Exercise 0.72 – Physical properties – electrical conductivity

Q072-01 Which substances has the lowest electrical conductivity?

A. Cu(s)
B. Hg(l)
C. LiOH(aq)
D. $H_2(g)$

Q072-02 Which compound dissolved in water to form a solution that does not conduct electricity?

A. HCl
B. NaCl
C. CH_3CH_2OH
D. CH_3COOH

Q072-03 What are responsible for the high electrical conductivity of metals?

A. Delocalised positive ions
B. Delocalised valence electrons
C. Delocalised atoms
D. Delocalised negative ions

Q072-04 Which has the greatest electrical conductivity at room temperature?
pure water

A. 0.010 M aqueous sodium chloride solution.
B. 0.010 M aqueous sucrose solution.
C. pure silver
D. 0.010 M dilute ethanoic acid solution

Q072-05 A solution of which compound in water will best conduct electricity?

A. CH_3OCH_3
B. H_2SO_4
C. NH_3
D. C_6H_6 (benzene)

Q072-06 By reference to the structure and bonding in the compounds NaCl and $SiCl_4$ state and explain the differences in conductivity in the liquid state

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Q072-07 Explain, in terms of their structure and bonding, why the element sulphur is a non-conductor of electricity and aluminium is a good conductor.

Q072-08 Explain why graphite can conduct electricity, but diamond is an insulator.

Exercise 0.72 – Physical properties – electrical conductivity

Q072-09 Use the information in the table below to identify the type of bonding and structure in each of the following substances. Explain these properties in terms of bonding and structure:

Substance	Melting point /K	Electrical conductivity
A	1986	Does not conduct in any state
B	1074	Conducts only in the liquid and aqueous states

Q072-10 Outline how potassium chloride is able to act as an electrical conductor.