ORIGINAL PRACTICE FORM A

AP Chemistry

Unit-Organized Multiple-Choice Practice Exam

60 questions	90 minutes	Calculator permitted	Four choices per question

Directions

• For each question, select the one best answer from choices A through D.

• Questions are grouped by AP Chemistry unit. Within every unit, later tiers contain as many or more questions and require more linked reasoning.

• Use the equations and constants provided. Record answers on the answer grid or directly in the booklet.

• This is original practice material modeled on the structure and vocabulary of the supplied exams. It is not an official College Board publication.

Unit Map and Progressive Question Counts

Unit	Topic	Questions	Core → Application → Challenge
Unit 1	Atomic Structure and Properties	5	1 → 1 → 3
Unit 2	Molecular and Ionic Compound Structure and Properties	5	1 → 1 → 3
Unit 3	Intermolecular Forces and Properties	12	2 → 4 → 6
Unit 4	Chemical Reactions	6	1 → 2 → 3
Unit 5	Kinetics	6	1 → 2 → 3
Unit 6	Thermodynamics	6	1 → 2 → 3
Unit 7	Equilibrium	6	1 → 2 → 3
Unit 8	Acids and Bases	8	1 → 3 → 4
Unit 9	Applications of Thermodynamics	6	1 → 2 → 3

Equations and Constants

Use these relationships as needed. Symbols have their usual meanings in the questions.

Solutions and gases	M = mol solute / L solution	P V = n R T	$M_1V_1 = M_2V_2$
Spectrophotometry	A = εbc	A □ concentration	
Kinetics	rate = $k[A]^m[B]^n$	$\ln[A]_t = -kt + \ln[A]_0$	$t_{1/2} = 0.693/k$ (first order)
Thermodynamics	q = mcΔT	$\Delta H°_{rxn} = \Sigma\Delta H°_{f,\ products} - \Sigma\Delta H°_{f,\ reactants}$	$\Delta G° = \Delta H° - T\Delta S°$
Equilibrium	K_c = product terms / reactant terms	Q compared with K predicts direction	$K_w = K_aK_b = 1.0 \times 10^{-14}$ at 25°C
Acids and bases	$pH = -\log[H_3O^+]$	$pOH = -\log[OH^-]$	$pH = pK_a + \log([base]/[acid])$
Electrochemistry	$\Delta G° = -nFE°$	$\Delta G° = -RT \ln K$	$E°_{cell} = E°_{cathode} - E°_{anode}$

Selected Constants

Constant	Value
Ideal gas constant, R	0.08206 L atm mol^{-1} K^{-1}; 8.314 J mol^{-1} K^{-1}
Faraday constant, F	9.65×10^4 C mol^{-1} e^-
Water at 25°C	$K_w = 1.0 \times 10^{-14}$

Unit 1

Atomic Structure and Properties

5 questions · progressive sequence by tier

CORE 1 question · Direct concept check

1 □ Mark for Review Unit 1

A sample of element X contains two isotopes. The relative abundances are shown in the table. What is the average molar mass of X?

Isotope	Relative Abundance
X-62	69.2%
X-64	30.8%

A	62.0 g mol^{-1}
B	62.3 g mol^{-1}
C	62.6 g mol^{-1}
D	64.0 g mol^{-1}

APPLICATION 1 question · Single-step data and model use

2 □ Mark for Review Unit 1

Which of the following is the ground-state electron configuration of S^{2-}?

A	[Ne] $3s^2$ $3p^2$
B	[Ne] $3s^2$ $3p^4$
C	[Ne] $3s^2$ $3p^5$
D	[Ne] $3s^2$ $3p^6$

CHALLENGE 3 questions · Multi-step reasoning and linked representations

3 □ Mark for Review Unit 1

The first ionization energy of Mg is greater than that of Na. Which of the following best explains the difference?

A	Mg has more occupied energy levels than Na.
B	Mg has a greater nuclear charge with similar electron shielding.
C	The valence electron in Mg is farther from the nucleus.
D	The valence electron in Mg experiences less attraction to the nucleus.

