Crystal Structure and Brittleness Worksheet

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

Crystal Structure and Brittleness

Question 1

Choice (3)

Na^+ and Cl^- have opposite charges.

Question 2

Alternating positive and negative neighbors allows attractions in several directions. The repeated arrangement helps stabilize the crystal.

Question 3

Choice (2)

When like charges become neighbors across the rows, they repel.

Question 4

In the metal, delocalized electrons can still attract positive cores as layers shift. A shift in the ionic model can bring like charges next to each other and cause repulsion.

Model of Two Ion Layers

Question 5

Choice (4)

All four columns pair one positive and one negative ion before the shift.

Question 6

All four columns have like charges. Positions 1 and 3 pair two negative ions. Positions 2 and 4 pair two positive ions.

Question 7

Choice (2)

The shift places matching charges next to one another across the layers.

Question 8

The push can shift an ion layer. Like charges then face each other and repel, which can separate the layers and fracture the crystal.