

Electron Configurations and Dot Diagram

Use your USEPR chart and your Periodic Table and Wave Paper

1. Write the electron configuration for Bromine (Hint,1s2 etc) _____
2. Write the electron configuration for phosphide ion, P^{-3} _____
3. Write the orbital notation for Nitrogen(arrows) _____
4. Write the correct dot diagram for

Magnesium

Magnesium ion (Mg^{+2})

Xenon

Oxygen (atom)

Oxide ion(O^{-2})

Fill in the chart below

Correct Dot Diagram	Structural Formula	Shape	Bond Type Circle	Molecule Type	Type of Force
CF ₄			Polar Nonpolar	Polar Nonpolar	
H ₂ S			Polar Nonpolar	Polar Nonpolar	
NH ₃			Polar Nonpolar	Polar Nonpolar	

Use your Forces Chart to Answer the following

5. What type of force is found in
- A. $C_{10}H_{10}$ _____
 - B. $C_6H_{12}O_6$ _____
 - C. $Ca(NO_3)_2$ _____
 - D. I_2 _____

6. Which of these compounds would have the highest melting point?
Explain why from the terms on your forces chart.

7. Which would have the highest vapor pressure ?

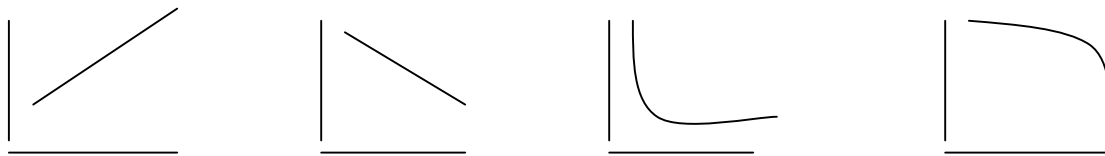
8. Which would dissolve in water, why do you think so.

A student measured the volume and temperature of some gas in a flexible container.
The pressure and amount of gas remains constant.

Here is the Data

Volume mL	Temperature Kelvin
100	273
110	300
117	320
124.5	340

9. Which Graph describes the data above ? Circle



10. How does the kinetic theory of gas particles explain this relationship ?

11. Which relationship would be constant $V \times T$ or V/T (circle)

12 **SHOW YOUR WORK** If you cooled 100mL of this gas at 273 K to $-50^\circ C$ calculate its new volume.

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13. SHOW YOUR WORK Calculate the moles of gas found in a sample of CO₂ that has a volume of 122.5 mL, a pressure of 1.4 ATM, and a temperature of 41C.

14. How would you make 150 mL of 3.00 M HCl from a 12.0 M stock solution of HCl ?

mL Stock _____

mL water _____

15. How many moles of NaF are in 7.5 Liters of 3.0M solution ?

16. What is the molarity of 15.0 grams of NaOH in 300 mL solution ?

17. 10.5 mL of grapefruit juice is titrated with 7.2 mL of iodine. (Iodine Molarity is 3.00×10^{-3})
What is the molarity of the Vitamin C in the juice ?

Answers Pg 1 1. [Ar] $3d^{10} 4s^2 4p^5$, 2. [Ar], **Chart** CF₄ tetra,P,NP,Dispersion,H₂S bent,P,P,Dipole,NH₃ trig pyramid,P,P Dipole **Pg2.** 5. A Dispersion,B. Dipole,C. Ionic,D. Dispersion 6. C, ionic bonding is strongest. 7. A weakest forces= dispersion,smallest F.Wt= 154 C₁₀H₁₀ 8. B and C Polar and ionic dissolve in polar H₂O 9. first, 11. V/T 12. 81.7mL **Pg. 3** 13. 6.67×10^{-3} moles 14. 37.5 mL stock,112.5 mL Water, 15. 22.5 moles 16. 1.25 M 17. M Vit c = 2.06×10^{-3} **Pg 4** 18. 1-3, 19. 13, 20. 7 21.X 22. Y 23. 7,24. either, we only know the pH is 1-3, 25. Indigo Carmine is yellow indicates pH 13, very basic not an acid.H₃PO₄ is an acid 26. pH= 3.19 27. pH=8.7 28. [H+]= 2.5×10^{-3}

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Use the information below to answer the questions

Indicator	pH=1	pH=3	pH=5	pH=7	pH=9	pH=11	pH=13
Bromo green	Yellow	Yellow	Green	Blue	Blue	Blue	Blue
Neutral Red	Purple	Purple	Purple	Red	Yellow	Yellow	Yellow
Indigo Carmine	Blue	Blue	Blue	Blue	Blue	Gray	Yellow

There are three mystery solutions

- Solution **X** turns yellow in Bromo Green What is the approximate pH _____
- Solution **Y** turns yellow in Indigo Carmine What is the approximate pH _____
- Solution **Z** turns red in Neutral Red What is the approximate pH _____
- Which solution is the most acidic ? _____
- Which solution has the highest pH ? _____
- Which solutions has the most OH⁻ ions _____?
- Could solution X be a strong acid or a weak acid ? _____ . Why do you think so?
Explain.
- A Student says solution Y is probably H₃PO₄. Explain why he is wrong.
- Calculate the pH of a solution with the [H⁺] = 6.5 × 10⁻⁴
- Calculate the pH of a solution with [OH⁻] = 5.0 × 10⁻⁶
- . Calculate the [H⁺] of a solution with pH of 2.60