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CHEMISTRY · EAPCET (EAMCET)

Coordination Compounds

Previous Year Questions with answers

160 questions · **131** papers · **2012–2026** · newest paper first

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What is in this PDF: every Coordination Compounds question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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Chapter at a glance

2.6%
of Chemistry questions, 2022–2026

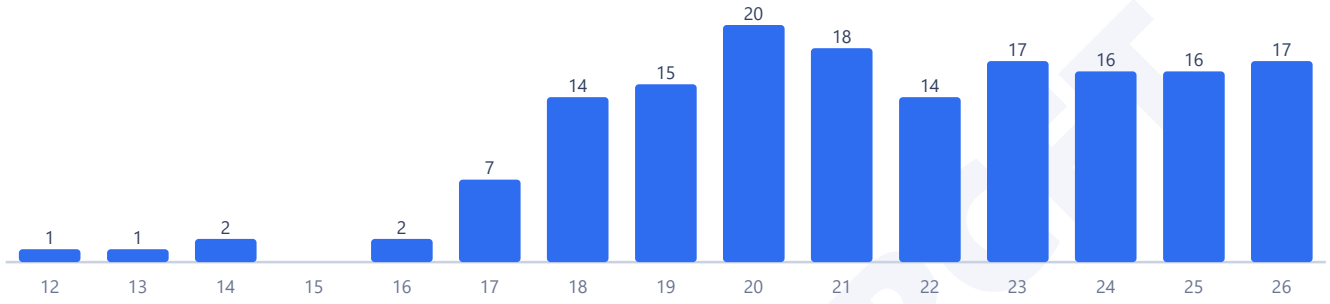
160
questions, 2012–2026

71 of 77
papers asked it, 2022–2026

160 / 0
MCQ / numerical, 2012–2026

Trend. Steady: 1.1 questions per paper in 2024–2026 against 1 in 2022–2023.

Questions per year



Counts are the questions we hold: 160 in 131 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2012–2026)

Bonding Theories	81
Basics & Nomenclature	51
Isomerism	20
Stability & Applications	8

How often it comes up

Coordination Compounds sits at rank 18 among the 31 chemistry chapters in the modern 2022 to 2026 period. Across our complete repository of entrance papers spanning 2010 through 2026, the chapter contributed 160 questions across 149 papers, appearing in 131 of those tests to account for 2.7 percent of the subject with an average of 1.1 questions per paper. In the recent five-year timeframe from 2022 to 2026, it gathered 80 questions across 77 sittings, being present in 71 papers to maintain 1.0 question per paper and a 2.6 percent subject share.

The chapter has appeared in every exam year since 2022, though it was absent from six papers across that five-year window. Looking at state-specific distributions between 2022 and 2026, AP tests accounted for 50 questions across 48 papers (appearing in 43 papers, 1.0 question per paper, 2.6 percent share), while TS tests generated 30 questions across 29 papers (appearing in 28 papers, 1.0 question per paper, 2.6 percent share).

During earlier testing between 2010 and 2021, papers included 80 questions across 72 sittings (appearing in 60 tests), representing 1.1 questions per paper and a 2.8 percent subject share. Across the most recent three exam cycles from 2024 to 2026, question writers set 49 questions across 46 sittings (with 45 papers containing questions), yielding 1.1 questions per test and 2.7 percent share. Looking across the longitudinal split, the proportion early versus the last three years remains about the same, while the balance recent versus the last three years is likewise about the same.

Most-asked topics

Questions in Coordination Compounds group into four foundational structural categories:

- **Bonding Theories** dominates the chapter with 81 questions overall and 40 in the modern window through 2026. Frequent problem types test crystal field theory (d-orbital splitting in octahedral versus tetrahedral environments,

pairing energy comparisons, crystal field stabilisation energy, and spectrochemical series ordering), valence bond theory (inner orbital versus outer orbital hybridization), and spin-only magnetic moments.

- **Basics & Nomenclature** provided 51 questions across the archive, with 26 occurring between 2022 and 2026. Topics include IUPAC naming of complex cations and anions, identifying coordination number and central metal oxidation state, ambidentate and chelating ligands, and Verners coordination theory regarding primary ionisable versus secondary non-ionisable valencies.
- **Isomerism** accounts for 20 questions overall, with 13 appearing from 2022 to 2026. Problems assess structural isomerism (ionisation, solvate, linkage, and coordination isomers) and stereoisomerism (geometrical cis-trans and facial-meridional arrangements, along with optical enantiomers in bidentate chelate complexes).
- **Stability & Applications** supplies 8 questions across the archive, including 1 in the recent period (last tested in 2022). Themes explore synergistic metal-carbon pi back-bonding in metal carbonyls, bridging carbonyls, and homogeneous catalysis.

