2024 Higher Chemistry Paper 1 – Q16

Section: Chemistry in Society
Topic: Getting the Most from Reactants

Question summary (Q16):
5 moles of ammonium phosphate, $(NH_4)_3PO_4$, contains how many moles of positive ions?

Worked Solution:
• Formula: $(NH_4)_3PO_4$.
• Each formula unit contains 3 ammonium ions (NH_4^+).
• For every mole of $(NH_4)_3PO_4$, there are 3 moles of positive ions.
• For 5 moles: 5 × 3 = 15 moles of positive ions.

Final Answer: D — 15

Revision Tips:
• When dealing with ionic compounds, carefully count the number of each ion per formula unit.
• Multiply by the number of moles of compound to find total moles of ions.
• Positive ions come from cations like NH_4^+, Na^+, Ca^{2+}, etc.