4 □ Mark for Review Unit 1

The mass spectrum of chlorine has its largest peak at mass number 35. The atomic number of chlorine is 17. How many neutrons are in the isotope represented by the largest peak?

A	17
B	18
C	35
D	52

5 □ Mark for Review Unit 1

The first four ionization energies of an element are shown. Which valence-electron configuration is most consistent with the data?

Ionization	Energy (kJ mol^{-1})
First	738
Second	1,450
Third	7,730
Fourth	10,500

A	ns^2
B	ns^2np^1
C	ns^2np^3
D	ns^2np^6

Unit 2

Molecular and Ionic Compound Structure and Properties

5 questions · progressive sequence by tier

CORE 1 question · Direct concept check

6 □ Mark for Review Unit 2

Which of the following best describes the molecular geometry of CO_2?

A	Linear
B	Bent
C	Trigonal planar
D	Tetrahedral

APPLICATION 1 question · Single-step data and model use

7 □ Mark for Review Unit 2

Which of the following carbon-halogen bonds is the most polar?

A	C-F
B	C-Cl
C	C-Br
D	C-I

CHALLENGE 3 questions · Multi-step reasoning and linked representations

8 □ Mark for Review Unit 2

The Lewis diagram of H_2O has two O-H bonds and two lone pairs on O. Which molecular geometry is consistent with the diagram?

A	Linear
B	Bent
C	Trigonal planar
D	Tetrahedral

9 □ Mark for Review Unit 2

MgO has a much higher melting point than NaF. Which of the following best explains the difference?

A	MgO contains molecules, whereas NaF contains ions.
B	The O atom in MgO forms hydrogen bonds.
C	The ions in MgO have greater charges, resulting in stronger attractions in the solid.
D	The molar mass of MgO is much greater than that of NaF.

10 □ Mark for Review Unit 2

Which statement best describes the bonding in CO_3^{2-}?

A	One C-O bond is always shorter than the other two.
B	All three C-O bonds are single bonds.
C	All three C-O bonds are double bonds.
D	Three equivalent resonance structures contribute to three equal C-O bonds.

Unit 3

Intermolecular Forces and Properties

12 questions · progressive sequence by tier

CORE 2 questions · Direct concept check

11 □ Mark for Review Unit 3

Samples of He(g) and Ne(g) are at the same temperature. Which statement about the average kinetic energy of the particles is correct?

A	He atoms have greater average kinetic energy because they move faster.
B	The atoms in both samples have the same average kinetic energy.
C	Ne atoms have greater average kinetic energy because they have greater mass.
D	The average kinetic energy cannot be compared without knowing the pressure.

12 □ Mark for Review Unit 3

$CH_3OH(l)$ has a higher boiling point than $CH_3OCH_3(l)$. Which of the following best explains the difference?

A	CH3OH has a greater molar mass.
B	CH3OCH3 is ionic.
C	CH3OH molecules can form hydrogen bonds with one another.
D	CH3OCH3 molecules have no intermolecular forces.

APPLICATION 4 questions · Single-step data and model use

13 □ Mark for Review Unit 3

Equal-volume samples of the gases shown are at the same temperature and pressure. Which sample has the greatest mass?

Sample	Gas
1	CO_2
2	N_2
3	CH_4

A	Sample 1
B	Sample 2
C	Sample 3
D	All three samples have the same mass.

14 □ Mark for Review Unit 3

At the same high temperature and low pressure, He(g) behaves more ideally than NH_3(g). Which statement best explains the observation?

A	He atoms have greater average kinetic energy.
B	NH3 molecules have no motion at low pressure.
C	He atoms have a greater molar mass.
D	Attractions among He atoms are weaker than attractions among NH3 molecules.

15 □ Mark for Review Unit 3

The boiling points of four liquids are shown. At the same temperature below all four boiling points, which liquid has the greatest vapor pressure?

Liquid	Boiling Point (°C)
Pentane	36
Hexane	69
Heptane	98
Octane	126

A	Pentane
B	Hexane
C	Heptane
D	Octane

16 □ Mark for Review Unit 3

A 25.0 mL sample of 0.200 M KNO_3(aq) is diluted with water to a total volume of 100.0 mL. What is the final concentration?