What the questions look like

Examiners place heavy emphasis on crystal field electron occupancy and ligand displacement rules. A standard problem supplies octahedral complexes of iron, cobalt, or manganese with strong-field cyanide or weak-field fluoride ligands, asking you to calculate crystal field stabilization energy or determine the ratio of electrons residing in the lower triplet subshell versus the upper doublet subshell.

Another frequent format asks which coordination compound produces zero precipitate when treated with excess silver nitrate solution, requiring candidates to recognize Verners formulation where all chloride ions reside inside the primary coordination sphere as non-ionisable ligands. Isomerism questions often ask you to count total stereoisomers for an octahedral cobalt complex containing symmetrical bidentate ethylenediamine ligands.

How to practise it

Memorise the spectrochemical series for ligands in increasing order of crystal field splitting strength: iodide, bromide, thiocyanate, chloride, sulphide, fluoride, hydroxide, oxalate, water, isothiocyanate, edta, ammonia, ethylenediamine, nitrite, cyanide, and carbon monoxide. Strong-field ligands cause electron pairing when crystal field splitting exceeds pairing energy, producing low-spin inner-orbital complexes.

For isomerism, remember the symmetry rules. Trans isomers of octahedral bis-chelated complexes like trans-dichlorobis(ethylenediamine)cobalt possess an inversion center and are optically inactive, whereas the corresponding cis isomer lacks improper rotation axes and resolves into non-superimposable d and l optical enantiomers. Be fluent in Verners precipitation counts: one mole of hexamminecobalt trichloride yields three moles of silver chloride precipitate, while pentamminecobalt dichloride yields two, and tetramminecobalt monochloride yields one.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Which of the following has maximum number of electrons in t_{2g} orbitals?

(A) $[\mathrm{Fe(CN)_6}]^{3-}$
(B) $[\mathrm{FeCl_6}]^{3-}$
(C) $[\mathrm{CoCl_6}]^{3-}$
(D) $[\mathrm{Co(NH_3)_6}]^{3+}$

Answer: (D) $[\mathrm{Co(NH_3)_6}]^{3+}$ · The council's preliminary key

Q2 AP EAPCET 2026 · 18 May · Shift 2 MCQ

In which of the following given sets, complexes are correctly arranged in the increasing order of their spin only magnetic moment values?

I. $[Fe(CN)_6]^{4-} < [Fe(CN)_6]^{3-} < [Fe(H_2O)_6]^{3+}$

II. $[Co(NH_3)_6]^{3+} < [Ni(H_2O)_6]^{2+} < [Cr(H_2O)_6]^{3+}$

III. $[V(H_2O)_6]^{3+} < [Cr(CN)_6]^{3-} < [Fe(H_2O)_6]^{2+}$

The correct answer is

(A) I, II only
(B) I, II, III
(C) II, III only
(D) I, III only

Answer: (B) I, II, III · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

Which of the following exhibit only geometrical isomerism?

(A) Diaquadioxalatochromate (III) ion
(B) Dichloridobis(ethane – 1, 2 – diamine)platinum (IV) ion
(C) Triamminetrinitrito – N cobalt (III)
(D) Tris(ethane – 1, 2 – diamine)cobalt (III) ion

Answer: (C) Triamminetrinitrito – N cobalt (III) · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

How many of the following complex ions contain 4 unpaired electrons?

$[\mathrm{Cr(H_2O)_6}]^{2+}$, $[\mathrm{Mn(H_2O)_6}]^{2+}$, $[\mathrm{Fe(H_2O)_6}]^{2+}$,

$[\mathrm{Co(H_2O)_6}]^{3+}$, $[\mathrm{Cu(H_2O)_6}]^{2+}$, $[\mathrm{CoF_6}]^{3-}$,

$[\mathrm{Cr(CN)_6}]^{4-}$, $[\mathrm{MnCl_4}]^{2-}$

The correct answer is

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(A) 3
(B) 4
(C) 2
(D) 5

Options (2) or (1) were accepted. More than one answer was accepted. · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

Identify the correct set containing only ambidentate ligands

(A) NO_2^-, CN^-, SCN^-
(B) $NH_3, CN^-, C_2O_4^{2-}$
(C) SO_4^{2-}, SCN^-, CO
(D) $C_2O_4^{2-}, (CH_3)_3P, CO$

Answer: (A) NO_2^-, CN^-, SCN^- · The council's preliminary key

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

Which of the following complexes do not exhibit geometrical isomerism?

