

Name:

Date:

Period:

Seat #:

Try these problems. If you can DO them, check the box (). If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

Indicate the **strongest** IMF holding together crystals of the following substances:

		London forces	Dipole-dipole attractions	Hydrogen bonding	Metallic bonding	Ionic bonding	Covalent bonding
1.	KCl						
2.	IF ₃						
3.	HF						
4.	AsH ₃						
5.	Br ₂						
6.	Pt						
7.	NaOH						
8.	H ₂ S						
9.	Ne						
10.	SiO ₂						

Describe the interparticle forces at work in the following:

- _____ a. **within** a water molecule H₂O
_____ b. in a crystal of the salt NaCl
_____ c. in a **solution** of potassium nitrate KNO₃
_____ d. in diamond
_____ e. in a fiber of nylon
_____ f. in liquid butane
_____ g. **between** water molecules in ice
_____ h. between the two strands in the double helix of DNA
_____ i. in paraffin wax
_____ j. between the molecules of carbon dioxide CO₂ in dry ice
_____ k. between the molecules of HCl in **liquid** HCl
_____ l. in tungsten metal
_____ m. in a solution of perchloric acid

Elemental boron is extremely hard (nearly as hard as diamond) and has a melting point of 2300°C. It is a poor conductor of electricity at room temperature. What kind of solid would you expect for boron based on these properties?

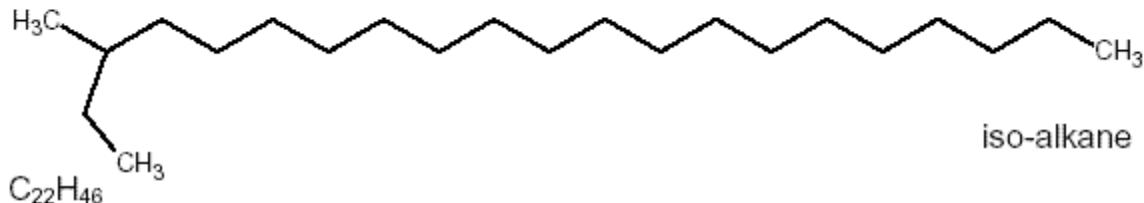
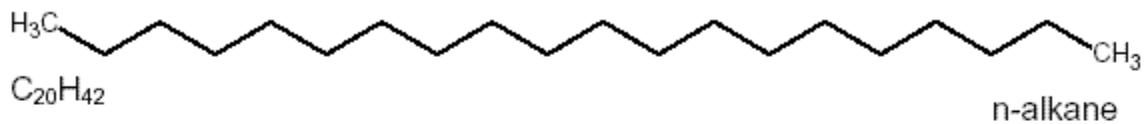
- A. molecular solid B. metal C. ionic solid D. covalent/network solid

Valence electrons delocalized over huge arrays of atoms. What kind of solid is described by this property?

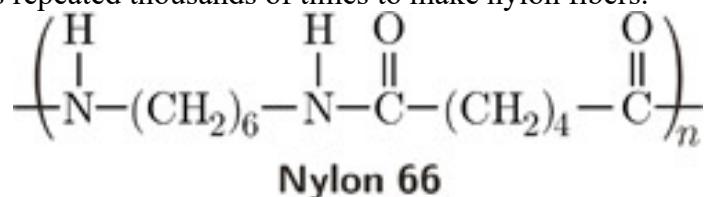
- A. molecular solid B. metal C. ionic solid D. covalent/network solid

Notes about structures that are considered “common knowledge” for AP chemistry students:

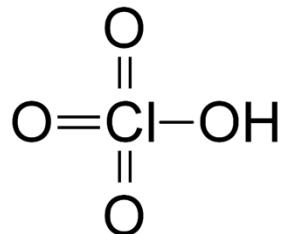
Paraffin wax is made up of long carbon chains. The Alkanes area also called the Paraffins.



Nylon is a polymer made up of long chains of carbons with amine groups and C=O groups. The “*n*” means that this pattern of atoms is repeated thousands of times to make nylon fibers.



Perchloric acid is based on the perchlorate ion (ClO_4^-). This is an “oxoacid” where the H atom bonds to one of the oxygen atoms.



DNA has a familiar structure, but we are interested in how the two sides of DNA are connected to each other. Note that there are some N-H bonds and O-H bonds in the “Nitrogenous bases”.

