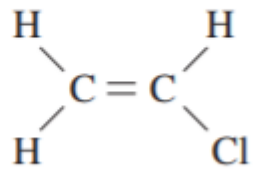


Question 1.

What is the name of this compound?



- (A) Styrene
- (B) Ethylene
- (C) Chloroethane
- (D) Vinyl chloride

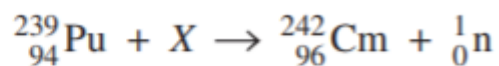
Question 2.

What is the molecular formula of pentanoic acid?

- (A) $\text{C}_5\text{H}_9\text{O}$
- (B) $\text{C}_5\text{H}_{10}\text{O}$
- (C) $\text{C}_5\text{H}_{10}\text{O}_2$
- (D) $\text{C}_5\text{H}_{11}\text{O}_2$

Question 3.

Curium is produced according to this equation.

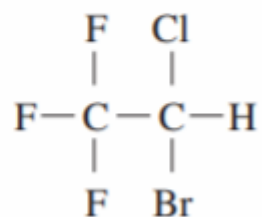


What is X in the equation?

- (A) A proton
- (B) A neutron
- (C) A beta particle
- (D) An alpha particle

Question 4.

What is the IUPAC name of the following compound?



- (A) 1-bromo-1-chloro-2,2,2-trifluoroethane
- (B) 1-chloro-1-bromo-2,2,2-trifluoroethane
- (C) 2-chloro-2-bromo-1,1,1-trifluoroethane
- (D) 2-bromo-2-chloro-1,1,1-trifluoroethane

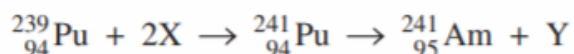
Question 5.

Which of the equations correctly describes incomplete combustion?

- (A) $\text{C}_2\text{H}_5\text{OH}(l) + 2\text{O}_2(g) \rightarrow 2\text{CO}(g) + 3\text{H}_2\text{O}(l)$
- (B) $\text{C}_2\text{H}_5\text{OH}(l) + \frac{7}{2}\text{O}_2(g) \rightarrow 2\text{CO}_2(g) + 3\text{H}_2\text{O}(l)$
- (C) $\text{C}_2\text{H}_5\text{OH}(l) + 3\text{O}_2(g) \rightarrow 2\text{CO}_2(g) + 3\text{H}_2\text{O}(l)$
- (D) $\text{C}_2\text{H}_5\text{OH}(l) + 2\text{O}_2(g) \rightarrow \text{C}(s) + \text{CO}(g) + 3\text{H}_2\text{O}(l)$

Question 6.

A transuranic element can be produced in a nuclear reactor according to this equation:



Which row of the table correctly identifies X and Y?

	X	Y
(A)	Neutron	Electron
(B)	Proton	Neutron
(C)	Neutron	Proton
(D)	Proton	Electron

Question 7.

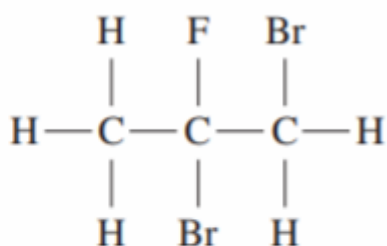
$\text{C}_6\text{H}_{12}\text{O}_6$ = Glucose, fermentation converts glucose into ethanol and carbon dioxide

What volume of carbon dioxide will be produced if 10.3 g of glucose is fermented at 25°C and 100 kPa?

- (A) 1.30 L
- (B) 1.42 L
- (C) 2.57 L
- (D) 2.83 L

Question 8.

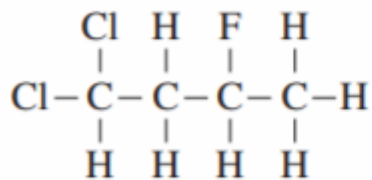
What is the IUPAC name of the following compound?



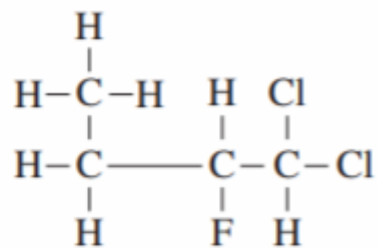
- (A) 1,2-dibromo-2-fluoropropane
- (B) 2,3-dibromo-2-fluoropropane
- (C) 2-fluoro-2,3-dibromopropane
- (D) 2-fluoro-1,2-dibromopropane

Question 9.

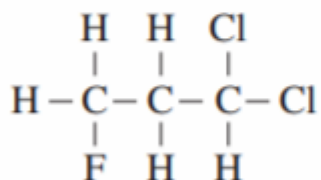
Four compounds, W, X, Y and Z, are represented below.



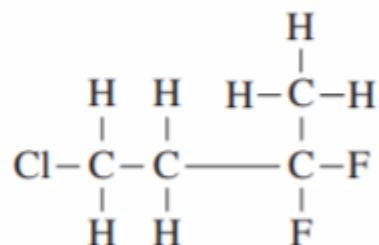
Compound W



Compound X



Compound Y



Compound Z

Which of the following is a pair of isomers?

- (A) W and X
- (B) W and Y
- (C) X and Y
- (D) Y and Z

Question 10.

If exactly one gram of each of the following compounds is treated with excess hydrochloric acid, which would release the greatest volume of $\text{CO}_2(g)$ at 25°C and 100 kPa ?

- (A) K_2CO_3
- (B) KHCO_3
- (C) Na_2CO_3
- (D) NaHCO_3

Question 11.

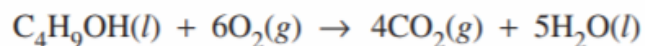
An experimental car using ethanol as a fuel source requires 2270 kJ of energy for every kilometre travelled.

Given that the heat of combustion of ethanol is 1360 kJ mol^{-1} , what is the maximum distance that the car can travel on 1.0 kilogram of ethanol?

- (A) 1.7 km
- (B) 13 km
- (C) 28 km
- (D) 36 km

Question 12.

Butan-1-ol burns in oxygen according to the following equation.



How many moles of carbon dioxide would form if two moles of butan-1-ol were burnt in excess oxygen?

- (A) 2
- (B) 4
- (C) 8
- (D) 10

Question 13.

When placed in the Periodic Table, the recently discovered element 116 would be found in the same group as

- (A) element 16.
- (B) element 43.
- (C) element 87.
- (D) element 102.

Question 14.

Which two species will react to form a product containing a coordinate covalent bond?

- (A) $\text{Ca}(s)$ and $2\text{H}^+(aq)$
- (B) $\text{H}_2\text{O}(l)$ and $\text{H}^+(aq)$
- (C) $\text{Ag}^+(aq)$ and $\text{Cl}^-(aq)$
- (D) $\text{NH}_4^+(aq)$ and $\text{OH}^-(aq)$

Question 15.

What effect does a catalyst have on a reaction?

- (A) It increases the rate.
- (B) It increases the yield.
- (C) It increases the heat of reaction.
- (D) It increases the activation energy.

Answers available on:

<https://edzion.com/2021/08/31/chemistry-preliminary-exam/>