I. $K[Cr(H_2O)_2(C_2O_4)_2]$

II. $[Co(en)_3]Cl_3$

III. $[Co(NH_3)_5(NO_2)](NO_3)_2$

The correct answer is

(A) I , III only
(B) II , III only
(C) I , II only
(D) I , II , III

Answer: (B) II , III only · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

The metal ion, ligands present in Wilkinson catalyst are respectively

(A) Rh^{3+}, Cl^-, PPh_3
(B) Rh^+, Cl^-, PPh_3
(C) Rh^{2+}, Br^-, PH_3
(D) Re^+, I^-, $P(CH_3)_3$

Answer: (B) Rh^+, Cl^-, PPh_3 · The council's preliminary key

Q8 AP EAPCET 2026 · 13 May · Shift 2 MCQ

Choose the correct formula for tris (ethane-1, 2-diamine) cobalt (III) hexacyanido ferrate (II)

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(A) $[Co(en)_3][Fe(CN)_6]$
(B) $[Co(en)_3]_2[Fe(CN)_6]_3$
(C) $[Co(en)_3]_3[Fe(CN)_6]_2$
(D) $[Co(en)_3]_4[Fe(CN)_6]_3$

Answer: (D) $[Co(en)_3]_4[Fe(CN)_6]_3$ · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 1 MCQ

In which of the following, ratio of t_{2g} and e_g electrons is 3 : 2 ?

(A) $[FeF_6]^{3-}$
(B) $[CoF_6]^{3-}$
(C) $[Fe(CN)_6]^{3-}$
(D) $[Co(NH_3)_6]^{3+}$

Answer: (A) $[FeF_6]^{3-}$ · The council's preliminary key

Q10 AP EAPCET 2026 · 12 May · Shift 2 MCQ

Aqueous solutions of which of the following compounds do not form AgCl precipitate with excess $AgNO_3$ solution?

I. $PtCl_4.2HCl$

II. $PtCl_2.2NH_3$

III. $CoCl_3.4NH_3$

IV. $PdCl_2.4NH_3$

The correct answer is

(A) I , II only
(B) III , IV only
(C) I , II , III only
(D) I , II , IV only

Answer: (A) I , II only · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 1 MCQ

Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour?

(A) $[Co(C_2O_4)_3]^{3-}$
(B) $[MnCl_6]^{3-}$
(C) $[Mn(CN)_6]^{3-}$
(D) $[Fe(CN)_6]^{3-}$

Answer: (B) $[MnCl_6]^{3-}$ · The council's preliminary key

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Q12 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The primary and secondary valencies of chromium in the complex ion, $[CrCl_2(C_2O_4)_2]^{3-}$ are respectively x and y. The sum of x and y is

(A) 7
(B) 8
(C) 9
(D) 6

Answer: (C) 9 · The council's preliminary key

Q13 TS EAPCET 2026 · 10 May · Shift 1 MCQ

Which of the following exhibit both geometrical and optical isomerism?

I. $[Pt(en)_2Cl_2]^{2+}$

II. $[Co(NH_3)_3(NO_2)_3]$

III. $[Cr(H_2O)_2(C_2O_4)_2]^{+}$

IV. $[Co(en)_3]Cl_3$

The correct answer is

(A) I, III, IV only
(B) I, II, III only
(C) II, III, IV only
(D) I, III only

Answer: (D) I, III only · The council's preliminary key

Q14 TS EAPCET 2026 · 10 May · Shift 2 MCQ

Which one of the following complexes has least number of stereoisomers?

(A) $[Co(NH_3)_5Cl]Cl_2$
(B) $[Co(en)(NH_3)_2Cl_2]Cl$
(C) $[Co(en)_2Cl_2]Cl$
(D) $[Co(en)_3]Cl_3$

Answer: (A) $[Co(NH_3)_5Cl]Cl_2$ · Checked by our team

Q15 TS EAPCET 2026 · 9 May · Shift 1 MCQ

Among the four complex ions given, identify the pair of ions with same spin only magnetic moment value

$[Ni(NH_3)_6]^{2+}$	$[MnCl_6]^{3-}$	$[FeF_6]^{3-}$	$[CoF_6]^{3-}$
I	II	III	IV

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(A) II, III only
(B) II, IV only
(C) I, IV only
(D) I, III only

Answer: (B) II, IV only · The council's preliminary key

Q16 TS EAPCET 2026 · 9 May · Shift 1 MCQ

Which of the following will give maximum number of isomers?

