

### Question 1

Determine the vapor pressure of a solution at 25C that contains 76.6 g of glucose ( $C_6H_{12}O_6$ ) in 250.0 mL of water. The vapor pressure of pure water at 25C is 23.8 torr.

- A) 70.8 torr
- B) 72.9 torr
- C) 23.1 torr
- D) 22.9 torr
- E) 7.29 torr

Answer: <https://biology-forums.com/index.php?topic=1880282>

### Question 2

A gas occupies 22.4 L at STP and 19.0 L at 100C and 1.50 atm pressure. How many moles of gas did the system gain or lose?

- A) 0.08 moles gained
- B) 0.01 moles gained
- C) 0.01 moles lost
- D) 0.07 moles lost
- E) 1.40 moles gained

Answer: <https://biology-forums.com/index.php?topic=1879541>

### Question 3

Determine the mass percent (to the hundredths place) of H in sodium bicarbonate ( $NaHCO_3$ ).

- A) 1.20
- B) 14.30
- C) 57.14
- D) 27.36
- E) 19.05

Answer: <https://biology-forums.com/index.php?topic=1879286>

### Question 4

A 1.0 L buffer solution is 0.250 M  $HC_2H_3O_2$  and 0.060 M  $NaC_2H_3O_2$ . Which of the following actions will destroy the buffer?

- A) adding 0.060 moles of  $NaC_2H_3O_2$
- B) adding 0.060 moles of  $HC_2H_3O_2$
- C) adding 0.060 moles of HCl
- D) adding 0.060 moles of KOH
- E) All of the above will destroy the buffer.

Answer: <https://biology-forums.com/index.php?topic=1880699>

### Question 5

Give the number of valence electrons for Pb.

- A) 4
- B) 2
- C) 28
- D) 12
- E) 26

Answer: <https://biology-forums.com/index.php?topic=1879853>

### Question 6

Identify the following diagnostic procedure that gives the highest dose of radiation.

- A) dental x-ray two bitewings
- B) upper gastrointestinal tract x-ray
- C) barium enema x-ray
- D) chest x-ray
- E) thallium heart scan

Answer: <https://biology-forums.com/index.php?topic=1880984>

### Question 7

Identify an element that is NOT in nonoxide ceramics.

- A) nitrogen
- B) silicon

- C) aluminum  
D) boron  
E) carbon

Answer: <https://biology-forums.com/index.php?topic=1880213>

### Question 8

Why doesn't Dalton's Law of Partial Pressures depend on the identity of the gases present?

Answer: <https://biology-forums.com/index.php?topic=1879603>

### Question 9

How many atoms are in 7.50 moles of Ca?

- A) 4.52 10<sup>24</sup> atoms  
B) 1.52 10<sup>24</sup> atoms  
C) 5.02 10<sup>23</sup> atoms  
D) 3.01 10<sup>24</sup> atoms  
E) 7.53 10<sup>23</sup> atoms

Answer: <https://biology-forums.com/index.php?topic=1879154>

### Question 10

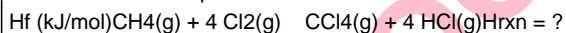
Predict the charge of the most stable ion of sodium.

- A) 1+  
B) 3-  
C) 4+  
D) 5+  
E) 6+

Answer: <https://biology-forums.com/index.php?topic=1879136>

### Question 11

Use the information provided to determine H<sub>rxn</sub> for the following reaction:



CH<sub>4</sub>(g)-75

CCl<sub>4</sub>(g)-96

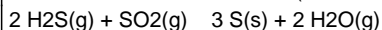
HCl(g)-92

- A) -389 kJ  
B) -113 kJ  
C) +113 kJ  
D) -71 kJ  
E) +79 kJ

Answer: <https://biology-forums.com/index.php?topic=1879639>

### Question 12

Determine the volume of H<sub>2</sub>S (at 375 K and 1.20 atm) needed to produce 55.0 g of S. Assume that there is excess SO<sub>2</sub> present.



- A) 44.0 L  
B) 29.3 L  
C) 22.7 L  
D) 34.1 L  
E) 66.0 L

Answer: <https://biology-forums.com/index.php?topic=1879494>

### Question 13

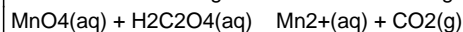
The rate constant for a first-order reaction is 0.54 s<sup>-1</sup>. What is the half-life of this reaction if the initial concentration is 0.33 M?

- A) 0.089 s  
B) 1.8 s  
C) 0.31 s  
D) 5.6 s  
E) 1.3 s

Answer: <https://biology-forums.com/index.php?topic=1880435>

### Question 14

What element is being oxidized in the following redox reaction?



- A) C
- B) O
- C) Mn
- D) H

Answer: <https://biology-forums.com/index.php?topic=1880839>

### Question 15

Identify the battery type that has a high overcharge tolerance.

- A) NiCad
- B) Li ion
- C) NiMH
- D) lead storage
- E) none of the above

Answer: <https://biology-forums.com/index.php?topic=1880861>

### Question 16

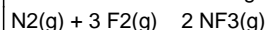
Calculate the molar mass of  $\text{Ca}_3(\text{PO}_4)_2$ .

- A) 87.05 g/mol
- B) 215.21 g/mol
- C) 310.18 g/mol
- D) 279.21 g/mol
- E) 246.18 g/mol

Answer: <https://biology-forums.com/index.php?topic=1879192>

### Question 17

What is n for the following equation in relating  $K_c$  to  $K_p$ ?



- A) 4
- B) -3
- C) -2
- D) 2
- E) 0

Answer: <https://biology-forums.com/index.php?topic=1880485>

### Question 18

Energy that is associated with the relative positions of electrons and nuclei in atoms and molecules is called

- A) kinetic energy.
- B) thermal energy.
- C) potential energy.
- D) chemical energy.

Answer: <https://biology-forums.com/index.php?topic=1879610>

### Question 19

Choose the bidentate ligand from the substances below.

- A) ethylenediamine
- B) EDTA
- C) chloride ion
- D) ammonia
- E) carbon monoxide

Answer: <https://biology-forums.com/index.php?topic=1881227>

### Question 20

Place the following in order of decreasing XO bond length, where "X" represents the central atom in each of the following compounds or ions.



- A)  $\text{CO}_2 > \text{SiO}_3^{2-} > \text{CO}_3$
- B)  $\text{CO}_2 > \text{CO}_3^{2-} > \text{SiO}_3^{2-}$
- C)  $\text{CO}_3^{2-} > \text{CO}_2 > \text{SiO}_3^{2-}$
- D)  $\text{CO}_3^{2-} > \text{SiO}_3^{2-} > \text{CO}_2$

E)  $\text{SiO}_2 > \text{CO}_2 > \text{CO}$

Answer: <https://biology-forums.com/index.php?topic=1879951>

BIOLOGY-FORUMS.COM