

AP Chemistry Report - Kriti

Exam: Chemtopper Mock Test 2

Includes grading summary, strengths/weaknesses, MCQ wrong-answer analysis, and FRQ scoring comments.

Component	Score	Comment
MCQ	45/60	Wrong: 8, 9, 10, 19, 31, 32, 33, 35, 37, 48, 51, 52, 55, 57, 58
FRQ	39/46	Q1: 9, Q2: 8, Q3: 7, Q4: 4, Q5: 3, Q6: 4, Q7: 4
Composite	79.9/100 estimated (50% MCQ + 50% FRQ)	Strong 4 / near 5 range

Strengths

- Very strong written calculations and explanations.
- Excellent FRQ 6 and FRQ 7 performance.
- Good command of acid-base and Ksp methods.

Weaknesses and Priorities

- Several MCQ concept-selection errors despite strong calculations.
- Review spectator ions, formal charge, electrolysis, and Nernst comparison.
- Graph-based E_a marking should be placed precisely.

MCQ Wrong-Answer Analysis

Question 8: student B | correct D

Conductivity depends on mobile-ion concentration; Bi_2S_3 gives the greatest total ion concentration. Q8 is D.

Question 9: student C | correct D

Compare pK_a - pH ; HCN has the greatest acid/base ratio.

Question 10: student A | correct B

Gas expansion is spontaneous because entropy and possible particle arrangements increase.

Question 19: student C | correct A

The major cyanate resonance form places negative formal charge on oxygen.

Question 31: student B | correct A

The precipitate is AgCl(s) : $\text{Ag}^+ + \text{Cl}^- \rightarrow \text{AgCl(s)}$.

Question 32: student A | correct B

Na^+ and NO_3^- are spectator ions.

Question 33: student B | correct C

Ca(OH)_2 provides two OH^- ions; 66.7 mL of 0.150 M HNO_3 is needed.

Question 35: student A | correct C

$\text{Cr}_2\text{O}_7^{2-}$ requires six electrons, so six Fe^{2+} ions are needed.

Question 37: student C | correct B

Fast-equilibrium substitution gives rate = $k[\text{NO}_2]^2[\text{F}_2]$.

Question 48: student A | correct D

H^+ removes F^- , shifting MgF_2 dissolution right and increasing solubility.

Question 51: student A | correct B

At equivalence the solution contains NH_4^+ , a weak acid.

Question 52: student D | correct C

$[\text{base}] > [\text{acid}]$, so $\text{pH} > \text{pK}_a$.

Question 55: student D | correct C

Excess OH^- remains, giving pH about 12.40.

Question 57: student B | correct A

In molten NaCl , Na^+ is reduced at the cathode to Na(l) .

Question 58: student A | correct B

0.200 mol Cl_2 corresponds to 0.400 mol electrons.

FRQ Scoring Comments

Q1: 9/10

Very strong titration response; only minor loss on the strong-acid curve because the full curve was not shown clearly.

Q2: 8/10

Most thermodynamics/equilibrium work correct; partial pressure from particle diagram was counted incorrectly.

Q3: 7/10

Strong net equation/cathode/Ecell work. Lost credit on Nernst comparison and some arithmetic in nickel deposition.

Q4: 4/4

Excellent IMF/heat of vaporization response.

Q5: 3/4

Catalyst explanation was good; E_a marking was incorrect.

Q6: 4/4

Excellent combustion analysis, gas density, molecular formula and effusion.

Q7: 4/4

Excellent carbonate/ K_{sp} response.

Recommended Follow-up

- Redo wrong MCQs without looking at the key, especially electrolysis and spectator-ion questions.
- Practice Nernst comparison problems where Q is not 1.
- Keep FRQ calculations organized; written work is generally strong.