2024 Higher Chemistry Paper 1 – Q20

Section: Chemistry in Society
Topic: Equilibria

Question summary (Q20):
For the equilibrium:
$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$
The question asks: after a further two hours under the same conditions, what happens to the forward and reverse reaction rates?

Worked Solution:
• At equilibrium, the rates of the forward and reverse reactions are equal.
• If the conditions (concentration, temperature, pressure) are unchanged, the system remains at equilibrium.
• Therefore:
  – Rate of forward reaction = unchanged.
  – Rate of reverse reaction = unchanged.

Final Answer: D — unchanged / unchanged

Revision Tips:
• At equilibrium: forward rate = backward rate.
• Concentrations stay constant, but reactions are still happening at the same rate (dynamic equilibrium).
• Only a change in conditions (temperature, pressure, concentration) disturbs equilibrium (Le Chatelier’s principle).