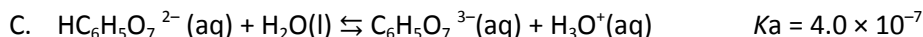
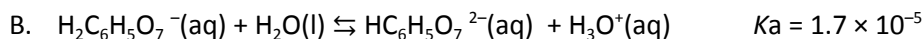
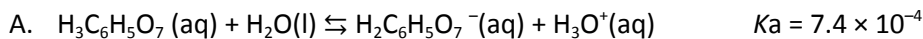
List in **ascending order**, the factors that will cause the equilibrium concentration of $\text{NO}(\text{g})$ in the reaction to increase while the K_c remains unchanged.

Record all **three digits** of your answer in **lowest to highest order** in the boxes provided below.

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30. Use the following information to answer the next question.

Citric acid, $\text{H}_3\text{C}_6\text{H}_5\text{O}_7(\text{aq})$, is a weak, polyprotic acid that is found in fruits such as oranges and lemons. Citric acid reacts with water, as represented by the following Brønsted–Lowry equations.



The chemical species that are present in this equilibrium system are:

1. $\text{H}_3\text{C}_6\text{H}_5\text{O}_7(\text{aq})$
2. $\text{H}_2\text{O}(\text{l})$
3. $\text{H}_2\text{C}_6\text{H}_5\text{O}_7^-(\text{aq})$
4. $\text{H}_3\text{O}^+(\text{aq})$
5. $\text{HC}_6\text{H}_5\text{O}_7^{2-}(\text{aq})$
6. $\text{C}_6\text{H}_5\text{O}_7^{3-}(\text{aq})$

Identify the following chemical species, in order:

Acid in reaction A

Conjugate base of the
acid in reaction A

Base in reaction B

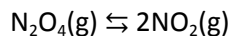
Amphiprotic species
in reaction C

Record all **four digits** of your answer in the numerical response in the boxes provided below.

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31. Use the following information to answer this question.

A technician placed an amount of the colourless gas, dinitrogen tetroxide, into a flask. He closed the flask and allowed the reaction to reach equilibrium. The dinitrogen tetroxide partially decomposed to form brown-coloured nitrogen dioxide gas, according to the following balanced chemical equation.



The data collected during the experiment were recorded below.

	N₂O₄(g)	NO₂(g)
Initial Concentration (mol/L)	0.798	0.000
Final Concentration (mol/L)	0.694	0.208

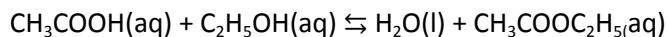
The value of the equilibrium constant in this system as $a.bc \times 10^{-d}$

Record the values of a , b , c and d in the boxes provided below.

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32. Use the following information to answer this question.

The ester ethyl ethanoate can be produced in the following equilibrium mixture:



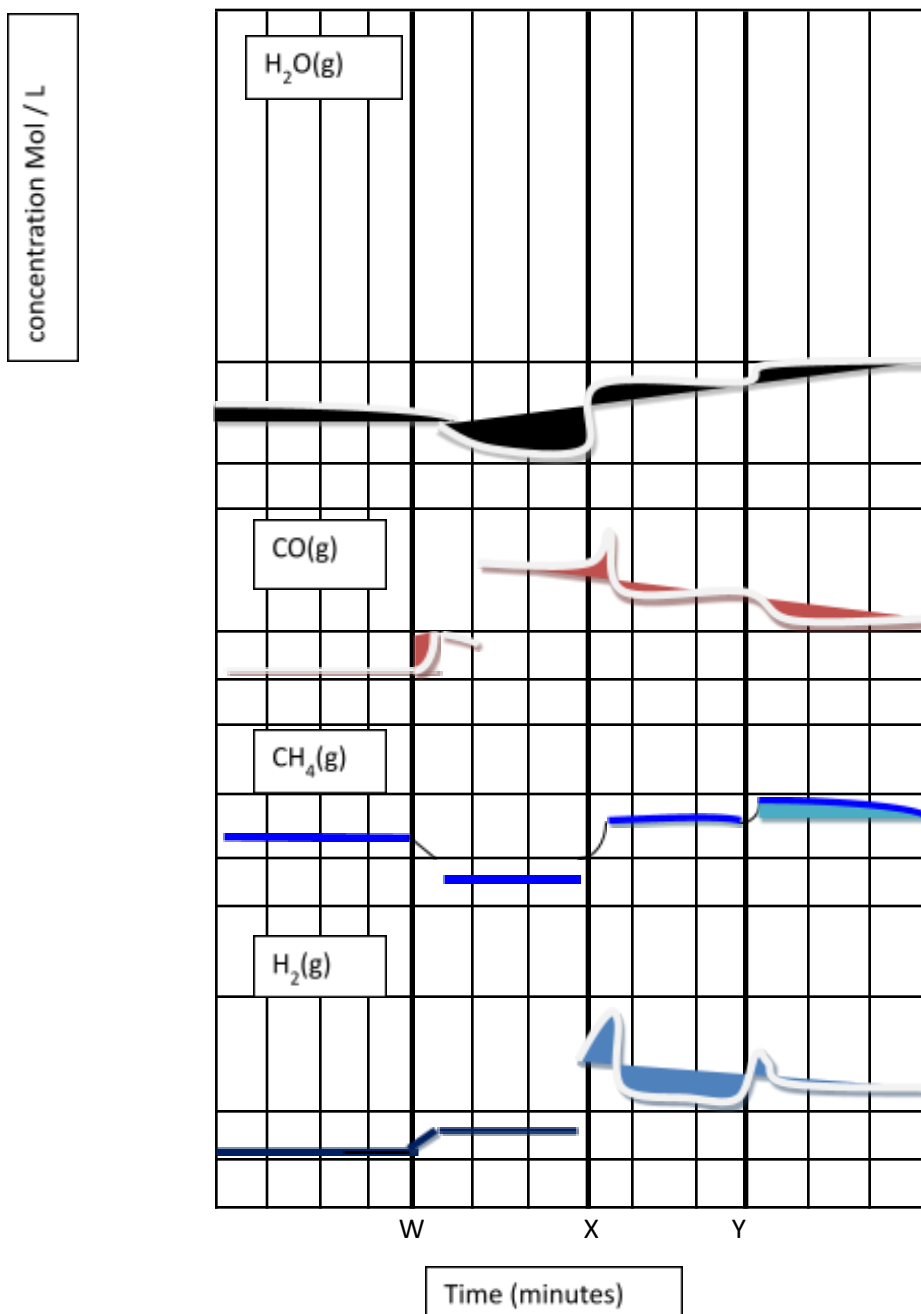
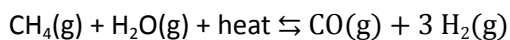
At a certain temperature, K_c for this equilibrium is 6.86. If the initial concentration of the acid is 1.00 mol/L and initial concentration of the alcohol is 0.950 mol/L, what mass of ester will be present at equilibrium in a 1.00 L solution? Express the answer to the nearest tenth.

Record your answer in the boxes provided below.

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33. Use the following information to answer the next question.

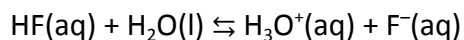
The following equilibrium system is used to produce hydrogen gas for further chemical reactions in an oil refinery.



The equilibrium shift at time "X" was caused by

- Addition of heat
- Addition of hydrogen gas to the system
- Addition of neon gas to the system while a constant volume is maintained
- Pressure increased by decreasing the volume

34. Use the following information to answer the next question.



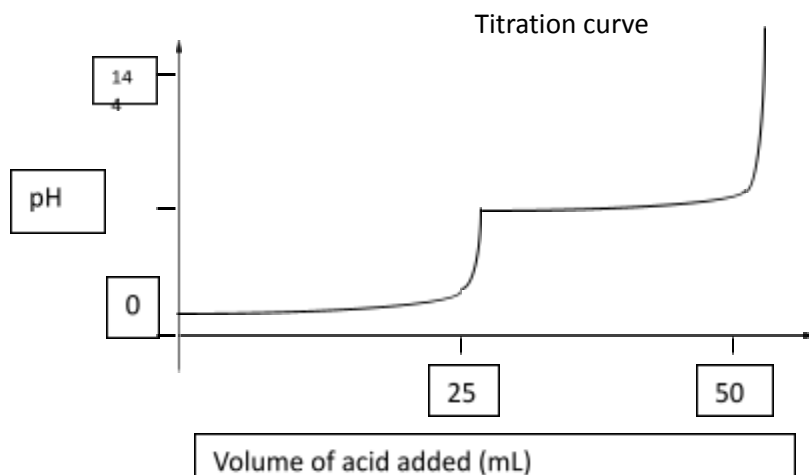
The equilibrium law expression for the equation above is i, and at equilibrium the amount of products present is ii the amount of reactants present.

