

NAME _____ PER _____ DATE _____
ATOMIC STRUCTURE PRACTICE TEST #2

1. One of Bohr's contributions to atomic theory is the idea that...
 - a) the atom has a massive positively charged nucleus.
 - b) electrons exist in regions of space called orbitals.
 - c) electrons exist in specific energy levels.
 - d) neutrons are present in the nucleus.
2. One of Schroedinger's contributions to atomic theory is the idea that...
 - a) the atom has a massive positively charged nucleus.
 - b) electrons exist in regions of space called orbitals.
 - c) electrons exist in specific energy levels.
 - d) neutrons are present in the nucleus.
3. One of Rutherford's contributions to atomic theory is the idea that...
 - a) the atom has a massive positively charged nucleus.
 - b) electrons exist in regions of space called orbitals.
 - c) electrons exist in specific energy levels.
 - d) neutrons are present in the nucleus.
4. A sample of gas is electrically charged so that it glows red. The red color is emitted from the gas when...
 - a) electrons in the gas sample are excited into new energy levels.
 - b) electrons in the gas sample return to their ground state energy levels.
 - c) protons in the gas sample are excited into new energy levels.
 - d) protons in the gas sample return to their ground state energy levels.
5. Light which has a long wavelength has _____ energy and a _____ frequency.
 - a) high, high
 - b) low, high
 - c) high, low
 - d) low, low
6. Light which has a short wavelength has _____ energy and a _____ frequency.
 - a) high, high
 - b) low, high
 - c) high, low
 - d) low, low
7. T or F. Modern atomic theory teaches that electrons orbit the nucleus of an atom much like planets orbit the sun.
8. Orbitals are regions of space where a/an _____ is likely to be located.
 - a) proton
 - b) electron
 - c) neutron
 - d) nucleus
9. The atomic mass unit (amu) is based on an atom of _____.
 - a) carbon-12
 - a) carbon-13
 - a) carbon-14
 - a) hydrogen
10. What is the maximum number of electrons that can fit into a p **orbital**?
 - a) 1
 - b) 2
 - c) 6
 - d) 10
 - e) 14
 - f) 18
11. What is the maximum number of electrons that can fit into a f **sublevel**?
 - a) 1
 - b) 2
 - c) 6
 - d) 10
 - e) 14
 - f) 18
12. Which of the following is an invalid orbital designation?
 - a) 1s
 - b) 3d
 - c) 2p
 - d) 4f
 - e) 2d

Matching:

a) Hund's Rule

b) Aufbau Principle

c) Pauli Exclusion Principle

_____ 13. States that electron filling begins with lowest energy orbitals first.

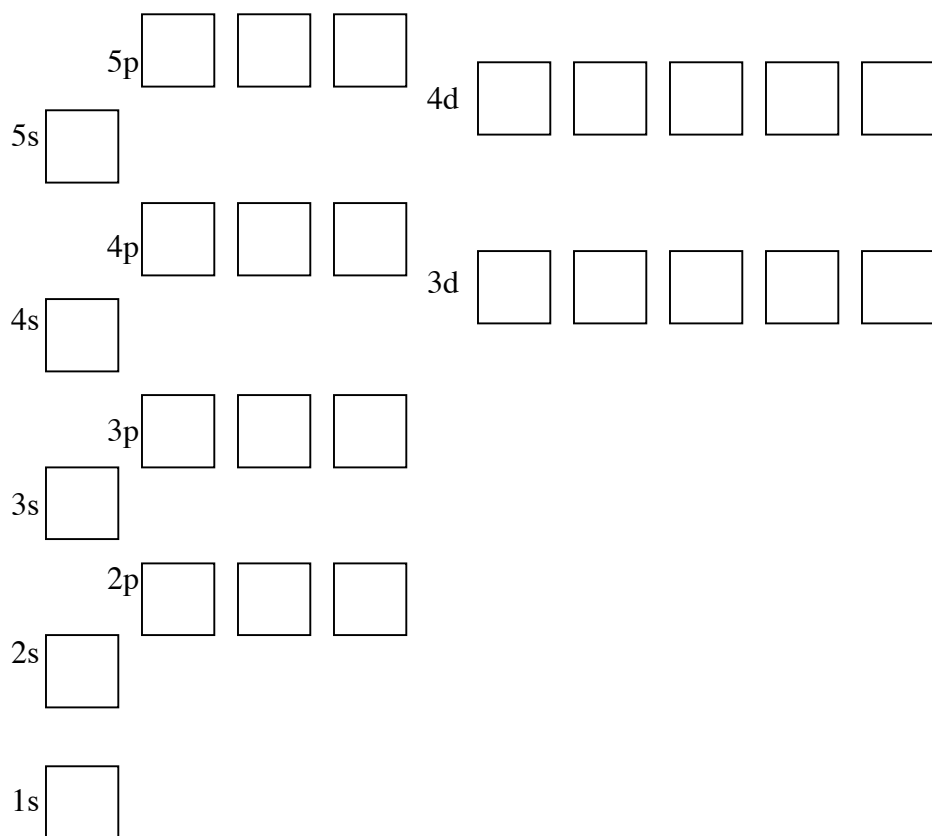
_____ 14. States that electrons fill orbitals of the same energy by adding one electron to each orbital, and then doubling up.

_____ 15. States any orbital can hold a maximum of two electrons, each with opposite spins.

Fill in the blank:

16. An atom is the smallest _____ of an element which retains the _____ of that element.

17. Fill the orbital diagram for Arsenic (As)



18. Arrange the following sublevels in order of increasing energy.

4d, 4f, 5s, 5p, 5d, 5f, 6s, 6p, 6d, 7s, 7p

19. Write the full electron configuration for Cl.
20. Write the full electron configuration for Ba.
21. Write the shorthand electron configuration (noble gas configuration) of Co.
22. Write the shorthand electron configuration (noble gas configuration) of Pb.
23. Write the outer electron configuration (battleship notation) for Hg (only the last sublevel).
24. Write the outer electron configuration (battleship notation) for Sb (only the last sublevel).

25. Use the following data to calculate the average atomic mass of chromium.

ISOTOPES	MASS (amu)	Percent Abundance
Cr-50	49.946	4.35
Cr-52	51.941	83.8
Cr-53	52.941	9.5
Cr-54	53.939	2.35

SHOW YOUR WORK AND CIRCLE FINAL ANSWER.

Atomic Structure Chart

No.	Element	Symbol	Protons	Neutrons	Electrons	Mass	Charge
1		F		10			-1
2			6		2	14	
3			13			27	+3
4			54	77			0
5				16	18		-3
6					18	32	-2
7				20	18		+1
8			53			127	-1
9			18	22			0
10					78	207	+4
11		Fe		30			+2
12					10	28	+4
13				20	18		+2
14		Mg		12			+2
15				18	18		-1
16		Ti		25	20		
17			80	120	78		
18		W			70	184	
19		Sn			46	119	
20			47	61			0