A	0.0125 M
B	0.0250 M
C	0.0500 M
D	0.800 M

CHALLENGE 6 questions · Multi-step reasoning and linked representations

17 □ Mark for Review Unit 3

A solution has an absorbance of 0.80 when its concentration is 0.100 M. Under the same conditions, an unknown solution has an absorbance of 0.40. What is the concentration of the unknown?

A	0.025 M
B	0.050 M
C	0.100 M
D	0.200 M

18 □ Mark for Review Unit 3

In a paper chromatography experiment, substance Q travels farther than substance R. Which statement is most consistent with the observation?

A	Q has a greater molar mass than R.
B	Q forms stronger ionic bonds than R.
C	Q has a stronger attraction to the stationary phase than R.
D	Q has a stronger attraction to the mobile phase than R.

19 □ Mark for Review Unit 3

Which description best represents NaCl(s) after it dissolves in water?

A	Intact NaCl molecules are dispersed among water molecules.
B	Na and Cl atoms are dispersed with no charges.
C	Separate Na^+ and Cl^- ions are dispersed in a 1:1 ratio and are surrounded by water molecules.
D	Only Na^+ ions are dispersed because Cl^- remains in the solid.

20 □ Mark for Review Unit 3

The solubility of KNO_3 is 50 g per 100 g H_2O at 60°C and 30 g per 100 g H_2O at 20°C. A saturated solution containing 100 g of water at 60°C is cooled to 20°C. What mass of KNO_3 is expected to crystallize?

A	10 g
B	15 g
C	20 g
D	30 g

21 □ Mark for Review Unit 3

A gas occupies 2.0 L at 1.0 atm and 300 K. It is compressed to 1.0 L and heated to 600 K. What is the final pressure?

A	0.50 atm
B	1.0 atm
C	2.0 atm
D	4.0 atm

22 □ Mark for Review Unit 3

During a phase transition on a heating curve, energy is added while the temperature remains constant. Which statement best describes the particles during this interval?

A	Their average kinetic energy increases continuously.
B	Their potential energy increases as intermolecular attractions are overcome.
C	Their average kinetic energy decreases.
D	Chemical bonds within the particles are broken.

Unit 4

Chemical Reactions

6 questions · progressive sequence by tier

CORE 1 question · Direct concept check

23 □ Mark for Review Unit 4

Which of the following is the net ionic equation for the formation of AgCl(s) when $AgNO_3$(aq) and NaCl(aq) are mixed?

A	$Ag^+(aq) + Cl^-(aq) \rightarrow AgCl(s)$
B	AgNO3(aq) + NaCl(aq) → AgCl(s) + NaNO3(aq)
C	$Na^+(aq) + NO_3^-(aq) \rightarrow NaNO_3(aq)$
D	$Ag^+(aq) + NO_3^-(aq) \rightarrow AgNO_3(s)$

APPLICATION 2 questions · Single-step data and model use

24 □ Mark for Review Unit 4

$N_2(g) + 3\ H_2(g) \rightarrow 2\ NH_3(g)$. If 2.0 mol N_2 and 3.0 mol H_2 react completely, which statement is correct?

A	N2 is limiting and 4.0 mol NH3 forms.
B	H2 is limiting and 2.0 mol NH3 forms.
C	H2 is limiting and 3.0 mol NH3 forms.
D	Neither reactant is limiting and 5.0 mol NH3 forms.

25 □ Mark for Review Unit 4

$H_2SO_4(aq) + 2\ NaOH(aq) \rightarrow Na_2SO_4(aq) + 2\ H_2O(l)$. What volume of 0.100 M NaOH is required to react completely with 25.0 mL of 0.100 M H_2SO_4?

A	12.5 mL
B	25.0 mL
C	50.0 mL
D	100.0 mL

CHALLENGE 3 questions · Multi-step reasoning and linked representations

26 □ Mark for Review Unit 4

Excess $SO_4^{2-}(aq)$ is added to 25.0 mL of a $BaCl_2(aq)$ solution. After filtering and drying, 0.583 g of $BaSO_4(s)$ is collected. The molar mass of $BaSO_4$ is 233 g mol^{-1}. What was the concentration of $BaCl_2$?

