

NAME: _____

Honors Bonding Exercise

For each of the following compounds, draw the electron-dot diagram and determine each of the following:

- | | | | |
|----|--------------------------------------|---|--|
| 1. | Type of Bond | - | Ionic
Non-Polar Covalent
Polar Covalent |
| 2. | Conductivity in solid phase | - | Good
Poor |
| 3. | Conductivity in liquid/aqueous phase | - | Good
Poor |
| 4. | Likely Boiling/Melting Pt. | - | High
Low |
| 5. | Molecular shape | - | Linear
Bent
Pyramidal
Trigonal Planar
Tetrahedral
N/A (for ionic) |
| 6. | Polarity of the Molecule | - | Polar Molecule
Non-Polar Molecule
N/A (for ionic) |
| 7. | Intermolecular Bond | - | van der Waals
Dipole–Dipole Attraction
Hydrogen Bonding
N/A (for ionic) |
| 8. | Likely Phase at STP | - | Solid
Liquid
Gas |

EXAMPLE:

NaCl

Dot Diagram



- 1.) Type of Bond: Ionic
- 2.) Conductivity (s): Poor
- 3.) Conductivity (l) or (aq): Good
- 4.) Likely BP / MP: High
- 5.) Molecular Shape: N/A
- 7.) Polarity of Molecule: N/A
- 4.) Intermolecular bond: N/A
- 8.) Likely phase at STP: Solid

EXAMPLE:

H₂O

Dot Diagram



- 1.) Type of Bond : Polar Covalent
 - 2.) Conductivity (s): Poor
 - 3.) Conductivity (l) or (aq): Poor
 - 4.) Likely BP / MP: Poor
 - 5.) Molecular Shape: bent
 - 6.) Polarity of Molecule: polar
 - 7.) Intermolecular bond: hydrogen bonding
 - 8.) Likely phase at STP: liquid
-

1.) LiBr
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

2.) CaCl₂
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

3.) K₂S
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

4.) Al_2O_3
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

5.) NH_3
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

6.) I_2
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

7.) CCl_4
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

8.) H_2S
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

9.) HBr
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

10.) HF
Dot Diagram

- 1.) Type of bond: _____
- 2.) Conductivity (s): _____
- 3.) Conductivity (*l*) or (*aq*): _____
- 4.) Likely BP / MP: _____
- 5.) Molecular Shape: _____
- 6.) Polarity of Molecule: _____
- 7.) Intermolecular bond: _____
- 8.) Likely Phase at STP: _____

11.) CS₂
Dot Diagram

- 1.) Type of bond: _____
- 2.) Conductivity (s): _____
- 3.) Conductivity (*l*) or (*aq*): _____
- 4.) Likely BP / MP: _____
- 5.) Molecular Shape: _____
- 6.) Polarity of Molecule: _____
- 7.) Intermolecular bond: _____
- 8.) Likely Phase at STP: _____

12.) O₂
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

13.) N₂
Dot Diagram

- 1.) Type of bond: _____
- 2.) Conductivity (s): _____
- 3.) Conductivity (*l*) or (*aq*): _____
- 4.) Likely BP / MP: _____
- 5.) Molecular Shape: _____
- 6.) Polarity of Molecule: _____
- 7.) Intermolecular bond: _____
- 8.) Likely Phase at STP: _____

14.) PF₃
Dot Diagram

- 1.) Type of bond: _____
- 2.) Conductivity (s): _____
- 3.) Conductivity (*l*) or (*aq*): _____
- 4.) Likely BP / MP: _____
- 5.) Molecular Shape: _____
- 6.) Polarity of Molecule: _____
- 7.) Intermolecular bond: _____
- 8.) Likely Phase at STP: _____

15.) OF₂
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

*16.) H₂CO
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

*17.) CH₃OH
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

*18.) BCl₃
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
-
-

*19.) SO_4^{2-}
Dot Diagram

- 1.) Type of bond: _____
- 2.) Conductivity (s): _____
- 3.) Conductivity (*l*) or (*aq*): _____
- 4.) Likely BP / MP: _____
- 5.) Molecular Shape: _____
- 6.) Polarity of Molecule: _____
- 7.) Intermolecular bond: _____
- 8.) Likely Phase at STP: _____

*20.) NH_4^{+1}
Dot Diagram

- 1.) Type of bond: _____
 - 2.) Conductivity (s): _____
 - 3.) Conductivity (*l*) or (*aq*): _____
 - 4.) Likely BP / MP: _____
 - 5.) Molecular Shape: _____
 - 6.) Polarity of Molecule: _____
 - 7.) Intermolecular bond: _____
 - 8.) Likely Phase at STP: _____
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