

SAMPLE TEST - Chemistry

MULTIPLE CHOICES. Choose the one alternative that best completes the statement or answers the question

- The chlorine atom has an atomic number of 17 and a mass number of 35. Therefore, a chlorine atom has _____ neutrons.
 - 7
 - 35
 - 17
 - 36
 - 18
- A mole of H₂
 - contains 6×10^{23} atoms.
 - contains 6×10^{23} molecules.
 - contains 1 gram of hydrogen.
 - is 6×10^{23} grams of hydrogen.
 - none of the above
- In an electrically neutral atom, the number of _____ is equal to the number of _____.
 - neutrons, electrons
 - protons, electrons
 - protons, neutrons
 - electrons, ions
 - electrons, isotopes
- A triple bond contains ___ sigma bond(s) and ___ pi bond(s).
 - 0, 3
 - 3, 0
 - 1, 2
 - 2, 1
 - 3, 2
- Which of the following is **NOT** true for the Group 1A elements?
 - Most of them are soft, silvery corrosive metals.
 - Their atomic radii increase with increasing molecular weight.
 - They are named the alkaline earth metals.
 - The electronic configuration of their outermost electrons is ns^1 .
 - They exhibit a +1 oxidation state in compounds.

6. Which of the following lists shows intermolecular forces in order of increasing strength?
- A) dipole-dipole, London dispersion, hydrogen bonding
 - B) London dispersion, dipole-dipole, hydrogen bonding
 - C) hydrogen bonding, London dispersion, dipole-dipole
 - D) dipole-dipole, hydrogen bonding, London dispersion
 - E) London dispersion, hydrogen bonding, dipole-dipole
7. What is the molarity of a NaOH solution containing 6 g of NaOH in 0.5 liters of solution? (Atomic masses: H=1; O=16; Na=23)
- A) 0.075 M
 - B) 0.15 M
 - C) 0.3 M
 - D) 3.33 M
 - E) 12 M
8. A chemical compound that acts as a proton donor is known as
- A) a Bronsted-Lowry acid.
 - B) a Bronsted-Lowry base.
 - C) an Arrhenius acid.
 - D) an Arrhenius base.
 - E) an oxidizing agent.
9. Which of the following pairs of molecules and their molecular geometries is WRONG?
- A) NH_3 - trigonal planar
 - B) H_2O - bent
 - C) BF_3 - trigonal planar
 - D) CH_4 - tetrahedral
 - E) CO_2 - linear
10. Which formula represents a salt?
- A) KOH
 - B) KCl
 - C) CH_3OH
 - D) CH_3COOH
 - E) SO_2

11. The precipitate formed when barium chloride is treated with sulfuric acid is _____ .

- A) BaS_2O_4
- B) BaSO_3
- C) BaSO_2
- D) BaSO_4
- E) BaS

12. What is the oxidation number of Cr in $\text{K}_2\text{Cr}_2\text{O}_7$?

- A) +2
- B) +3
- C) +5
- D) +6
- E) +7

13. Which half-reaction correctly represents oxidation?

- A) $\text{Cr}^{3+} + 3\text{e}^- \rightarrow \text{Cr}(\text{s})$
- B) $\text{Cr}^{3+} \rightarrow \text{Cr}(\text{s}) + 3\text{e}^-$
- C) $\text{Cr}(\text{s}) \rightarrow \text{Cr}^{3+} + 3\text{e}^-$
- D) $\text{Cr}(\text{s}) + 3\text{e}^- \rightarrow \text{Cr}^{3+}$
- E) $\text{Cr}^{3-} \rightarrow \text{Cr}(\text{s}) + 3\text{e}^-$

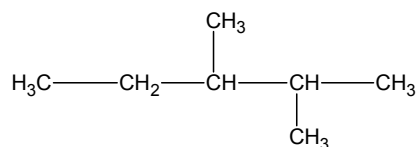
14. What is the pH of a 0.00001 M HCl solution?

- A) 1
- B) 9
- C) 4
- D) 5
- E) 10

15. What type of reaction is $\text{CH}_3\text{CH}_3 + \text{Cl}_2 \rightarrow \text{CH}_3\text{CH}_2\text{Cl} + \text{HCl}$?

- A) an addition reaction
- B) a substitution reaction
- C) a saponification reaction
- D) an elimination reaction
- E) an esterification reaction

16. Select the correct IUPAC name for:



- A) heptane
- B) 1,1,2-trimethylbutane
- C) 2-ethyl-1,1,2-trimethylethane
- D) 2,3-dimethylpentane
- E) 3,4-dimethylpentane

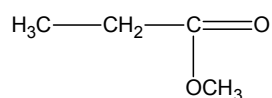
17. The hydrocarbons with a double covalent carbon-carbon bond are called

- A) alkanes
- B) alkenes
- C) alkynes
- D) alcohols
- E) aldehydes

18. Two isomers of a saturated hydrocarbon

- A) have the same structure.
- B) have different compositions of elements.
- C) have the same molecular formula.
- D) have a different content of the isotopes of hydrogen.
- E) react vigorously with one another.

19. The correct classification for the following compound is: _____ .



- A) aldehyde
- B) ester
- C) ketone
- D) carboxylic acid
- E) alcohol

20. Glucose is a _____ .

- A) protein
- B) disaccharide
- C) nucleic acid
- D) monosaccharide
- E) lipid