Exercises

1. What are the main families/classes of materials? List some of the most important properties of each of these families of materials and give at least one example of an application for each one of them.

2. DEFINITIONS

TERM	DEFINITION/ PROPERTIES
Materials Science and Engineering	
Composite material	
Materials Selection	
Polymeric Material	
Ceramic Material	
Metallic Material	

3. Name the most important criteria for selecting materials to use in (a) a household ladder, (b) CD case, (c) a bicycle frame. Identify materials that would satisfy these criteria.

4. What are the most important factors that must be considered in the packing of ions in an ionic crystal? Explain why diamond is such a hard material.

5. Describe primary covalent bonding between two atoms of the same element. What is a permanent dipole moment among polar covalent molecules?

6. Based on atomic bonding, explain why metals usually have high electrical conductivities.