A	0.0250 M
B	0.100 M
C	0.233 M
D	0.583 M

27 □ Mark for Review Unit 4

$2\ Al(s) + 3\ Cu^{2+}(aq) \rightarrow 2\ Al^{3+}(aq) + 3\ Cu(s)$. Which statement correctly describes the reaction?

A	Al is oxidized and Cu2+ is reduced.
B	Al is reduced and Cu2+ is oxidized.
C	Both Al and Cu2+ are oxidized.
D	No oxidation-reduction occurs.

28 □ Mark for Review Unit 4

The reaction $A_2 + 3\ B_2 \rightarrow 2\ AB_3$ occurs in a closed container. Initially, 4 particles of A_2 and 9 particles of B_2 are present. Which particles remain after the reaction goes to completion?

A	4 AB3 only
B	6 AB3 only
C	8 AB3 and 1 B2
D	6 AB3 and 1 A2

Unit 5

Kinetics

6 questions · progressive sequence by tier

CORE 1 question · Direct concept check

29 □ Mark for Review Unit 5

The initial-rate data for a reaction are shown. Which rate law is consistent with the data?

Experiment	[A] (M)	[B] (M)	Initial Rate (M s^{-1})
1	0.10	0.10	2.0×10^{-3}
2	0.20	0.10	8.0×10^{-3}
3	0.10	0.20	2.0×10^{-3}

A	rate = k[A]
B	rate = $k[A]^2$
C	rate = k[A][B]
D	rate = $k[A]^2[B]$

APPLICATION 2 questions · Single-step data and model use

30 □ Mark for Review Unit 5

Using the data in question 29, what is the value of the rate constant k?

A	0.020 s^{-1}
B	0.020 M^{-1} s^{-1}
C	0.20 M^{-1} s^{-1}
D	2.0 M^{-1} s^{-1}

31 □ Mark for Review Unit 5

A catalyst is added to a reaction at constant temperature. Which statement correctly describes the effect of the catalyst?

A	It provides a reaction pathway with lower activation energy and does not change ΔH.
B	It decreases the energy of the products and makes ΔH more negative.
C	It increases the equilibrium constant by increasing the forward rate only.
D	It increases the activation energy of the reverse reaction.

CHALLENGE 3 questions · Multi-step reasoning and linked representations

32 □ Mark for Review Unit 5

A proposed mechanism is shown.
Step 1: $NO_2 + NO_2 \rightarrow NO_3 + NO$ (slow)
Step 2: $NO_3 + CO \rightarrow NO_2 + CO_2$ (fast)
Which species is an intermediate?

A	NO2
B	NO3
C	NO
D	CO2

33 □ Mark for Review Unit 5

For a first-order reaction, [A] decreases from 0.80 M to 0.40 M in 20 s. What will [A] be after a total of 60 s?

A	0.30 M
B	0.20 M
C	0.10 M
D	0.050 M

34 □ Mark for Review Unit 5

Which statement best explains why increasing temperature usually increases the rate constant of a reaction?

A	The concentration of each reactant always increases.
B	The activation energy becomes zero.
C	Every collision produces products.
D	A greater fraction of collisions has enough energy to overcome the activation energy.

Unit 6

Thermodynamics

6 questions · progressive sequence by tier

CORE 1 question · Direct concept check

35 □ Mark for Review Unit 6

A reaction warms 100.0 g of water from 20.0°C to 30.0°C. The specific heat capacity of water is 4.18 J g^{-1} $°C^{-1}$. How much heat is absorbed by the water?

A	0.418 kJ
B	4.18 kJ
C	41.8 kJ
D	418 kJ

APPLICATION 2 questions · Single-step data and model use

36 □ Mark for Review Unit 6

$C(s) + O_2(g) \rightarrow CO_2(g)$, $\Delta H° = -394$ kJ mol^{-1}
$CO(g) + 1/2\ O_2(g) \rightarrow CO_2(g)$, $\Delta H° = -283$ kJ mol^{-1}
What is $\Delta H°$ for $C(s) + 1/2\ O_2(g) \rightarrow CO(g)$?