The statement above is completed by the information in row

Row	i	ii
A	$K_a = \frac{[\text{F}^-(\text{aq})][\text{H}_3\text{O}^+(\text{aq})]}{[\text{HF}(\text{aq})]}$	less than
B	$K_a = \frac{[\text{F}^-(\text{aq})][\text{H}_3\text{O}^+(\text{aq})]}{[\text{HF}(\text{aq})][\text{H}_2\text{O}(\text{aq})]}$	greater than
C	$K_a = \frac{[\text{HF}(\text{aq})][\text{H}_2\text{O}(\text{aq})]}{[\text{F}^-(\text{aq})][\text{H}_3\text{O}^+(\text{aq})]}$	less than
D	$K_a = \frac{[\text{HF}(\text{aq})]}{[\text{F}^-(\text{aq})][\text{H}_3\text{O}^+(\text{aq})]}$	greater than

Use the following information to answer the next **two questions**.

Equally concentrated solutions of $\text{HNO}_3(\text{aq})$, $\text{CH}_3\text{COOH}(\text{aq})$, $\text{HOOC}\text{COOH}(\text{aq})$, and $\text{Na}_2\text{S}(\text{aq})$ were titrated with either a strong acid or strong base, and the titration curves were plotted. One of the titration curves is illustrated below.



35. The titration curve represents the titration of

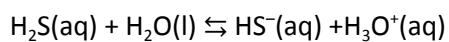
- a. $\text{HNO}_3(\text{aq})$
- b. $\text{CH}_3\text{COOH}(\text{aq})$
- c. $\text{HOOC}\text{COOH}(\text{aq})$
- d. $\text{Na}_2\text{S}(\text{aq})$

36. The most suitable indicator for the titration is

- a. phenolphthalein
- b. methyl violet
- c. chlorophenol red
- d. methyl orange

Use the following information to answer the next question.

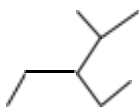
When hydrogen sulfide gas is released into the atmosphere, it dissolves in atmospheric water to form aqueous hydrosulfuric acid. The ionization of aqueous hydrosulfuric acid is shown below:



37. The concentration of a sample of aqueous hydrosulfuric acid is 0.065 mol/L. The hydronium ion concentration is i , and the pOH of the solution is ii .

Row	i	ii
A	$6.5 \times 10^{-2} \text{ mol/L}$	1.19
B	$6.5 \times 10^{-2} \text{ mol/L}$	12.81
C	$7.6 \times 10^{-5} \text{ mol/L}$	4.12
D	$7.6 \times 10^{-5} \text{ mol/L}$	9.88

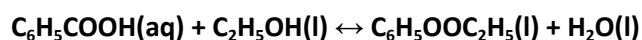
Use the diagram below to answer the next question



38. The IUPAC name for the structural diagram above is
- 2-methyl-3-ethylpentane
 - 3-ethyl-2-methylpentane
 - 3-ethyl-4-methylpentane
 - 3-isopropylpentene
39. Methylbenzene, commonly known as Toluene, is a solvent used in glues and lacquers. It is toxic to humans but it is preferred to benzene as a solvent because benzene is both toxic and carcinogenic. All of the following apply to toluene **except**
- Aliphatic
 - Aromatic
 - Stable
 - Unsaturated

Use the information below to answer the next question

Ethyl benzoate has a pleasant cherry-like odour. It is formed by the reaction shown below.

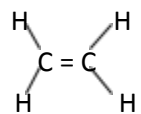


40. Ethyl benzoate is i , and the reactant molecules used to form Ethyl benzoate are ii and iii respectively.

The statement above is completed by the information in row

Row	i	ii	iii
A.	a carboxylic acid	an ester	an alcohol
B.	a carboxylic acid	an alcohol	an ester
C.	an ester	an aldehyde	a carboxylic acid
D.	an ester	a carboxylic acid	an alcohol

41. Ethene is the organic compound with the formula C_2H_4 . Ethene is used widely in industry and also has a role in biology as a hormone.

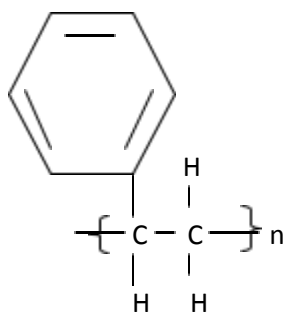


When ethene has water added, it forms _____, while when hydrogen is added it forms _____

- a. Ethanol, ethyne
- b. Ethanal, ethyne
- c. Ethanol, ethane
- d. Ethanal, ethane

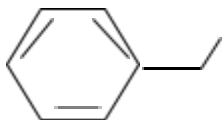
Use the information below to answer the next question

Polystyrene is a polymer used in packaging, refrigerator doors, cups, ice buckets and coolers. It was discovered in 1839 by Eduard Simon, an apothecary in Berlin.

