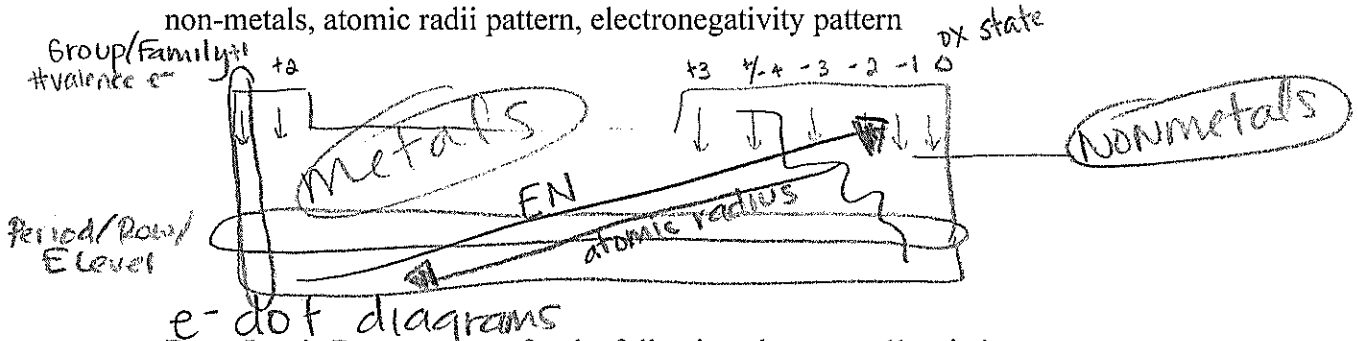
HPS Unit 6 Practice 2022 Name:

Sketch (insert image) the Periodic Table and label the following:
oxidation states, energy levels, rows/periods, columns/families/groups, metals, non-metals, atomic radii pattern, electronegativity pattern



e⁻ dot diagrams

~~Draw Lewis Dot structures~~ for the following elements. (1 point)

1. H 2. S 3. N 4. C 5. Na

6. Br 7. O 8. Se 9. Ca 10. Ne

State the type of bond that is most likely between the given elements. (1 point)

11. I Na & Br 12. C H & F 13. I Mg & I 14. C Cl & Cl

15. C H & O 16. I Li & S 17. C O & O 18. I Mg & O

For each of the covalent bonds listed above, draw a Lewis Dot structure. For each of the ionic bonds listed above, draw the two ions in the bond.

19. $[Na]^{+}[:\ddot{Br}:]^{-}$ 20. H–F: 21. $[Mg]^{+2}2[:\ddot{I}:]^{-}$ 22. :Cl–Cl:

23. δ^- O, H, H, δ^+ δ^+ 24. $2[Li]^{+}[:\ddot{S}:]^{-2}$ 25. O=O 26. $[Mg]^{+2}[:\ddot{O}:]^{-2}$

27. Compare and contrast ionic and covalent bonds.

I
Transfer of e⁻
met + non
very diff EN values

BOTH
octet Rule
Bond types
can be predicted w/ EN diff

C
Share e⁻
non + non
similar EN values

Balance these reactions

S 1. $2H_2 + O_2 \rightarrow 2H_2O$

S 2. $N_2 + 3H_2 \rightarrow 2NH_3$

S 3. $S_8 + 12O_2 \rightarrow 8SO_3$

S 4. $2N_2 + O_2 \rightarrow 2N_2O$

D 5. $2HgO \rightarrow 2Hg + O_2$

SR 6. $Zn + 2HCl \rightarrow ZnCl_2 + H_2$

SR 7. $2Na + 2H_2O \rightarrow 2NaOH + H_2$

D 8. $2H_3PO_4 \rightarrow H_4P_2O_7 + H_2O$

SR 9. $C_{10}H_{16} + 8Cl_2 \rightarrow 10C + 16HCl$

DR 10. $2Al(OH)_3 + 3H_2SO_4 \rightarrow Al_2(SO_4)_3 + 6H_2O$

S 11. $4Fe + 3O_2 \rightarrow 2Fe_2O_3$

DR 12. $Fe_2(SO_4)_3 + 6KOH \rightarrow 3K_2SO_4 + 2Fe(OH)_3$

C 13. $2C_7H_6O_2 + 15O_2 \rightarrow 14CO_2 + 6H_2O$

SR 14. $2Al + 3FeO \rightarrow Al_2O_3 + 3Fe$

SR 15. $Fe_2O_3 + 3H_2 \rightarrow 2Fe + 3H_2O$

C 16. $2C_2H_2 + 5O_2 \rightarrow 4CO_2 + 2H_2O$

S 17. $K_2O + H_2O \rightarrow 2KOH$

Label the Reaction Type: C=Combustion, S=Synthesis, SD = Single Displacement, DD = Double Displacement, D = Decomposition

D 1. $CaCO_{3(s)} \rightarrow CaO_{(s)} + CO_{2(g)}$

SR 2. $Mg_{(s)} + H_2O_{(g)} \rightarrow MgO_{(s)} + H_{2(g)}$

S 3. $2P_{(s)} + 3Cl_{2(g)} \rightarrow 2PCl_{3(g)}$

SR 4. $Fe_{(s)} + CuSO_{4(aq)} \rightarrow FeSO_{4(aq)} + Cu_{(s)}$

C 5. $CH_{4(g)} + 2O_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_{(g)}$

D 6. $2KClO_{3(s)} \rightarrow 2KCl_{(s)} + 3O_{2(g)}$

DR 7. $BaCl_{2(aq)} + Na_2SO_{4(aq)} \rightarrow 2NaCl_{(aq)} + BaSO_{4(s)}$

DR 8. $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$

C 9. $2C_4H_{10(g)} + 13O_{2(g)} \rightarrow 8CO_{2(g)} + 10H_2O_{(g)}$

SHORT ANSWER.

1. Why does increasing the concentration of reactants cause the reaction rate to increase?

↑ conc = ↑ reactants = ↑ collisions = ↑ Rate

2. Why does lowering the temperature of a reaction cause the reaction rate to slow down?

↓ temp = slower part = ↓ collisions = ↓ rate

3. How does a catalyst cause the reaction rate to increase?

catalyst decreases activation E needed to make the reaction work

4. How does the surface area affect reaction rates?

↑ SA = ↑ exposure of reactants = ↑ rate