A	-677 kJ mol^-1
B	-394 kJ mol^-1
C	-111 kJ mol^-1
D	+111 kJ mol^-1

37 □ Mark for Review Unit 6

Use the average bond enthalpies H-H = 436 kJ mol^{-1}, Cl-Cl = 243 kJ mol^{-1}, and H-Cl = 431 kJ mol^{-1}. Estimate ΔH for $H_2(g) + Cl_2(g) \rightarrow 2\ HCl(g)$.

A	-862 kJ mol^-1
B	-183 kJ mol^-1
C	+183 kJ mol^-1
D	+679 kJ mol^-1

CHALLENGE 3 questions · Multi-step reasoning and linked representations

38 □ Mark for Review Unit 6

For which process is ΔS expected to be positive?

A	$CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$
B	$2\ H_2(g) + O_2(g) \rightarrow 2\ H_2O(l)$
C	$H_2O(g) \rightarrow H_2O(l)$
D	$Na^+(aq) + Cl^-(aq) \rightarrow NaCl(s)$

39 □ Mark for Review Unit 6

For $CH_4(g) + 2\ O_2(g) \rightarrow CO_2(g) + 2\ H_2O(l)$, the standard heats of formation in kJ mol^{-1} are CH_4 = -75, O_2 = 0, CO_2 = -394, and $H_2O(l)$ = -286. What is ΔH° for the reaction?

A	-605 kJ mol^-1
B	-319 kJ mol^-1
C	+891 kJ mol^-1
D	-891 kJ mol^-1

40 □ Mark for Review Unit 6

On a potential energy diagram, the products are 50 kJ mol^{-1} lower in energy than the reactants. Which statement is correct?

A	ΔH = +50 kJ mol^-1 and the reaction is endothermic.
B	ΔH = -50 kJ mol^-1 and the reaction is exothermic.
C	ΔH = 0 because the activation energy is not given.
D	The sign of ΔH changes when a catalyst is added.

Unit 7

Equilibrium

6 questions · progressive sequence by tier

CORE 1 question · Direct concept check

41 □ Mark for Review Unit 7

For $N_2(g) + 3\ H_2(g) \rightleftharpoons 2\ NH_3(g)$, which expression is equal to K_c?

A	$[NH_3]^2 / ([N_2][H_2]^3)$
B	$[N_2][H_2]^3 / [NH_3]^2$
C	$2[NH_3] / ([N_2] + 3[H_2])$
D	$[NH_3] / ([N_2][H_2])$

APPLICATION 2 questions · Single-step data and model use

42 □ Mark for Review Unit 7

For a reaction mixture at a particular temperature, Q is less than K. Which change occurs as the system approaches equilibrium?

A	The reverse reaction occurs only.
B	The value of K decreases.
C	The net reaction proceeds toward products.
D	The reaction stops immediately.

43 □ Mark for Review Unit 7

$2\ NO_2(g) \rightleftharpoons N_2O_4(g)$. At constant temperature, the volume of an equilibrium mixture is decreased. What is the initial response?

A	The equilibrium shifts left because [NO2] decreases.
B	The equilibrium shifts right, toward fewer moles of gas.
C	K increases and the equilibrium shifts right.
D	No change occurs because the temperature is constant.

CHALLENGE 3 questions · Multi-step reasoning and linked representations

44 □ Mark for Review Unit 7

For A(g) □ B(g), K_c = 4.0. Initially, [A] = 1.0 M and [B] = 0. What is [A] at equilibrium?

A	0.80 M
B	0.50 M
C	0.25 M
D	0.20 M

45 □ Mark for Review Unit 7

For A(g) □ 2 B(g), K = 5.0 at a certain temperature. What is K for 2 B(g) □ A(g) at the same temperature?

