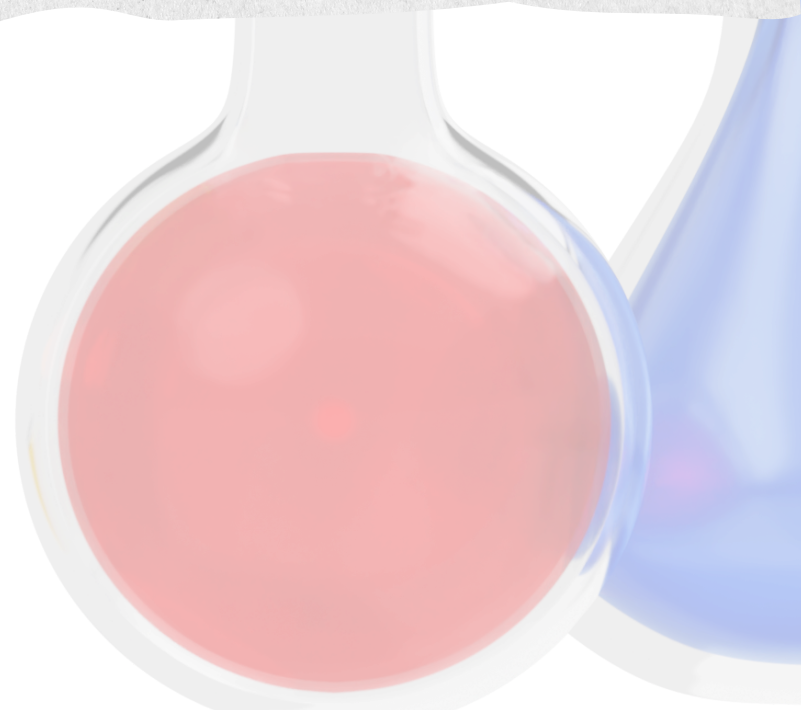


CSCA Chemistry

Full Mock Test 1



1

Which of the following statements is NOT related to van der Waals forces?

- A. Gaseous substances can condense or solidify when pressurized or cooled.
- B. Dry ice readily sublimates
- C. The melting and boiling points of fluorine, chlorine, bromine, and iodine increase in that order
- D. Sodium chloride has a relatively high melting point

2

Which of the following statements is incorrect?

- A. Protecting the environment is equivalent to protecting humanity itself
- B. Environmental pollution primarily includes air pollution, water pollution, and soil pollution
- C. Inhaling sulfur dioxide can cause respiratory diseases
- D. The fundamental solution to air pollution is restricting the development of the chemical industry

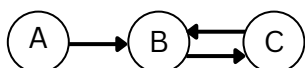
3

Among the following chemical reactions, which one breaks both ionic and covalent bonds?

- A. Thermal decomposition of KClO_3
- B. Dissolution of NaOH in water
- C. Thermal decomposition of HClO
- D. Melting Na_2CO_3 by heating

4

Compounds A, B, and C have the conversion relationship shown in the diagram (“→” indicates a one-step reaction; some substances and reaction conditions are omitted). Which of the following groups of substances does not meet the requirement of being in the order A, B, C?



- A. C, CO, CO_2
- B. KOH , K_2CO_3 , KNO_3
- C. CO_2 , CaCO_3 , CaCl_2
- D. Fe_2O_3 , FeCl_3 , $\text{Fe}(\text{OH})_3$

5

Elements A, B, C, D, and E belong to the same period. The highest-valent oxides of A and B form alkaline hydrates, with B being more alkaline than A. The gaseous hydrides of C and D show stability such that C is more stable than D. Among the simple ions formed by gaining or losing electrons, E has the smallest ionic radius. The correct order of their atomic numbers from smallest to largest is ()

- A. C, D, E, A, B
- B. E, C, D, A, B
- C. B, A, E, D, C
- D. B, A, D, C, E

6

Among the following reactions, which one involves both the breaking of ionic bonds and covalent bonds?

- A. Passing SO_2 through water
- B. Dissolving sodium hydrogen sulfate in water
- C. Passing HCl into water
- D. Dissolving caustic soda in water

7

Which of the following statements regarding energy changes in chemical reactions is correct?

- A. The formation of chemical bonds is an exothermic process
- B. No energy change occurs during reversible reactions
- C. Reactions occurring at room temperature are necessarily exothermic
- D. The magnitude of energy change in a chemical reaction is independent of the mass of reactants

8

The reason phenol exhibits weak acidity is ()

- A. The benzene ring increases the polarity of the hydroxyl group's O-H
- B. The hydroxyl group activates the benzene ring
- C. Phenol can react with NaOH solution
- D. Phenol reacts with bromine water

9

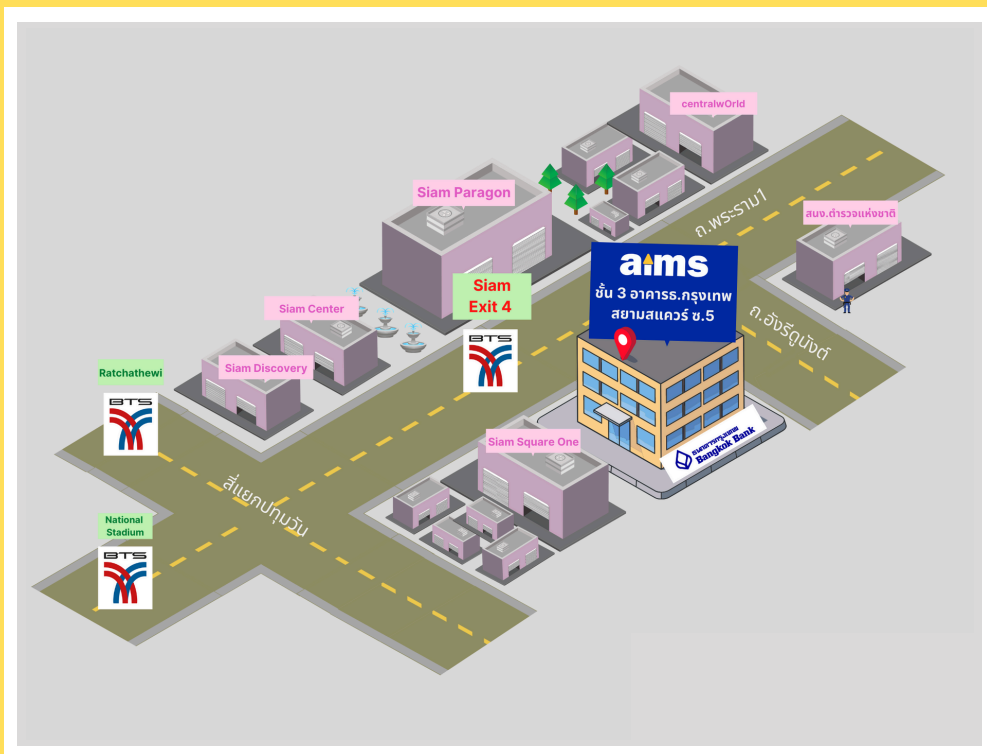
Natural pigments are often extracted using solvent extraction. Which of the following solvents cannot be used to extract natural pigments from aqueous solutions?

- A. Petroleum ether
- B. Dichloromethane
- C. Ethanol
- D. Ethyl ether

10

3.2 g of a substance contains 6.02×10^{22} molecules. The relative molecular mass of this substance is ()

- A. 16
- B. 64
- C. 32
- D. 96



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