

CHEMISTRY:

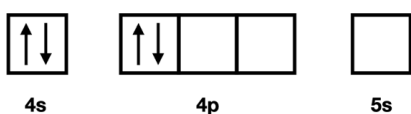
QUESTION 1:

Give the symbol of the element that when it has an oxidation state of +5 has an electron configuration of $[\text{Kr}]4d^{10}$

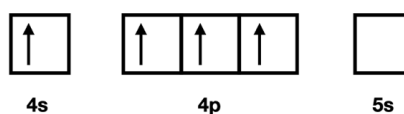
QUESTION 2:

The valence shell electron configurations shown below correspond to different states for a neutral atom of a certain element.

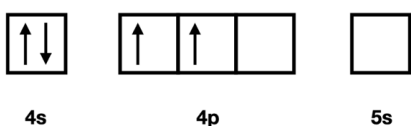
(A)



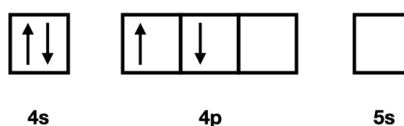
(B)



(C)



(D)



What is the symbol of element

Which is the highest excited state (A, B, C, or D)

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QUESTION 3:

Which of the following statements are correct?

- It takes a smaller amount of energy to ionize a neutral, isolated, atom of an element with an ns^2np^1 valence shell than to ionize an a neutral, isolated, atom of an element with an ns^2np^3 valence shell.
- The size of a cation is always smaller than the size of the corresponding neutral atom.

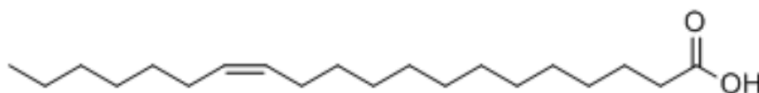
- The second ionization energy of an element with a ns^1 valence shell is smaller than the second ionization energy of an element with a ns^2 valence shell .
- The energy of a halogen atom in the gas state is larger in magnitude than the energy of the corresponding halide anion in the gas state.

QUESTION 4:

Calculate the amount of anions (in moles) in 24.4 g of calcium iodate.
Express your answer with three significant figures.

QUESTION 5:

Calculate the mass percentage of oxygen in the organic molecule whose line structure is shown below. Express your answer with three significant figures.



QUESTION 6:

Elemental analysis of a compound with molar mass 214.22 g/mol gives the following mass percent composition: C 72.89%, H 4.71%, O 22.41%. Find the molecular formula of the compound.

Enter your answer in the space below using the following format: if the molecular formula of a compound containing elements X, Y, and Z is X_2YZ_3 enter your answer as X2YZ3.