A	25
B	0.20
C	-5.0
D	-0.20

46 □ Mark for Review Unit 7

Equal volumes of 0.020 M $AgNO_3(aq)$ and 0.010 M $K_2CrO_4(aq)$ are mixed. For Ag_2CrO_4, $K_{sp} = 1.0 \times 10^{-12}$. Which statement is correct immediately after mixing?

A	Q = Ksp, so the mixture is at equilibrium with no solid.
B	Q < Ksp, so all ions remain dissolved.
C	Q > Ksp, so Ag2CrO4(s) forms.
D	Ksp increases because the solutions were diluted.

Unit 8

Acids and Bases

8 questions · progressive sequence by tier

CORE 1 question · Direct concept check

47 □ Mark for Review Unit 8

What is the pH of 1.0×10^{-3} M HCl(aq)?

A	1.0
B	2.0
C	3.0
D	11.0

APPLICATION 3 questions · Single-step data and model use

48 □ Mark for Review Unit 8

Which statement correctly compares 0.10 M HCl(aq) and 0.10 M HF(aq)?

A	HCl has the lower pH because it ionizes to a greater extent.
B	HF has the lower pH because F is more electronegative than Cl.
C	The solutions have the same pH because their concentrations are equal.
D	HF has the lower pH because it is a weak acid.

49 □ Mark for Review Unit 8

Which species is the conjugate acid of NH_3?

A	NH2-
B	N2H4
C	NH4+
D	HNO3

50 □ Mark for Review Unit 8

Which mixture forms a buffer?

A	0.10 M HCl and 0.10 M NaCl
B	0.10 M CH_3COOH and 0.10 M CH_3COONa
C	0.10 M NaOH and 0.10 M NaCl
D	0.10 M HNO3 and 0.10 M KNO3

CHALLENGE 4 questions · Multi-step reasoning and linked representations

51 □ Mark for Review Unit 8

A buffer contains equal concentrations of CH_3COOH and CH_3COO^-. The pK_a of CH_3COOH is 4.76. What is the pH of the buffer?

A	2.38
B	4.00
C	4.76
D	9.52

52 □ Mark for Review Unit 8

The equivalence-point pH of a titration is expected to be 8.7. Which indicator is the best choice?

Indicator	Color-Change Range
Thymol blue	8.0-9.6
Congo red	3.0-5.0
Phenol red	6.8-8.4
Indigo carmine	11.4-13.0

A	Thymol blue
B	Congo red
C	Phenol red
D	Indigo carmine

53 □ Mark for Review Unit 8

At the equivalence point in the titration of a weak acid with a strong base, the pH is usually greater than 7. Which statement best explains why?

A	Excess strong base is always present at equivalence.
B	The weak acid becomes a strong acid.
C	Water is removed from the solution.
D	The conjugate base of the weak acid reacts with water to produce OH^-.

54 □ Mark for Review Unit 8

At 25°C, K_a for HF is 6.8×10^{-4}. What is K_b for F^-?

A	6.8 × 10^-18
B	1.5 × 10^-11
C	6.8 × 10^-4
D	1.5 × 10^-3

Unit 9

Applications of Thermodynamics

6 questions · progressive sequence by tier

CORE 1 question · Direct concept check

55 □ Mark for Review Unit 9

For a reaction at 298 K, $\Delta H° = -100$ kJ mol^{-1} and $\Delta S° = -200$ J mol^{-1} K^{-1}. What is $\Delta G°$?

A	-160 kJ mol^-1
B	-100 kJ mol^-1
C	-40.4 kJ mol^-1
D	+59.6 kJ mol^-1

APPLICATION 2 questions · Single-step data and model use

56 □ Mark for Review Unit 9

Which combination of signs makes a reaction thermodynamically favorable at all temperatures under standard conditions?

A	$\Delta H° < 0$ and $\Delta S° > 0$
B	$\Delta H° < 0$ and $\Delta S° < 0$
C	$\Delta H° > 0$ and $\Delta S° > 0$
D	$\Delta H° > 0$ and $\Delta S° < 0$

57 □ Mark for Review Unit 9

The standard reduction potentials are shown. What is E° for a galvanic cell that uses Zn(s)/Zn^{2+}(aq) and Cu(s)/Cu^{2+}(aq)?

