BODACIOUS BONDING BONANZA

1. Solid compounds that are found in crystals that conduct electricity: a) Cr  b) Fe

2. Solid compounds that are found in crystals that do not conduct electricity:
   a) SrCl₂  b) Pb(NO₃)₂  c) KI

3. Solid compounds that are found in crystals that will conduct electricity only when melted or dissolved in an aqueous solution:
   a) NaCl  b) KCl  c) MgCl₂

4. Compound that has both ionic and covalent bonds: a) NH₄Cl

5. Compounds that have ionic bonds:
   a) NaCl  b) KCl  c) MgCl₂

6. Compounds that have covalent bonds:
   a) NH₃  b) C₆H₁₂O₆  c) CO₂  d) CH₄  e) H₂O
   f) I₂  g) N₂H₄

7. Soft Solids with low melting points and no electrical conductivity: a) C₆H₁₂O₆  b) CO₂

8. Molecular Solids: a) C₆H₁₂O₆  b) CO₂  c) I₂

9. These two chemical species are ductile and malleable. a) Fe  b) Cr

10. These two chemical species form colored aqueous solutions a) Fe  b) Cr

11. These two chemical species form metallic bonds a) Fe  b) Cr

12. Compounds that are nonpolar but have polar bonds: a) CH₄  b) CO₂

13. Chemical compounds that are polar: a) NH₃  b) C₆H₁₂O₆

14. Compound(s) that are nonpolar with nonpolar bonds: a) I₂

15. Compound(s) that are sharing electrons equally: a) I₂

16. The molecule that has a bent shape: a) H₂O

17. The molecule that has a tetrahedral shape: a) CH₄  b) NH₄⁺

18. The molecule that has a coordinate covalent bond a) NH₄⁺

19. These compounds are also known as “salts” a) SrCl₂  b) Pb(NO₃)₂  c) KI

20. These compounds are known as “electrolytes” a) SrCl₂  b) Pb(NO₃)₂  c) KI

Electrolytes are ionic compounds that are dissolved into "free ions" that can conduct electricity.
### Ionic Solids

- **Bonding:** Salt
- **Example:** $\text{NaCl, NaNO}_3, \text{NH}_4\text{Cl}$
- **Melting points:** $\uparrow m_p$
- **Hardness:** Hard
- **Crystal/Molecule:** Network, cation and anion
- **Conductor/Heat:** No
- **Conductor/Electricity:** No
- **Malleability/Ductility:** None
- **Solubility/Water:** Yes
- **Electrolytes:** Yes

### Molecular Solids

- **Bonding:** Covalent
- **Example:** $\text{H}_2\text{O}, \text{CO}_2, \text{H}_2\text{CO}_2$ (dimer)
- **Melting points:** $\downarrow m_p$
- **Hardness:** Soft, brittle, plastic, flexible
- **Crystal/Molecule:** Molecule
- **Conductor/Heat:** No
- **Conductor/Electricity:** Tree-like conductors
- **Malleability/Ductility:** None
- **Solubility/Water:** Yes
- **Electrolytes:** Not

### Metallic Solids

- **Bonding:** Metal & Nonmetal
- **Example:** $\text{Cu}, \text{Hg}, \text{Ag}$
- **Melting points:** $\uparrow m_p$
- **Hardness:** Very hard
- **Crystal/Molecule:** Cystalline of metal
- **Conductor/Heat:** Yes
- **Conductor/Electricity:** Yes
- **Malleability/Ductility:** Yes
- **Solubility/Water:** No
- **Electrolytes:** Not