Grade 12 Midyear Chemistry Exam

Units 1–4: representations, evidence, systems, materials

All contexts are original fictional paper models. No laboratory work, chemical handling, instrument use, fabrication, medical guidance, product recommendation, or real-world decision is requested. Total points: 40.

1. A carbonyl label supports which bounded conclusion? [2 pts]

2. State one representation limit of a skeletal formula. [3 pts]

3. A fictional mass card has 2.50 g and 1.00 mL. Calculate density. [3 pts]

4. With uncertainties ±0.05 g and ±0.02 mL, estimate relative uncertainty and absolute density uncertainty. [3 pts]

5. An IR card has a broad labeled feature and an NMR card has two labeled environments. State what each can suggest and what neither proves. [3 pts]

6. Explain why two compatible spectrum cards need not identify a unique fictional structure. [3 pts]

7. A water-model icon card shows polar attractions. Distinguish an intermolecular model from a covalent-bond claim. [3 pts]

8. A fictional enzyme-rate card levels off. Give a bounded interpretation and one excluded claim. [3 pts]

9. A polymer card lists flexible chains and a higher stated elongation. Write a structure-property claim with a limitation. [4 pts]

10. A nanoscale surface card has greater labeled area. Explain one possible model relation and one missing condition. [4 pts]

11. A materials source says its card proves a product should be adopted. Identify two evidence/authority limits. [4 pts]

12. Write a CER synthesis using any two cards. Include evidence, uncertainty/boundary, and an explicit refusal of a real-world recommendation. [5 pts]