

Chemistry PPE revision task 1 - answers

Properties of substances– Ionic compounds, small molecules, polymers, giant covalent structures, metals and alloys

1. Describe the structure of ionic compounds.

Regular, giant ionic lattice.

2. Why do ionic compounds have high melting and boiling points?

Strong electrostatic forces of attraction between ions.

3. Why can ionic compounds conduct electricity when melted or dissolved in water?

Ions are free to move, carry the charge.

4. What state of matter are small molecules normally found in?

Gas or liquid.

5. Why do small molecules have low melting and boiling points?

Weak forces between molecules/ intermolecular forces.

6. Why don't small molecules conduct electricity?

Do not have an overall electric charge.

7. What are polymers?

Very large molecules made of repeating units.

8. Give an example of a giant covalent structure.

Diamond, graphite, silicon dioxide.

9. Why do giant covalent structures have very high melting and boiling points?

Strong covalent bonds must be broken.

10. How are atoms arranged in pure metals?

Layers.

11. What is an alloy?

Mixture of two elements, one of which is a metal.

12. Why do we use alloys, rather than pure metals, for many uses?

They are harder as the layers are distorted.

13. Why are metals good conductors of electricity?

Electrical charge carried by delocalised electrons.

Properties of substances – Diamond, graphite, graphene and fullerenes

1. In a diamond, how many covalent bonds does each carbon make?

4

2. Name 2 properties of diamond.

Hard, very high melting point.

3. In graphite, how many covalent bonds does each carbon make?

3

4. Describe the structure of graphite.

Layers of hexagonal rings.

5. Why is graphite soft?

Layers can slide over each other, weak forces between layers, no covalent bonds between layers.

6. Why does graphite conduct electricity?

Each carbon has one delocalised electron.

7. What is graphene?

Single layer of graphite, 1 atom thick.

8. What are fullerenes?

Molecules of carbon atoms with hollow shapes.