(A) $[Co(NH_3)_4Cl_2]^+$
(B) $[Ni(en)(NH_3)_4]^{2+}$
(C) $[Ni(C_2O_4)(en)_2]$
(D) $[Cr(SCN)_2(NH_3)_4]^+$

Answer: (D) $[Cr(SCN)_2(NH_3)_4]^+$ · The council's preliminary key

Q17 TS EAPCET 2026 · 9 May · Shift 2 MCQ

Which of the following exhibit optical isomerism?

I. $[Fe(C_2O_4)_3]^{3-}$

II. $[Cr(H_2O)_4Cl_2]^+$

III. $[Co(NH_3)_2(en)_2]^{3+}$

The correct answer is (only)

(A) I, II only
(B) I, III only
(C) II, III only
(D) I, II, III

Answer: (B) I, III only · The council's preliminary key

Q18 AP EAPCET 2025 · 27 May · Shift 1 MCQ

Identify the set which does not have ambidentate ligand (s)

(A) $NO_2^-, CN^-, C_2O_4^{2-}$
(B) $C_2O_4^{2-}, H_2O, SO_4^{2-}$
(C) SCN^-, NH_3, CH_3COO^-
(D) CN^-, SCN^-, CH_3NH_2

Answer: (B) $C_2O_4^{2-}, H_2O, SO_4^{2-}$ · The council's preliminary key

Q19 AP EAPCET 2025 · 26 May · Shift 1 MCQ

Which of the following exhibit ionization isomerism ?

I) $[Cr(NH_3)_4Cl_2]Cl$

II) $[Ti(H_2O)_5Cl](NO_3)_2$

III) $[Pt(en)(NH_3)Cl]NO_3$

IV) $[Co(NH_3)_4(NO_3)_2]NO_3$

(A) II & III only
(B) I & II only
(C) II & IV only
(D) III & IV only

Answer: (A) II & III only · The council's preliminary key

Q20 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The IUPAC name of the complex shown below is

$K_3[Co(ox)_3]$

(A) Tripotassium trioxalatocobaltate (III)
(B) Potassium trioxalatecobaltate (III)
(C) Potassium trioxalatecobalt (III)
(D) Potassium trioxalatocobaltate (III)

Answer: (D) Potassium trioxalatocobaltate (III) · The council's preliminary key

Q21 AP EAPCET 2025 · 26 May · Shift 2 MCQ

Identify the ion (hydrated in solution) which is not correctly matched with its spin only magnetic moment (in BM) given in brackets

(A) Cr^{3+} (4.90)
(B) Cu^{2+} (1.73)
(C) Co^{3+} (4.90)
(D) Fe^{2+} (4.90)

Answer: (A) Cr^{3+} (4.90) · The council's preliminary key

Q22 AP EAPCET 2025 · 24 May · Shift 1 MCQ

The co-ordination number of chromium in $K[Cr(H_2O)_2(C_2O_4)_2]$ is

(A) 5
(B) 4
(C) 6
(D) 3

Answer: (C) 6 · The council's preliminary key

Q23 AP EAPCET 2025 · 23 May · Shift 1 MCQ

In which one of the following complexes the metal ion has $t_{2g}^3 e_g^2$ configuration?

(A) $[Mn(H_2O)_6]^{2+}$
(B) $[Fe(H_2O)_6]^{2+}$
(C) $[Co(NH_3)_6]^{3+}$
(D) $[Ni(H_2O)_6]^{2+}$

Answer: (A) $[Mn(H_2O)_6]^{2+}$ · The council's preliminary key

Q24 AP EAPCET 2025 · 23 May · Shift 2 MCQ

Identify the complex ion with spin only magnetic moment of 4.90 BM.

(A) $[Co(NH_3)_6]^{3+}$
(B) $[Cr(NH_3)_6]^{3+}$
(C) $[Mn(CN)_6]^{3-}$
(D) $[MnC\ell_6]^{3-}$

Answer: (D) $[MnC\ell_6]^{3-}$ · The council's preliminary key

Q25 AP EAPCET 2025 · 22 May · Shift 1 MCQ

In which of the following, complex ions are not in correct order with respect to their magnitude of crystal field splitting ?

