ALBERTA SCIENCE 30 · UNIT B · 25 QUESTIONS

Chemistry in the Environment — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **Coal burned in a power plant contains sulfur. When the coal burns, a gas is produced that is a major contributor to acid deposition. This gas is**

- A carbon dioxide
- B sulfur dioxide
- C ozone
- D methane

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2 **A sample of industrial effluent has a pH of 2.5. This sample would be classified as**

A strongly basic

B weakly basic

C neutral

D acidic

Understand It with Pulse | Flag a mistake

3 **The general formula for the alkane family of hydrocarbons is**

A C_nH_{2n}

B C_nH_{2n-2}

C C_nH_{2n+2}

D C_nH_n

Understand It with Pulse | Flag a mistake

4 **Which of the following compounds is a saturated hydrocarbon?**

- **A** C_3H_8
- **B** C_2H_4
- **C** C_2H_2
- **D** C_6H_6

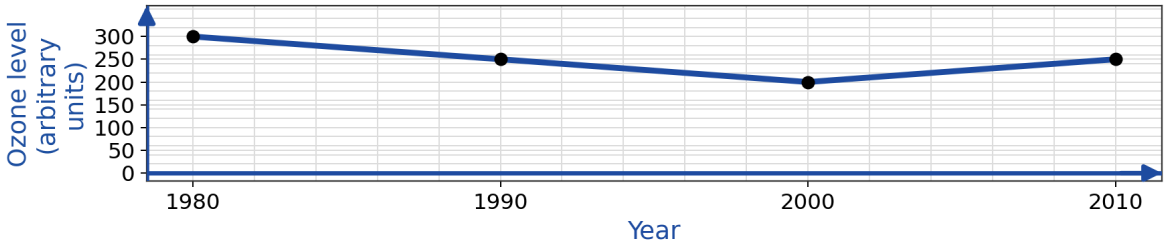
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5 **Hexane is a straight-chain alkane that contains 6 carbon atoms. The number of hydrogen atoms in one molecule of hexane is _____ Record your answer as a whole number.**

ANSWER _____

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6 **The graph below shows stratospheric ozone level, in arbitrary units, over time. Between 1980 and 2000, the ozone level**



- **A** fell by 100 units
- **B** rose by 100 units
- **C** fell by 50 units
- **D** did not change

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7 **Biomagnification is best described as**

- **A** the breakdown of a toxic substance by bacteria in soil
- **B** the total mass of a pollutant stored in one organism
- **C** the increasing concentration of a toxic substance in organisms at higher trophic levels
- **D** the movement of a pollutant downward through groundwater

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8 **The products of the complete combustion of a hydrocarbon are**

A carbon dioxide and water

B carbon monoxide and water

C carbon and hydrogen

D carbon dioxide and hydrogen

Understand It with Pulse | Flag a mistake

9 **Which of the following compounds is classified as an alcohol?**

A CH_3COOH

B C_2H_4

C CH_4

D CH_3OH

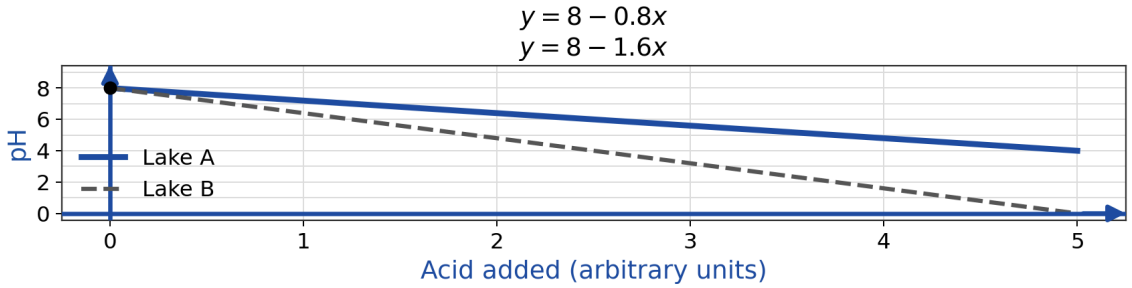
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10 **A sample of rainwater collected in an industrial region has a hydrogen ion concentration of $[H^+] = 1.6 \times 10^{-5}$ mol/L. The pH of the rainwater is _____ Record your answer to the nearest hundredth.**

ANSWER _____

Understand It with Pulse | Flag a mistake

11 **Lake A is surrounded by limestone bedrock and Lake B is surrounded by granite bedrock. The graph below shows pH as acid is added to each lake. After 5 units of acid are added, the lake with the smaller drop in pH, and the size of that drop, are**



A Lake A, drop of 4.0

B Lake A, drop of 8.0

C Lake B, drop of 4.0

D Lake B, drop of 8.0

Understand It with Pulse | Flag a mistake

12 **Which pair of compounds are structural isomers of each other?**

A ethane and ethene

B propane and butane

C butane and 2-methylpropane

D methane and methanol

Understand It with Pulse | Flag a mistake

13 **Ground-level ozone, a harmful component of photochemical smog, is produced when**