Reduction Half-Reaction	E° (V)
$Cu^{2+} + 2\ e^- \rightarrow Cu$	+0.34
$Zn^{2+} + 2\ e^- \rightarrow Zn$	-0.76

A	-1.10 V
B	-0.42 V
C	+0.42 V
D	+1.10 V

CHALLENGE 3 questions · Multi-step reasoning and linked representations

58 □ Mark for Review Unit 9

A galvanic cell operates using $Fe(s)/Fe^{2+}(aq)$ and $Cu(s)/Cu^{2+}(aq)$. The Fe electrode is the anode. Which statement is correct as the cell operates?

A	The Fe electrode gains mass and electrons flow from Cu to Fe.
B	The Fe electrode loses mass and electrons flow from Fe to Cu.
C	The Cu electrode loses mass and electrons flow from Cu to Fe.
D	Both electrodes gain mass.

59 □ Mark for Review Unit 9

$Ag^{+}(aq) + e^{-} \rightarrow Ag(s)$. A current transfers 1.93×10^{4} C through an electrolytic cell. Use 9.65×10^{4} C mol^{-1} e^{-} and a molar mass of Ag of 107.9 g mol^{-1}. What mass of Ag is deposited?

A	10.8 g
B	19.3 g
C	21.6 g
D	107.9 g

60 □ Mark for Review Unit 9

For a galvanic cell under standard conditions, E° is positive. Which statement must also be true?

A	ΔG° is negative and K is greater than 1.
B	ΔG° is positive and K is less than 1.
C	ΔG° is zero and K equals 1.
D	The reaction is at equilibrium before the cell operates.

Student Answer Grid

Choose the one best answer for each question.

1 (A) (B) (C) (D)	16 (A) (B) (C) (D)	31 (A) (B) (C) (D)	46 (A) (B) (C) (D)
2 (A) (B) (C) (D)	17 (A) (B) (C) (D)	32 (A) (B) (C) (D)	47 (A) (B) (C) (D)
3 (A) (B) (C) (D)	18 (A) (B) (C) (D)	33 (A) (B) (C) (D)	48 (A) (B) (C) (D)
4 (A) (B) (C) (D)	19 (A) (B) (C) (D)	34 (A) (B) (C) (D)	49 (A) (B) (C) (D)
5 (A) (B) (C) (D)	20 (A) (B) (C) (D)	35 (A) (B) (C) (D)	50 (A) (B) (C) (D)
6 (A) (B) (C) (D)	21 (A) (B) (C) (D)	36 (A) (B) (C) (D)	51 (A) (B) (C) (D)
7 (A) (B) (C) (D)	22 (A) (B) (C) (D)	37 (A) (B) (C) (D)	52 (A) (B) (C) (D)
8 (A) (B) (C) (D)	23 (A) (B) (C) (D)	38 (A) (B) (C) (D)	53 (A) (B) (C) (D)
9 (A) (B) (C) (D)	24 (A) (B) (C) (D)	39 (A) (B) (C) (D)	54 (A) (B) (C) (D)
10 (A) (B) (C) (D)	25 (A) (B) (C) (D)	40 (A) (B) (C) (D)	55 (A) (B) (C) (D)
11 (A) (B) (C) (D)	26 (A) (B) (C) (D)	41 (A) (B) (C) (D)	56 (A) (B) (C) (D)
12 (A) (B) (C) (D)	27 (A) (B) (C) (D)	42 (A) (B) (C) (D)	57 (A) (B) (C) (D)
13 (A) (B) (C) (D)	28 (A) (B) (C) (D)	43 (A) (B) (C) (D)	58 (A) (B) (C) (D)
14 (A) (B) (C) (D)	29 (A) (B) (C) (D)	44 (A) (B) (C) (D)	59 (A) (B) (C) (D)
15 (A) (B) (C) (D)	30 (A) (B) (C) (D)	45 (A) (B) (C) (D)	60 (A) (B) (C) (D)