(A) $[Fe(H_2O)_6]^{3+} > [FeF_6]^{3-}$
(B) $[Fe(en)_3]^{3+} > [Fe(NCS)_6]^{3-}$
(C) $[Fe(CN)_6]^{4-} > [Fe(H_2O)_6]^{2+}$
(D) $[Fe(H_2O)_6]^{2+} > [Fe(NH_3)_6]^{2+}$

Answer: (D) $[Fe(H_2O)_6]^{2+} > [Fe(NH_3)_6]^{2+}$ · The council's preliminary key

Q26 AP EAPCET 2025 · 22 May · Shift 2 MCQ

In $Fe_x[Fe_y(CN)_6]_3$, x, y respectively, are

(A) 3, 2
(B) 4, 1
(C) 2, 3
(D) 1, 4

Answer: (B) 4, 1 · The council's preliminary key

Q27 AP EAPCET 2025 · 21 May · Shift 1 MCQ

Which of the following complexes exhibit geometrical isomerism ?

I) $[Co(en)(NH_3)_2Cl_2]Cl$

II) $[Co(NH_3)_4Cl_2]Cl$

III) $[Co(en)_3]Cl_3$

IV) $[Co(en)_2Cl_2]Br$

(A) I, II & III only

(B) II, III & IV only

(C) I, II & IV only

(D) II & III only

Answer: (C) I, II & IV only · The council's preliminary key

Q28 TS EAPCET 2025 · 4 May · Shift 1 MCQ

Which one of the following complex ions is diamagnetic in nature?

(A) $[CoF_6]^{3-}$

(B) $[Co(ox)_3]^{3-}$

(C) $[Mn(CN)_6]^{3-}$

(D) $[Fe(CN)_6]^{3-}$

Answer: (B) $[Co(ox)_3]^{3-}$ · The council's preliminary key

Q29 TS EAPCET 2025 · 4 May · Shift 2 MCQ

Observe the following complex ions

$[Mn(CN)_6]^{3-}$	$[Fe(CN)_6]^{3-}$	$[CoF_6]^{3-}$	$[Co(C_2O_4)_3]^{3-}$
A	B	C	D

Identify the option in which the unpaired electrons in the complex ions are in correct increasing order

(A) C, A, B, D

(B) B, A, C, D

(C) D, A, B, C

(D) D, B, A, C

Answer: (D) D, B, A, C · The council's preliminary key

Q30 TS EAPCET 2025 · 3 May · Shift 1 MCQ

Arrange the following complexes in the increasing order of their spin only magnetic moment (in B.M)

I. $[Fe(CN)_6]^{4-}$

II. $[MnCl_4]^{2-}$

III. $[Mn(CN)_6]^{4-}$

IV. $[Cr(NH_3)_6]^{3+}$

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(A) II < IV < I < III
(B) III < II < I < IV
(C) I < IV < II < III
(D) I < III < IV < II

Answer: (D) I < III < IV < II · The council's preliminary key

Q31 TS EAPCET 2025 · 3 May · Shift 2 MCQ

Total number of geometrical isomers possible for the complexes $[NiCl_4]^{2-}$, $[CoCl_2(NH_3)_4]^{+}$, $[Co(NH_3)_3(NO_2)_3]$ and $[Co(NH_3)_5Cl]^{2+}$ is

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (C) 4 · The council's preliminary key

Q32 TS EAPCET 2025 · 2 May · Shift 1 MCQ

Which one of the following is not an ambidentate ligand?

(A) CN
(B) SCN^-
(C) SO_4^{2-}
(D) NO_2^-

Answer: (C) SO_4^{2-} · The council's preliminary key

Q33 TS EAPCET 2025 · 2 May · Shift 2 MCQ

When 100 mL of 0.2 M solution of $CoCl_3.xNH_3$ is treated with excess of $AgNO_3$ solution, 3.6×10^{22} ions are precipitated. The value of x is

$(N = 6 \times 10^{23}\ mol^{-1})$

(A) 5
(B) 6
(C) 4
(D) 3

Answer: (B) 6 · The council's preliminary key

Q34 AP EAPCET 2024 · 23 May · Shift 1 MCQ

Arrange the following in the increasing order of their magnetic moments

I. $[Mn(CN)_6]^{3-}$

II. $[MnCl_6]^{3-}$

III. $[Fe(CN)_6]^{3-}$

IV. $[FeF_6]^{3-}$

(A) III < I < IV < II

(B) III < IV < II < I

(C) IV < II < I < III

(D) III < I < II < IV

Answer: (D) III < I < II < IV · The council's preliminary key

Q35 AP EAPCET 2024 · 22 May · Shift 1 MCQ

Match the complexes in list-I with their hybridization in list-II

	List-I Complex	List-II Hybridization
I	$Ni(CO)_4$	A sp^3d^2
II	$[Ni(CN)_4]^{2-}$	B d^2sp^3
III	$[Co(NH_3)_6]^{3+}$	C dsp^2
IV	$[CoF_6]^{3-}$	D sp^3

(A) I-C, II-D, III-A, IV-B

(B) I-D, II-C, III-A, IV-B

(C) I-D, II-C, III-B, IV-A

(D) I-C, II-D, III-B, IV-A

Answer: (C) I-D, II-C, III-B, IV-A · The council's preliminary key

Q36 AP EAPCET 2024 · 22 May · Shift 2 MCQ

Which complex among the following is most paramagnetic?