A oxygen reacts with water vapour inside clouds

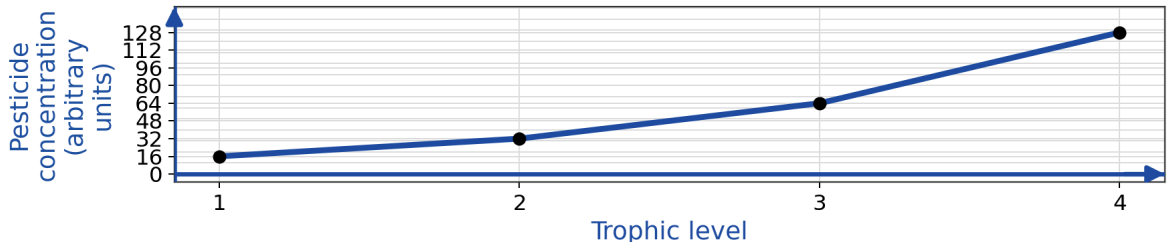
B chlorofluorocarbons are released from aerosol cans

C sulfur dioxide dissolves in rain droplets

D nitrogen oxides and organic vapours react in the presence of sunlight

Understand It with Pulse | Flag a mistake

14 **The graph below shows pesticide concentration at four trophic levels, in arbitrary units. The concentration at trophic level 4 is how many times the concentration at trophic level 1?**



A 2

B 4

C 8

D 16

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15 **Ethanoic acid reacts with methanol to produce water and an organic compound that belongs to the family called**

A esters

B alkanes

C alcohols

D carboxylic acids

Understand It with Pulse | Flag a mistake

16 **A furnace that burns natural gas with a limited supply of oxygen can produce a colourless, odourless gas that is highly toxic to humans. This gas is**

A carbon dioxide

B carbon (soot)

C carbon monoxide

D nitrogen dioxide

Understand It with Pulse | Flag a mistake

17 **The unbalanced equation for the complete combustion of ethane is**

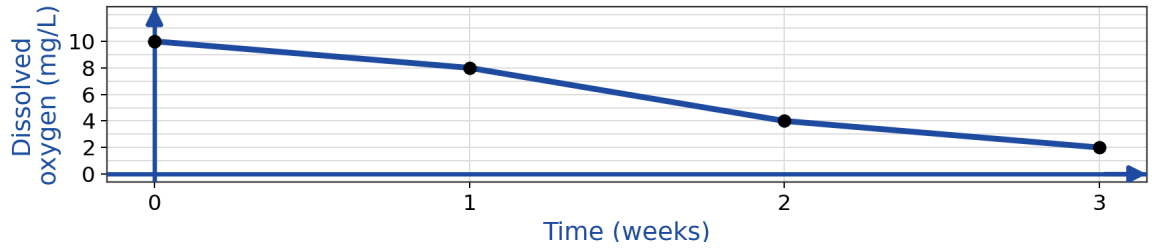
__C_2H_6 + __O_2 → __CO_2 + __H_2O

When the equation is balanced with the lowest whole-number coefficients, the sum of all four coefficients is _____ Record your answer as a whole number.

ANSWER _____

Understand It with Pulse | Flag a mistake

18 **The graph below shows dissolved oxygen in a lake after fertilizer runoff causes an algal bloom. After 3 weeks, the dissolved oxygen level, in milligrams per litre, is**



A 2

B 4

C 8

D 10

Understand It with Pulse | Flag a mistake

19 **Benzene, C_6H_6, is a ring-shaped hydrocarbon that is classified as**

A an aromatic hydrocarbon

B an alkene

C an alkane

D an alkyne

Understand It with Pulse | Flag a mistake

20 **Unpolluted rainwater has a pH of 5.6. A sample of acid rain has a pH of 4.3. The hydrogen ion concentration of the acid rain is how many times greater than that of the unpolluted rainwater? The factor is _____ Record your answer to the nearest whole number.**

ANSWER _____

Understand It with Pulse | Flag a mistake

21 **The layer of ozone in the stratosphere is essential for life on Earth because it**

- **A** keeps the surface of the Earth warm at night
- **B** produces the oxygen needed for cellular respiration
- **C** traps pollutants so that they cannot reach the ground
- **D** absorbs most of the harmful ultraviolet radiation from the Sun

Understand It with Pulse | Flag a mistake

22 **Which of the following compounds contains a carboxyl group, -COOH?**

- **A** ethanol
- **B** ethanoic acid
- **C** ethene
- **D** propane

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23 **The compound 2,2-dimethylpropane is a branched-chain alkane. The total number of atoms in one molecule of 2,2-dimethylpropane is _____ Record your answer as a whole number.**

ANSWER _____

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24 **A 2.0 kg sample of fish tissue is found to contain 3.6 mg of mercury. One part per million is equal to 1 mg of a substance per kilogram of sample. The concentration of mercury in the fish tissue is _____ ppm Record your answer to the nearest tenth.**

ANSWER _____

Understand It with Pulse | Flag a mistake

25 **Which technology is installed at coal-fired power plants specifically to remove sulfur dioxide from exhaust gases before they are released?**

A catalytic converters

B electrostatic precipitators

C flue-gas scrubbers

D cooling towers

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. B
2. D
3. C
4. A
5. 14
6. A
7. C
8. A
9. D
10. 4.8
11. A
12. C
13. D
14. C
15. A
16. C
17. 19
18. A
19. A
20. 20
21. D
22. B
23. 17
24. 1.8
25. C

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