AP Chemistry

Sample Question Paper - 2026

Country: US | Duration: 3h 15m | Max Marks: 5-point scale | Language: English

Negative Marking: No | Total Questions: 60 | QuizVerse AI Tutor

General Instructions:

1. This paper contains 60 questions across 1 section(s): Chemistry.
2. Duration: 3h 15m. Maximum marks: 5-point scale.
3. Negative marking: No.
4. Read each question carefully before answering.

Section 1: Chemistry (60 Questions)

Q1. The van't Hoff factor for NaCl is approximately:

(A) 1

(B) 2

(C) 3

(D) 0.5

Q2. The rate of reaction doubles when temperature increases by:

(A) 5 K

(B) 10 K

(C) 20 K

(D) 50 K

Q3. The shape of XeF4 is:

(A) See-saw

(B) Octahedral

(C) Square planar

(D) Tetrahedral

Q4. Which element has the highest electronegativity?

(A) Fluorine

(B) Chlorine

(C) Nitrogen

(D) Oxygen

Q5. The equilibrium constant Kp and Kc are related by:

(A) Kp = Kc/RT

(B) Kp = Kc(RT)^delta_n

(C) Kp = RT*Kc

(D) Kp = Kc

Q6. The lightest noble gas is:

(A) Argon

(B) Helium

(C) Krypton

(D) Neon

Q7. The pH of a 0.1 M HCl solution is:

(A) 4

(B) 1

(C) 2

(D) 3

Q8. The ore of aluminium is:

(A) Galena

(B) Bauxite

(C) Chalcopyrite

(D) Haematite

Q9. Markovnikov's rule applies to the addition of HBr to:

(A) Benzene

(B) Propene

(C) Ethene

(D) Methane

Q10. For an endothermic reaction, increasing temperature:

(A) Decreases equilibrium constant

(B) Decreases rate

(C) Increases equilibrium constant

(D) No effect

Q11. The molar conductivity at infinite dilution can be obtained by:

(A) Kohlrausch's law

(B) Hess's law

(C) Faraday's law

(D) Ohm's law

Q12. Gibbs free energy change for a spontaneous process is:

(A) Undefined

(B) Zero

(C) Positive

(D) Negative

Q13. Which element has the highest electronegativity?

(A) Nitrogen

(B) Chlorine

(C) Fluorine

(D) Oxygen

Q14. For an endothermic reaction, increasing temperature:

(A) Decreases rate

(B) No effect

(C) Increases equilibrium constant

(D) Decreases equilibrium constant

Q15. The hybridization of C in acetylene is:

(A) sp2

(B) sp3

(C) sp3d

(D) sp

Q16. The colour of KMnO4 is due to:

(A) d-d transition

(B) Charge transfer transition

(C) s-p transition

(D) f-f transition

Q17. For a first-order reaction with k = 0.020 s^-1, the half-life is:

(A) 10.0 s

(B) 20.0 s

(C) 15.0 s

(D) 13.9 s

Q18. The reagent for converting aldehyde to carboxylic acid is:

(A) NaBH4

(B) KMnO4 / K2Cr2O7

(C) LiAlH4

(D) Zn-Hg / HCl

Q19. The lightest noble gas is:

(A) Argon

(B) Helium

(C) Krypton

(D) Neon

Q20. The coordination number in BCC is:

(A) 8

(B) 4

(C) 6

(D) 12

Q21. Which reagent is used for Baeyer-Villiger oxidation?

(A) KMnO4

(B) LiAlH4

(C) NaBH4

(D) mCPBA / peracid

Q22. Colligative properties depend on:

(A) Nature of solute

(B) Nature of solvent

(C) Number of solute particles

(D) Molar mass of solute

Q23. For a first-order reaction with k = 0.020 s^-1, the half-life is:

(A) 13.9 s

(B) 20.0 s

(C) 10.0 s

(D) 15.0 s

Q24. Colligative properties depend on:

(A) Molar mass of solute

(B) Nature of solvent

(C) Nature of solute

(D) Number of solute particles

Q25. Friedel-Crafts acylation uses which catalyst?

(A) FeCl3

(B) CuCl2

(C) AlCl3

(D) ZnCl2

Q26. Which test distinguishes aldehydes from ketones?

(A) Beilstein test

(B) Lucas test

(C) Lassaigne test

(D) Tollens' test (silver mirror)

Q27. Which of the following has the highest lattice energy?

(A) NaBr

(B) NaI

(C) NaF

(D) NaCl

Q28. Wurtz reaction involves coupling of:

(A) Alkyl halides with Na

(B) Acids with SOCl2

(C) Aryl halides with Cu

(D) Aldehydes with NaOH

Q29. The hybridization of Ni in [Ni(CN)4]2- is:

(A) dsp2

(B) d2sp3

(C) sp3

(D) sp3d

Q30. Grignard reagents react with dry CO_2 to give:

(A) Alcohols

(B) Ketones

(C) Carboxylic acids

(D) Esters

Q31. The coordination number in BCC is:

(A) 4

(B) 12

(C) 8

(D) 6

Q32. Colligative properties depend on:

(A) Nature of solvent

(B) Number of solute particles

(C) Nature of solute

(D) Molar mass of solute

Q33. VSEPR theory predicts the shape of SF_6 as:

(A) Octahedral

(B) Square planar

(C) Trigonal bipyramidal

(D) Tetrahedral

Q34. Markovnikov's rule applies to the addition of HBr to:

(A) Benzene

(B) Propene

(C) Ethene

(D) Methane

Q35. Kolbe's electrolysis of sodium acetate gives:

(A) Propane

(B) Methane

(C) Ethane

(D) Butane

Q36. The magnetic moment of Fe^{2+} (d^6) in weak field is:

(A) 0 BM

(B) 5.9 BM

(C) 2.83 BM

(D) 4.9 BM (4 unpaired)

Q37. Which reagent is used for Baeyer-Villiger oxidation?