(A) $[Co(NH_3)_6]^{2+}$

(B) $[Co(NH_3)_6]^{3+}$

(C) $[Co(H_2O)_6]^{2+}$

(D) $[Co(H_2O)_6]^{3+}$

Answer: (D) $[Co(H_2O)_6]^{3+}$ · The council's preliminary key

Q37 AP EAPCET 2024 · 21 May · Shift 1 MCQ

Impure silver ore + CN^- + $H_2O \xrightarrow{O_2} [X]^-$ + OH^-

$[X]^-$ + Zn $\longrightarrow$ $[Y]^{2-}$ + Ag (pure)

The co-ordination numbers of the metals in [X], [Y] are respectively

(A) 3, 4
(B) 1, 4
(C) 4, 2
(D) 2, 4

Answer: (D) 2, 4 · The council's preliminary key

Q38 AP EAPCET 2024 · 21 May · Shift 1 MCQ

How many of the following ligands are stronger than H_2O?

$S^{2-}, Br^-, C_2O_4^{2-}, CN^-, en, NH_3, CO, OH^-$

(A) 5
(B) 3
(C) 4
(D) 6

Answer: (C) 4 · The council's preliminary key

Q39 AP EAPCET 2024 · 21 May · Shift 2 MCQ

Cobalt (III) chloride forms a green coloured complex 'X' with NH_3. Number of moles of AgCl formed when excess of $AgNO_3$ solution is added to 100 mL of 1M solution of 'X' is

(A) 0.3
(B) 0.2
(C) 0.1
(D) 1

Answer: (C) 0.1 · The council's preliminary key

Q40 AP EAPCET 2024 · 20 May · Shift 1 MCQ

The paramagnetic complex ion which has no unpaired electrons in t_{2g} orbitals is

(A) $[Fe(CN)_6]^{4-}$
(B) $[Fe(CN)_6]^{3-}$
(C) $[Zn(NH_3)_6]^{2+}$
(D) $[Ni(NH_3)_6]^{2+}$

Answer: (D) $[Ni(NH_3)_6]^{2+}$ · The council's preliminary key

Q41 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Arrange the following in the increasing order of number of unpaired electrons present in the central metal ion

I. $[MnCl_6]^{3-}$

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II. $[FeF_6]^{3-}$

III. $[Mn(CN)_6]^{3-}$

IV. $[Fe(CN)_6]^{3-}$

(A) $IV < I < III < II$

(B) $I < III < II < IV$

(C) $IV < III < I < II$

(D) $I < II < III < IV$

Answer: (C) $IV < III < I < II$ · The council's preliminary key

Q42 AP EAPCET 2024 · 19 May · Shift 2 MCQ

The spin only magnetic moments of the complexes $[Mn(CN)_6]^{3-}$ and $[Co(C_2O_4)_3]^{3-}$ are respectively

(A) 2.84 BM, 0 BM

(B) 0 BM, 2.84 BM

(C) 0 BM, 3.87 BM

(D) 5.92 BM, 2.84 BM

Answer: (A) 2.84 BM, 0 BM · The council's preliminary key

Q43 AP EAPCET 2024 · 18 May · Shift 1 MCQ

Which of the following does not show optical isomerism?

(A) $Cis - [Cr\,Cl_2(C_2O_4)_2]^{3-}$

(B) $[Pt\,Cl_2(en)_2]^{2+}$

(C) $[Co\,(NH_3)_3(NO_2)_3]$

(D) $[Co(en)_3]^{3+}$

Answer: (C) $[Co\,(NH_3)_3(NO_2)_3]$ · The council's preliminary key

Q44 TS EAPCET 2024 · 11 May · Shift 1 MCQ

Which one of the following complex ions has geometrical isomers?

