Updating a Water Model After Proton Transfer

Scoring guide · one credit per question · review written work against each rubric

Updating a Water Model After Proton Transfer

Question 1

Hydronium has three O–H bonds and one lone pair on oxygen. One original lone pair becomes the shared pair in the new O–H bond.

Question 2

Choice (1)

Both original bond electrons remain with chlorine when the hydrogen ion transfers, producing Cl^-.

Question 3

Add the third hydrogen bonded to oxygen and show one remaining lone pair. The oxygen center is then trigonal pyramidal instead of bent.

Question 4

The starting molecules are both neutral. H_3O^+ and a neutral Cl atom would total +1, so charge would not be conserved. Cl^- provides the −1 charge that balances hydronium.