(A) $NaBH_4$

(B) $KMnO_4$

(C) $LiAlH_4$

(D) mCPBA / peracid

Q38. The IUPAC name of CH3CH(OH)CH3 is:

(A) Propan-1-ol

(B) Isopropyl ether

(C) 2-Methylethanol

(D) Propan-2-ol

Q39. The colour of KMnO4 is due to:

(A) Charge transfer transition

(B) f-f transition

(C) d-d transition

(D) s-p transition

Q40. Gibbs free energy change for a spontaneous process is:

(A) Undefined

(B) Negative

(C) Zero

(D) Positive

Q41. According to Raoult's law, the vapour pressure of a solvent in solution is:

(A) p = RT/V

(B) p = p0 * x_solute

(C) p = p0 / x_solvent

(D) p = p0 * x_solvent

Q42. The major product of SN1 reaction of tert-butyl chloride with ethanol is:

(A) tert-Butanol

(B) Isobutane

(C) tert-Butyl ethyl ether

(D) 2-Methylpropene

Q43. The hybridization of C in acetylene is:

(A) sp

(B) sp2

(C) sp3d

(D) sp3

Q44. The hybridization of C in acetylene is:

(A) sp3

(B) sp3d

(C) sp2

(D) sp

Q45. According to Raoult's law, the vapour pressure of a solvent in solution is:

(A) p = RT/V

(B) p = p0 * x_solvent

(C) p = p0 / x_solvent

(D) p = p0 * x_solute

Q46. Lanthanide contraction is caused by:

(A) Poor shielding by 4f electrons

(B) Nuclear fusion

(C) High ionization energy

(D) Electron capture

Q47. The product of dehydration of ethanol at 443 K is:

(A) Acetaldehyde

(B) Acetic acid

(C) Ethylene (C2H4)

(D) Diethyl ether

Q48. Grignard reagents react with dry CO2 to give:

(A) Esters

(B) Ketones

(C) Carboxylic acids

(D) Alcohols

Q49. Which test distinguishes aldehydes from ketones?

(A) Tollens' test (silver mirror)

(B) Lucas test

(C) Beilstein test

(D) Lassaigne test

Q50. The IUPAC name of CH3CH(OH)CH3 is:

(A) 2-Methylethanol

(B) Propan-1-ol

(C) Isopropyl ether

(D) Propan-2-ol

Q51. The crystal field splitting energy in octahedral complex is:

(A) 10Dq_tet

(B) Delta_oct

(C) Delta_tet

(D) Delta_sq

Q52. Lanthanide contraction is caused by:

(A) Electron capture

(B) Nuclear fusion

(C) Poor shielding by 4f electrons

(D) High ionization energy

Q53. The product of dehydration of ethanol at 443 K is:

(A) Diethyl ether

(B) Ethylene (C2H4)

(C) Acetic acid

(D) Acetaldehyde

Q54. The crystal field splitting energy in octahedral complex is:

(A) Delta_sq

(B) Delta_tet

(C) 10Dq_tet

(D) Delta_oct

Q55. Grignard reagents react with dry CO2 to give:

(A) Esters

(B) Alcohols

(C) Carboxylic acids

(D) Ketones

Q56. For a first-order reaction with k = 0.020 s^-1, the half-life is:

(A) 20.0 s

(B) 13.9 s

(C) 15.0 s

(D) 10.0 s

Q57. The order of ionic radius: Na+ vs Mg2+ vs Al3+ is:

(A) All equal

(B) Mg2+ > Na+ > Al3+

(C) Al3+ > Mg2+ > Na+

(D) Na+ > Mg2+ > Al3+

Q58. Which of the following has the highest lattice energy?

(A) NaBr

(B) NaI

(C) NaCl

(D) NaF

Q59. Which of the following has the highest lattice energy?

(A) NaCl

(B) NaBr

(C) NaF

(D) NaI

Q60. The ore of aluminium is:

(A) Haematite

(B) Chalcopyrite

(C) Bauxite

(D) Galena

Answer Key

Q1: (B)	Q2: (B)	Q3: (C)	Q4: (A)	Q5: (B)
Q6: (B)	Q7: (D)	Q8: (B)	Q9: (B)	Q10: (C)
Q11: (A)	Q12: (D)	Q13: (C)	Q14: (C)	Q15: (D)
Q16: (B)	Q17: (D)	Q18: (B)	Q19: (B)	Q20: (A)
Q21: (D)	Q22: (C)	Q23: (A)	Q24: (D)	Q25: (C)
Q26: (D)	Q27: (C)	Q28: (A)	Q29: (A)	Q30: (C)
Q31: (C)	Q32: (B)	Q33: (A)	Q34: (B)	Q35: (C)
Q36: (D)	Q37: (D)	Q38: (D)	Q39: (A)	Q40: (B)
Q41: (D)	Q42: (C)	Q43: (A)	Q44: (D)	Q45: (B)
Q46: (A)	Q47: (C)	Q48: (C)	Q49: (A)	Q50: (D)
Q51: (B)	Q52: (C)	Q53: (B)	Q54: (D)	Q55: (C)
Q56: (B)	Q57: (D)	Q58: (D)	Q59: (C)	Q60: (C)