(A) $[Co(Cl)_2(en)_2]^+$

(B) $[Cr(NH_3)_4(en)]^{3+}$

(C) $[Co(en)_3]^{3+}$

(D) $[Ni(NH_3)_5Br]^+$

Answer: (A) $[Co(Cl)_2(en)_2]^+$ · The council's preliminary key

Q45 TS EAPCET 2024 · 10 May · Shift 1 MCQ

Identify the complex ion with electronic configuration $t_{2g}^3e_g^2$

(A) $[Fe(H_2O)_6]^{3+}$
(B) $[Cr(H_2O)_6]^{3+}$
(C) $[Ni(H_2O)_6]^{2+}$
(D) $[Ti(H_2O)_6]^{3+}$

Answer: (A) $[Fe(H_2O)_6]^{3+}$ · The council's preliminary key

Q46 TS EAPCET 2024 · 10 May · Shift 2 MCQ

Arrange the following in increasing order of their crystal field splitting energy

I $[Co(H_2O)_6]^{3+}$

II $[Co(NH_3)_6]^{3+}$

III $[Co(CN)_6]^{3-}$

IV $[CoF_6]^{3-}$

(A) I < II < III < IV
(B) IV < I < II < III
(C) I < III < II < IV
(D) IV < II < I < III

Answer: (B) IV < I < II < III · The council's preliminary key

Q47 TS EAPCET 2024 · 9 May · Shift 1 MCQ

The molecular formula of a coordinate complex is $CoH_{12}O_6Cl_3$. When one mole of this aqueous solution of complex is reacted with excess of aqueous $AgNO_3$ solution, three moles of AgCl was formed. What is the correct formula of the complex?

(A) $[Co(H_2O)_6]Cl_3$
(B) $[Co(H_2O)_5Cl]Cl_2.H_2O$
(C) $[Co(H_2O)_4Cl_2]Cl(H_2O)_2$
(D) $[Co(H_2O)_3Cl_3](H_2O)_3$

Answer: (A) $[Co(H_2O)_6]Cl_3$ · The council's preliminary key

Q48 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Pt + 3:1 mixture of (conc. HCl + conc. HNO_3) $\rightarrow [X]^{2-}$

What is the oxidation state of Pt in $[X]^{2-}$ complex ion?

(A) +2
(B) +3
(C) +4
(D) +6

Answer: (C) +4 · The council's preliminary key

Q49 TS EAPCET 2024 · 9 May · Shift 2 MCQ

Which of the following will have a spin only magnetic moment of 2.86 BM?

(A) $[CoF_6]^{3-}$
(B) $[Co(NH_3)_6]^{3+}$
(C) $[NiCl_4]^{2-}$
(D) $[Ni(CN)_4]^{2-}$

Answer: (C) $[NiCl_4]^{2-}$ · The council's preliminary key

Q50 AP EAPCET 2023 · 19 May · Shift 1 MCQ

Match the following.

List I (Complex)	List II (Color)
A. $[Ni(en)_3]^{2+}$	I. Green
B. $[Ni(H_2O)_4(en)]^{2+}$	II. Blue
C. $[Ni(H_2O)_6]^{2+}$	III. Pale blue
D. $[Ni(H_2O)_2(en)_2]^{2+}$	IV. Violet

(A) A-IV, B-I, C-III, D-II
(B) A-I, B-II, C-III, D-IV
(C) A-IV, B-III, C-I, D-II
(D) A-I, B-III, C-II, D-IV

Answer: (C) A-IV, B-III, C-I, D-II · The council's preliminary key

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Q51 AP EAPCET 2023 · 18 May · Shift 1 MCQ

The spin only magnetic moment of $[MnBr_4]^{x-}$ is 5.9 BM. The geometry of the complex and x respectively are

(A) tetrahedral, 1
(B) square planar, 1
(C) square planar, 2
(D) tetrahedral, 2

Answer: (D) tetrahedral, 2 · The council's preliminary key

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Q52 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The compounds having coordinated water are

$CrCl_3.6H_2O$ (I) $BaCl_2.2H_2O$ (II) $CuSO_4.5H_2O$ (III)

(A) II, III only
(B) I, III only
(C) I, II only
(D) I, II, III

Answer: (B) I, III only · The council's preliminary key

Q53 AP EAPCET 2023 · 18 May · Shift 2 MCQ

The configurations of the complexes of manganese A, B respectively are $t_{2g}^3 e_g^1$, $t_{2g}^4 e_g^0$. Then A, B are

