
1. A sample of a substance has these characteristics:

- melting point of 984 K
- hard, brittle solid at room temperature
- poor conductor of heat and electricity as a solid
- good conductor of electricity as a liquid on in an aqueous solution

This sample is classified as

- A) a metallic element
- B) a radioactive element
- C) a molecular compound
- D) an ionic compound

2. Based on bond type, which compound has the highest melting point?

- A) CH₃OH
- B) C₆H₁₄
- C) CaCl₂
- D) CCl₄

3. Which substance is an electrolyte?

- A) CH₃OH
- B) C₆H₁₂O₆
- C) H₂O
- D) KOH

4. A solid substance was tested in the laboratory. The test results are listed below.

- dissolves in water
- is an electrolyte
- melts at a high temperature

Based on these results, the solid substance could be

- A) Cu
- B) CuBr₂
- C) C
- D) C₆H₁₂O₆

5. A substance that does not conduct electricity as a solid but does conduct electricity when melted is most likely classified as

- A) an ionic compound
 - B) a molecular compound
 - C) a metal
 - D) a nonmetal
-

6. The data table below represents the properties determined by the analysis of substances *A*, *B*, *C*, and *D*

Substance	Melting Point (°C)	Boiling Point (°C)	Conductivity
<i>A</i>	-80	-20	none
<i>B</i>	20	190	none
<i>C</i>	320	770	as solid
<i>D</i>	800	1250	in solution

Which substance is an ionic compound?

- A) *A* B) *B* C) *C* D) *D*

7. Which of the following solids has the highest melting point?
A) H₂O(s) B) Na₂O(s)
C) SO₂(s) D) CO₂(s)
8. A hard substance that has a high melting point and is a poor conductor of electricity in the solid phase could be
A) CO₂ B) Mg C) NaCl D) CCl₄
9. As NaC₂H₃O₂(s) is stirred into water and dissolves, the electrical conductivity of the solution
A) decreases B) increases
C) remains the same
10. A characteristic of ionic solids is that they
A) have high melting points
B) have low boiling points
C) conduct electricity
D) are non-crystalline
11. A substance that has a melting point of 1074 K conducts electricity when dissolved in water, but does *not* conduct electricity in the solid phase. The substance is most likely
A) an ionic solid B) a network solid
C) a metallic solid D) a molecular solid
12. Which type of bonding is characteristic of a substance that has a high melting point and electrical conductivity only in the liquid phase?
A) nonpolar covalent
B) coordinate covalent
C) ionic
D) metallic
13. As 1 gram of sodium hydroxide dissolves in 100 grams of water, the conductivity of the solution
A) decreases B) increases
C) remains the same
14. Which substance is a conductor of electricity in the liquid phase but *not* in the solid phase?
A) Br₂ B) HBr C) Na D) NaCl
15. Which of the following substances is the best conductor of electricity?
A) H₂O(g) B) H₂O(s)
C) NaCl(s) D) NaCl(ℓ)
16. The water solution of which of the following substances is the best conductor of electricity?
A) KCl B) C₆H₁₂O₆
C) CO₂ D) CO
17. A substance has a high melting point and conducts electricity in the liquid phase. This substance is
A) Ne B) Hg C) NaCl D) SiC
18. Which substance dissolves in pure water and produces a solution that is a good conductor of electricity?
A) CaCl₂ B) C₆H₁₂O₆
C) N₂ D) O₂
19. A crystalline solid has a high melting point and is a good conductor of electricity in the liquid state. This solid could be
A) CO₂ B) Hg
C) C₆H₁₂O₆ D) KCl

20. Which type of substance can conduct electricity in the liquid phase but *not* in the solid phase?

- A) ionic compound
- B) molecular compound
- C) metallic element
- D) nonmetallic element