Sample Assessment - Entrance to Senior Chemistry

(correct answer marked *)

1. An atom has an atomic number of 10 and an atomic mass of 20. The number of electrons in this atom is

 A. 30   B. 0   C. 10 *   D. 20

2. The charge on a neutron is

A. -1   B. +1   C. 0*   D. 1/2

3. An element consists of atoms all of which have the same number of:

A. neutrons

B. isotopes

C. protons *

D. neutrons plus protons

E. nuclear particles

4. Which one of the following statements about the nuclear model of the atom is FALSE?

A. Almost all of the mass of the atom is concentrated in the nucleus.

B. The atom has no definite boundary.

C. The electrons occupy a very large volume as compared to the nucleus.

D. The protons and neutrons in the nucleus are very tightly packed together.

E. In a neutral atom, the number of protons and neutrons is always the same. *

5. The existence of isotopes makes which one of the statements in Dalton's atomic theory

A. atoms occur in compounds in definite ratio of atoms.

B. the atoms of different elements have different masses.

C. the atoms of a particular element have identical masses. *

D. matter consists of particles called atoms.

E. atoms cannot be destroyed by chemical reactions.

6. Which of the following statements is false concerning distilled water?

A. It is a solution. *

B. It is a pure substance.

C. lt is a compound.

D. It is made up of two elements.

E. It has a uniform composition.

7. Which of the following chlorides has bonds with the 'most ionic character?

A. $MgCl_2$

B. NaCl   *

C. $CaCl_2$

D. $SnCl_2$

E. $SnCl_4$

8. How many moles are there in 67 .2litres of nitrogen gas measured at STP?

A. 2.4 moles

B. 22.4 moles

C. 6.72 moles

D. 3.0 moles

E . 67.2 moles

9. If 25. mL of 0.5 M NaOH is exactly neutralized by 5 mL of H_2SO_4 then the molarity of the $H_2SO_4$is:

A. 1.25 mol/L   *

B. 2.5 mo1/L

C. 5.0 rno1/L

D. 0.625 mol/L

E. 0.98 mol/L

10. Hydrogen and oxygen react so that 2.00 g of hydrogen and 16.00 g of oxygen combine to make 18.00 g of water. What mass of hydrogen must be burned to make 72.0 g of water?

A. 4.0 g

B. 4.7 g

C. 8.5 g

D. 8.0 g   *

E. 2.0 g

11. In assigning oxidation numbers to the elements in the compound copper hydroxide $Cu(OH)_2$which of the following is correct?

A. Copper is given an oxidation number of zero

B. Hydrogen is given an oxidation number of -1

C. Oxygen is given an oxidation number of -2   *

D. The sum of the oxidation numbers for the compound is -2

12. The percentage by mass of the element potassium in the compound with the formula $K_3PO_4$is:

A. 55.3%   * B. 54.5%   C. 53.9%   D. 50%   E. 14.6%