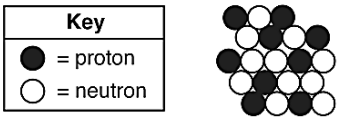
Chemistry
Ms. Ye

Name _____
Date _____Block _____

Atomic History & Structure MC Practice

Question & Answer	Brief Explanation/Work
1. Which sequence represents a correct order of historical developments leading to the modern model of the atom? a. The atom is a hard sphere → most of the atom is empty space → electrons exist in orbitals outside the nucleus b. The atom is a hard sphere → electrons exist in orbitals outside the nucleus → most of the atom is empty space c. Most of the atom is empty space → electrons exist in orbitals outside the nucleus → the atom is a hard sphere d. Most of the atom is empty space → the atom is a hard sphere → electrons exist in orbitals outside the nucleus	(include the names of the models)
2. The gold foil experiment led to the conclusion that each atom in the foil was composed mostly of empty space because most alpha particles directed at the foil a. Remained trapped in the foil b. Were deflected by the nuclei in the gold atoms c. Were deflected by the electrons in the gold atoms d. Passed through the foil	
3. The nucleus is the part of the atom that a. Consists mostly of empty space b. Has a negative charge c. Occupies most of the atom's total volume d. Contains most of the atom's total mass	
4. What is the atomic number of an element whose atoms each contain 47 protons, 60 neutrons, and 47 electrons? a. 13 b. 47 c. 60 d. 107	

5. What is the mass number of an atom which contains 21 electrons, 21 protons, and 24 neutrons? a. 21 b. 42 c. 45 d. 66	
6. Every chlorine atom has a. 7 electrons b. 17 neutrons c. A mass number of 35 d. An atomic number of 17	
7. The diagram below represents the nucleus of an atom  **What are the atomic number and mass number of this atom?** a. The atomic number is 9 and the mass number is 19 b. The atomic number is 9 and the mass number is 20 c. The atomic number is 11 and the mass number is 19 d. The atomic number is 11 and the mass number is 20	
8. The nucleus of an atom contains 8 protons and 6 neutrons. The total number of electrons present in a neutral atom of this element is a. 6 b. 2 c. 8 d. 14	
9. A particle of matter contains 6 protons, 7 neutrons, and 6 electrons. This must be a a. Neutral carbon atom b. Neutral nitrogen atom c. Positively charged carbon ion d. Positively charged nitrogen ion	
10. What is the total number of protons and neutrons in the nuclide, $^{80}_{35}Br$? a. 35 b. 45 c. 80 d. 115	
11. What is the total number of neutrons in an atom of O-18? a. 18 b. 16 c. 10 d. 8	

12. Which diagram represents the nucleus of an atom of $^{27}_{13}Al$?

A. 14 n, 27 p

B. 14 n, 13 p

C. 27 n, 13 p

D. 40 n, 13 p

13. Which of the following atoms has the greatest nuclear charge?

$a.\ ^{14}_{7}N$ $b.\ ^{12}_{6}C$ $c.\ ^{2}_{1}H$ $d.\ ^{4}_{2}He$

14. Which ion contains the same total number of electrons as Cl^{1-}?

a. S^{2-} b. Br^{1-} c. Mg^{2+} d. Na^{1+}

15. A Ca^{2+} ion differs from a Ca atom in that the Ca^{2+} ion has

a. More protons
b. Fewer protons
c. More electrons
d. Fewer electrons

16. As the number of neutrons in the nucleus of a given atom of an element increases, the atomic number of that element

a. decreases b. increases c. remains the same

17. Compared to an atom of phosphorus-31, an atom of sulfur-32 contains

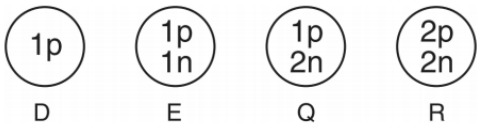
a. One less neutron
b. One less proton
c. One more neutron
d. One more proton

18. Which pair of atoms are isotopes of element X?

A. $^{226}_{90}X$ and $^{226}_{91}X$ B. $^{226}_{91}X$ and $^{227}_{91}X$

C. $^{227}_{91}X$ and $^{227}_{90}X$ D. $^{226}_{90}X$ and $^{227}_{91}X$

19. Each diagram below represents the nucleus of a different atom.



Which diagrams represent nuclei of the same element?

a. D and E, only
b. D, E, and Q
c. Q and R, only
d. Q, R, and E

20. A sample of element X contains 90 percent ^{25}X atoms, 5 percent ^{27}X atoms, and 5 percent ^{28}X atoms. The average isotopic mass is closest to

a. 22 b. 25 c. 27 d. 28

21. Element X has two isotopes. If 72.0% of the has an isotopic mass of 84.9 atomic mass units, and 28.0% of the element has an isotopic mass of 87.0 atomic mass units, the average atomic mass of element X is numerically equal to

A. $(72.0 + 84.9) \times (28.0 + 87.0)$

B. $(72.0 - 84.9) \times (28.0 + 87.0)$

C. $\frac{(72.0 \times 84.9)}{100} + \frac{(28.0 \times 87.0)}{100}$

D. $(72.0 \times 84.9) + (28.0 \times 87.0)$