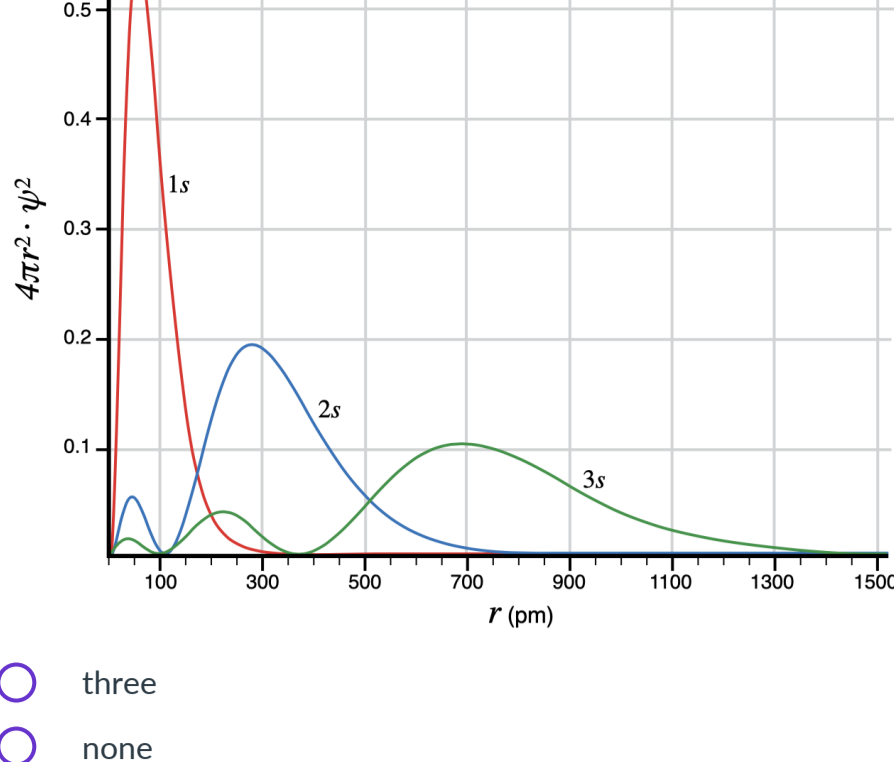


HW06 - Periodic Table Trends

1 1 point

Consider the following radial distribution plots for the 1s, 2s, and 3s orbitals in the H atom. How many spherical nodes does the 3s orbital have?



- three
- none
- four
- two
- one

2 1 point

Let X be a hypothetical element. Which of the following would be the largest?

- X^{2+}
- X
- X^{2-}
- X^-
- X^+

3 1 point

How many valence electrons are in a Kr atom?

- 0
- 8
- 7
- 2

4 1 point

The P^{2-} anion has how many total electrons and how many valence electrons respectively?

- 16, 8
- 16, 6
- 16, 7
- 18, 8
- 17, 7
- 17, 6
- 17, 8

5 1 point

Consider the elements lithium, oxygen, fluorine, and neon. Based on their position in the periodic table, which element would you expect to have the GREATEST tendency to attract a shared pair of electrons?

- oxygen
- fluorine
- lithium
- neon

6 1 point

The electronegativity of nonmetals is relatively _____ as compared to the electronegativity of metals.

- the same
- high
- Depends on the elements being compared.
- low

7 1 point

Which of the following elements would be expected to have the highest electronegativity?

- Na
- C
- Al
- He
- P
- N

8 1 point

Generally speaking, in the periodic table, electronegativity (decreases, increases) when moving from left to right and (decreases, increases) when moving from top to bottom of the periodic table.

- decreases, increases
- increases, decreases
- decreases, decreases
- increases, increases

9 1 point

Which one of the plots shown below best represents the sequential ionization energies (1st through 8th electrons) for aluminum?

-
-
-
-
-

10 1 point

What is the effective nuclear charge (Z_{eff}) for tin?

- +4
- 4
- +14
- +50
- 5

11 1 point

Name the compound CaBr_2 .

- calcium (II) bromide
- calcium bromine
- calcium bromide
- calcium dibromide

12 1 point

Choose the formula for the compound magnesium sulfide.

- MgS_2
- MgS
- Mg_2S_3
- Mg_2S

13 1 point

Choose the pair of names and formulae that do not match.

- SnCl_4 : tin (V) chloride
- KNO_3 : potassium nitrate
- MgSO_4 : magnesium sulfate
- N_2O_3 : dinitrogen trioxide
- SiCl_4 : silicon tetrachloride

14 1 point

What is the formula of dinitrogen pentoxide?

- N_2O
- NO
- N_2O_5
- NO_3
- N_3O_2

15 1 point

Name the compound CaC_2O_4 .

- cadmium oxalate
- calcium carbonate
- calcium oxalate
- cadmium carboxide
- calcium carboxide

16 1 point

Give the formula for sodium nitrate.

- NaNO_3
- $\text{Na}(\text{NO}_3)_2$
- $\text{Na}(\text{NO}_3)_3$
- Na_2NO_3

17 1 point

If the following crystallize in the same type of structure, which has the lowest lattice energy?

- BaS
- SrS
- CaO
- BaO
- SrO

18 1 point

Which pair of elements is most likely to form an ionic compound?

- nitrogen and sulfur
- sodium and aluminum
- magnesium and fluorine
- oxygen and chlorine

19 1 point

Covalent compounds are generally made up of elements found in which part of the periodic table?

- lower left
- upper left
- left and right
- upper right

20 1 point

Which of the following contains only covalent bonding and no ionic bonding?

- CCl_4
- NaOH
- Na_2SO_4
- $\text{Ca}(\text{NO}_3)_2$

21 1 point

What is the name of AgNO_3 ?

- silver mononitrogen trioxide
- silver nitrate
- silver(I) nitrate
- silver nitrite
- argon nitroxide

22 1 point

An element E has the electronic configuration $[\text{Ne}] 3s^2 3p^1$. Write the formula of its compound with sulfate.

- E_3SO_4
- $\text{E}(\text{SO}_4)_3$
- E_2SO_4
- $\text{E}_2(\text{SO}_4)_3$
- $\text{E}_3(\text{SO}_4)_2$

23 1 point

An element E has the electronic configuration $1s^2 2s^2 2p^4$. What is the formula of its compound with lithium?

- LiE_2
- Li_2E
- Li_4E
- LiE

24 1 point

Which of the following demonstrates the formation of an ionic compound involving the elements Na and S?

- $\text{Na}^+ + \text{Na}^+ + \text{S}^{2-} \rightarrow \text{Na}_2\text{S}$
- $\text{Na}^+ + \text{S}^- \rightarrow \text{NaS}$
- None of these.
- $\text{Na}^+ + \text{Na}^+ + \text{Na}^+ + \text{S}^{3-} \rightarrow \text{Na}_3\text{S}$
- $\text{Na}^{2+} + \text{S}^{2-} \rightarrow \text{NaS}$
- $\text{Na}^{2+} + \text{Na}^{2+} + \text{Na}^{2+} + \text{S}^{3-} + \text{S}^{3-} \rightarrow \text{Na}_3\text{S}_2$

25 1 point

Which of the following is the best representation of the compound calcium sulfide?

- Ca^+, S^-
- $\text{Ca}^{2+}, \text{S}^{2-}$
- $3\text{Ca}^{2+}, 2\text{S}^{3-}$
- $2\text{Ca}^+, \text{S}^{2-}$
- $\text{Ca}^{2+}, 2\text{S}^-$