Tracking Water Between Two Salt Solutions

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A sealed model has two dishes of salt solution at the same temperature. Only water vapor can pass between the dishes. Salt particles stay in their original dish. In the model, higher water fraction among liquid particles gives higher water-vapor pressure. Water moves on balance from the dish with higher vapor pressure toward the one with lower vapor pressure.

Dish at start	Water particles	Dissolved salt particles
P	90	10
Q	60	20

1 Which direction is predicted for the initial net water transfer?

(1) From P to Q

(2) From Q to P

(3) Neither direction

(4) Both dishes lose water to the room.

2 Explain how net water transfer changes the water fractions in both dishes while leaving their salt counts fixed. [1]

Answer and work

The model proposes a later record of 50 water particles in P and 100 in Q. It treats the number of water particles in the shared vapor as negligible in these liquid counts.

3 Check whether the proposed later record gives matching water fractions. Use both unchanged salt counts. [1]

Answer and work

4 A student says matching vapor pressures require both dishes to contain the same number of water particles. Evaluate the claim with the proposed record. [1]

Answer and work