## Atomic History & Structure MC Practice

Question & Answer	Brief Explanation/Work
1. Which sequence represents a correct order of	(include the names of the models)
historical developments leading to the modern	
model of the atom?	
a. The atom is a hard sphere $ ightarrow$ most of the atom	
is empty space $ ightarrow$ electrons exist in orbitals	
outside the nucleus	
b. The atom is a hard sphere $ ightarrow$ electrons exist in	
orbitals outside the nucleus $ ightarrow$ most of the atom	
is empty space	
c. Most of the atom is empty space $\rightarrow$ electrons	
exist in orbitals outside the nucleus $ ightarrow$ the atom	
is a hard sphere	
d. Most of the atom is empty space $\rightarrow$ the atom is	
a hard sphere $ ightarrow$ electrons exist in orbitals	
outside the nucleus	
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 Key	
e = proton	
O = neutron	
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 $\frac{80}{8}Br$ ?	
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. $14 \text{ n}$ B. $14 \text{ n}$ C. $27 \text{ n}$ D. $40 \text{ n}$ $13 \text{ p}$	
13 Which of the following atoms has the greatest	
nuclear charge?	
$a \frac{14}{12}$ $b \frac{12}{12}$ $c \frac{2}{11}$ $d \frac{4}{11}$	
$a. \frac{1}{7}N$ $b. \frac{1}{6}C$ $c. \frac{1}{1}H$ $a. \frac{1}{2}He$	
14. Which ion contains the same total number of	
electrons as Cl <sup>1-</sup> ?	
a. $S^{2-}$ b. $Br^{1-}$ c. $Mg^{2+}$ d. $Na^{1+}$	
15. A Ca <sup>2+</sup> ion differs from a Ca atom in that the	
Ca <sup>2+</sup> ion has	
a More protons	
h Fewer protons	
b. Nevel protons	
a. 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?	
226	
A. $^{220}_{90}X$ and $^{220}_{91}X$ B. $^{220}_{91}X$ and $^{221}_{91}X$	
C 227 v and 227 v D 226 v 1 227 v	
C. $\frac{1}{91}X$ and $\frac{1}{90}X$ D. $\frac{1}{90}X$ and $\frac{1}{91}X$	

19. Each diagram below represents the nucleus of	
a different atom.	
$ \begin{array}{c c} 1p & 1p & 1p \\ 1n & 2n & 2n \\ \end{array} $	
D E Q R	
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	
20.000	
20. A sample of element X contains 90 percent <sup>23</sup> X	
atoms, 5 percent 27X atoms, and 5 percent 28X	
atoms. The average isotopic mass is closest to	
a. 22 D. 25 C. 27 d. 28	
21 Flement X has two isotones 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. $(72.0 \times 84.9) + (28.0 \times 87.0)$	