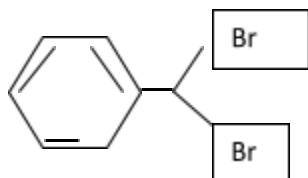


42. Which of the following structural diagrams represents the monomer used in the manufacture of polystyrene

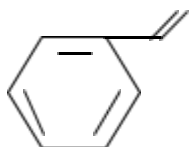
a.



b.



c.



d.



Use the following information to answer the next question

Organic Compounds

- | | |
|-------------------|-----------------------------|
| 1. 2-bromobutane | 4. pentane-3-ol |
| 2. 2-methylbutane | 5. 3-ethylpentane |
| 3. cyclohexene | 6. 2-methyl-1-phenylpropane |

43. The organic compound(s) that **do not** contain branches off the parent chain are
- 1, 3, and 4
 - 2, 5, and 6
 - 3, and 4
 - 3 only

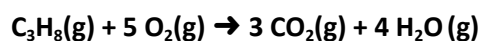
Use the following information to answer the next question.



44. The IUPAC name of the following compound is
- Hexene
 - Hexadiene
 - Hex-2,5-diene
 - Hex-1,5-diene

Use the following information to answer the next question

An economically important reaction involving the fossil fuel propane is represented by the following equation



45. The above reaction can be classified as both i and ii.

Row	i	ii
A.	Combustion	Endothermic
B.	Combustion	Exothermic
C.	Single Replacement	Endothermic
D.	Single Replacement	Exothermic

Numerical Response:

46. Consider two organic molecules: Bromobenzene, and Ethylbenzene

The descriptions numbered below that apply to both Bromobenzene and Ethylbenzene are _____, _____, _____, and _____.

Descriptions

1. Saturated

6. Alkanes

2. Unsaturated

7. Alkenes

3. Cyclic

8. Contains only single bonds

4. Aliphatic

9. Contains bonds that are not single bonds

5. Aromatic

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Numerical response.

47. The compounds numbered below that can be classified as organic compounds are _____, _____, _____, and _____.

Compounds Containing Carbon

1. $\text{CH}_4(\text{g})$

5. $\text{CH}_3\text{CH}_2\text{OH}(\text{l})$

2. $\text{HCN}(\text{g})$

6. $\text{CH}_3\text{CH}_2\text{CHCH}_2(\text{l})$

3. $\text{MgCO}_3(\text{s})$

7. $\text{SiC}(\text{s})$

4. $\text{HCOOCH}_2\text{CH}_3(\text{l})$

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Numerical response

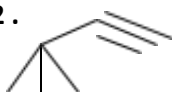
48. The line diagrams below represent organic compounds. The compounds that are structural isomers of each other are _____, _____, _____, and _____.

Line Diagrams for some Organic Compounds

1.



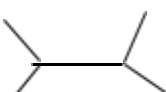
2.



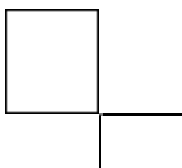
4.



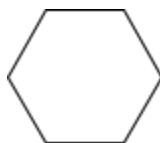
5.



3.



6.



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The equilibrium law expression for the industrial processing of ethanol is:

$$K_c = \frac{[C_2H_5OH(g)]}{[C_2H_4(g)][H_2O(g)]}$$

Under certain conditions, the $K_c = 400$. At equilibrium a 5.00×10^3 L reaction vessel contains 115 mol of $C_2H_4(g)$ and 110 mol of $H_2O(g)$.

49. What is the equilibrium concentration of ethanol under these conditions?

- a. 75.0 mol/L
- b. 5.06×10^6 mol/L
- c. 0.202 mol/L
- d. 1.50×10^{-2} mol/L

Answers:

1. D	2. A	3 Cc	4.C	5. B	6. (1378)	7. A	8. (0.4)	9. B	10.A
11. (6.32)	12. (46.9)	13. (1.77)	14.C	15.B	16. C	17. C	18. C	19. B	20. B
21. D	22. (4862)	23 (5017)	24.B	25. A	26. B	27. (2458)	28. D	29. (35)	30. (1325)
31. (6232)	32. (58.4)	33. D	34. A	35. C	36. A	37. D	38. B	39. A	40.D
41. C	42. C	43. A	44. D	45. B	46. (2359)	47. (1456)	48. (146))	49. C	