Electron Cloud Structure

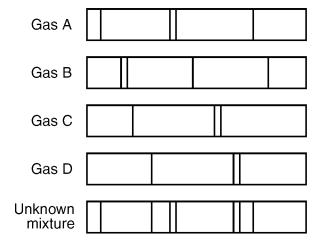
Name__ Period_

		Period
1. Which of these phy	rases best describes an atom?	11. What is the number of orbitals in the first principal
(A) a positive nucleus surrounded by a hard negative shell		energy level?
(B) a positive nucleus surrounded by a cloud of negative		(A) 1 (B) 2
charges		(C) 3 (D) 4
(C) a hard sphere with positive particles uniformly embedded		12. The maximum number of electrons that a single orbit
(D) a hard sphere with negative particles uniformly		of the 3 <i>d</i> sublevel may contain is
embedded		(A) 5 (B) 2
		(C) 3 (D) 4
from electrons that are	l by signs using neon gas results	
	her to a lower principal energy level	13. Which principal energy level has a maximum of three
(B) moving from a lower to a higher principal energy level		sublevels?
(C) being lost by the Ne(g) atoms		(A) 1 (B) 2
(D) being gained by th	-	(C) 3 (D) 4
		14. Which principal energy level can hold a maximum of
3. In the modern wave-mechanical model of the atom, the		18 electrons?
orbitals are regions of t	he most probable location of	(A) 5 (B) 2
(A) protons	(B) neutrons	$\begin{array}{c} (1) & 2 \\ (C) & 3 \\ (D) & 4 \end{array}$
(C) electrons	(D) positrons	(C) 5 (D) 4
4 1111		15. Which principal energy level of an atom contains an
	umber of occupied sublevels in the	electron with the lowest energy?
state?	evel of a zinc atom in the ground	(A) $n = 1$ (B) $n = 2$
(A) 1	(B) 2	(C) $n = 3$ (D) $n = 4$
(C) 3	(D) 2 (D) 4	
(0) 5		$16.$ Which diagram represents the nucleus of an atom of $\frac{2}{10}$
5. What is the total numbers	umber of sublevels in an atom's	Al?
fourth principal energy	level?	(A) (B)
(A) 8	(B) 16	$\begin{pmatrix} 14n \end{pmatrix} \begin{pmatrix} 14n \end{pmatrix}$
(C) 3	(D) 4	
		27 p / 13 p /
	ntains a total of 5 orbitals?	
(A) <i>s</i>	(B) <i>p</i>	
(C) <i>d</i>	(D) <i>f</i>	(C) (D)
7 What is the total m	umber of sublevels in the fourth	27 n 40 n
principal energy level?		
(A) 1	(B) 2	(13 p / (13 p /
(C) 3	(D) 4	
	umber of electrons needed to	
completely fill all of the orbitals in an atom's second		17. The maximum number of electrons that can occupy a
principal energy level?		principal energy level (n) of an atom is equal to
(A) 16	(B) 2	$(A) n (B) 2n (C) 2^2$
(C) 8	(D) 4	(C) n^2 (D) $2n^2$
9 What is the total m	umber of sublevels in the third	18. What is the maximum number of electrons that can
principal energy level?	under of sublevers in the unit	occupy the fourth principal energy level (shell) of an atom
(A) 1	(B) 2	(A) 6 (B) 8
(C) 3	(D) 4	(C) 18 (D) 32
(0) 5		(c) 10 (D) 52
10. The maximum num	nber of sublevels in the second	19. The modern model of the atom is based on the work of
principal energy level is		(A) one scientist over a short period of time
(A) 1	(B) 2	(B) one scientist over a long period of time
(C) 3	(D) 4	(C) many scientists over a short period of time
		(D) many scientists over a long period of time
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20. Base your answer to the following question on the information and the bright-line spectra represented below.

Many advertising signs depend on the production of light emissions from gas-filled glass tubes that are subjected to a high-voltage source. When light emissions are passed through a spectroscope, bright-line spectra are produced.



Identify the two gases in the unknown mixture.

21. Isotopes are atoms that have the same number of protons but a different	24. The nucleus of which atom contains 48 neutrons?
*	(A) ${}^{32}_{16}$ S
(A) number of electrons (B) number of neutrons	(B) $\frac{^{48}}{^{22}}$ Ti
(C) atomic number (D) nuclear charge	(C) $\frac{85}{37}$ Rb
44 45 40	(D) $\frac{^{112}}{^{48}}$ Cd
22. Atoms of ¹⁶ O, ¹⁷ O, and ¹⁸ O have the same number of	
(A) neutrons, but a different number of protons	25. An atom of carbon-14 contains
(B) protons, but a different number of neutrons	(A) 8 protons, 6 neutrons, and 6 electrons
(C) protons, but a different number of electrons	(B) 6 protons, 6 neutrons, and 8 electrons
(D) electrons, but a different number of protons	(C) 6 protons, 8 neutrons, and 8 electrons
· · ·	(D) 6 protons, 8 neutrons, and 6 electrons
23. The nucleus of an atom of K-42 contains	
(A) 19 protons and 23 neutrons	26. What is the total number of neutrons in an atom of $\frac{207}{82}$
(B) 19 protons and 42 neutrons	Pb?
(C) 20 protons and 19 neutrons	(A) 82 (B) 125
(D) 23 protons and 19 neutrons	(C) 207 (D) 289
	27. Compared to an atom of ${}_{6}^{12}$ C, an atom of ${}_{6}^{14}$ C has
	(A) more protons (B) fewer protons
	(C) more neutrons (D) fewer neutrons