(A) $[Mn(H_2O)_6]^{2+}$, $[Mn(CN)_6]^{3-}$
(B) $[Mn(H_2O)_6]^{2+}$, $[Mn(CN)_6]^{4-}$
(C) $[Mn(H_2O)_6]^{3+}$, $[Mn(CN)_6]^{4-}$
(D) $[Mn(H_2O)_6]^{3+}$, $[Mn(CN)_6]^{3-}$

Answer: (D) $[Mn(H_2O)_6]^{3+}$, $[Mn(CN)_6]^{3-}$ · The council's preliminary key

Q54 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Which of the following types of isomerism is exhibited by $[Co(NH_3)_5(NO_2)](NO_3)_2$

i. Optical ii. Linkage iii. Ionization iv. Coordination

(A) ii, iii only
(B) i, ii, iii only
(C) i, iii only
(D) ii, iv only

Answer: (A) ii, iii only · The council's preliminary key

Q55 AP EAPCET 2023 · 17 May · Shift 2 MCQ

IUPAC name of $[Pt(NH_3)_2Cl(NH_2CH_3)]\,Cl$ is

(A) (Amino methane) chloro (diammine) platinum (II) chlolide
(B) Chlorodiammine (methanamine) platinum (II) chloride
(C) Diamminechloro (methanamine) platinum(II) chloride
(D) Diamminechloro (methylamine) platinum (IV) chloride

Answer: (C) Diamminechloro (methanamine) platinum(II) chloride · The council's preliminary key

Q56 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Which one of the following has the highest molar conductivity?

(A) Diammine dichloroplatinum (II)
(B) Tetraamminedichlorocobalt (III) chloride
(C) Potassium hexacyano ferrate (II)
(D) Hexa aquo chromium (III) chloride

Answer: (C) Potassium hexacyano ferrate (II) · The council's preliminary key

Q57 AP EAPCET 2023 · 16 May · Shift 1 MCQ

The formula of tris (ethane -1,2- diamine) cobalt (III) sulphate is:

(A) $[Co(H_2NCH_2CH_2NH_2)_3]SO_4$
(B) $[Co(H_2NCH_2CH_2NH_2)_3]_3(SO_3)_2$
(C) $[Co(CH_3CH_2NHNH_2)_3]_2(SO_4)_3$
(D) $[Co(H_2NCH_2CH_2NH_2)_3]_2(SO_4)_3$

Answer: (D) $[Co(H_2NCH_2CH_2NH_2)_3]_2(SO_4)_3$ · The council's preliminary key

Q58 AP EAPCET 2023 · 16 May · Shift 2 MCQ

Observe the following complexes

$[Mn(CN)_6]^{3-}$, $[Fe(CN)_6]^{3-}$, $[Co(C_2O_4)_3]^{3-}$, $[MnCl_6]^{3-}$, $[Fe(CN)_6]^{4-}$, $[CoF_6]^{3-}$

From the above, the number of inner orbital complexes with paramagnetic nature is

(A) 2
(B) 1
(C) 3
(D) 4

Answer: (A) 2 · The council's preliminary key

Q59 AP EAPCET 2023 · 16 May · Shift 2 MCQ

Which of the following statements are correct?

i. $[Mn(CN)_6]^{3-}$, $[MnCl_6]^{3-}$ both are paramagnetic

ii. Both $[NiCl_4]^{2-}$, $[Ni(CO)_4]$ are tetrahedral and diamagnetic

iii. $[Co(NH_3)_6]^{3+}$ is inner orbital complex, but $[Ni(NH_3)_6]^{2+}$ is outer orbital complex.

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(A) i, ii only
(B) i, iii only
(C) ii, iii only
(D) i, ii, iii

Answer: (B) i, iii only · The council's preliminary key

Q60 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Arrange the following in order of increasing number of unpaired electrons in them

i. $[Fe(CN)_6]^{3-}$ ii. $[MnCl_6]^{3-}$ iii. $[FeF_6]^{3-}$ iv. $[Co(NH_3)_6]^{3+}$

(A) i, iv, ii, iii
(B) iv, i, iii, ii
(C) iv, i, ii, iii
(D) i, iv, iii, ii

Answer: (C) iv, i, ii, iii · The council's preliminary key

Q61 TS EAMCET 2023 · 14 May · Shift 1 MCQ

Match the following

List – I (Complex)	List – II (Spin only Magnetic moment)
A) $[CoF_6]^{3-}$	I) 0
B) $[Co(C_2O_4)_3]^{3-}$	II) $\sqrt{24}$
C) $[FeF_6]^{3-}$	III) $\sqrt{8}$
D) $[Mn\ (CN)_6]^{3-}$	IV) $\sqrt{35}$
	V) $\sqrt{15}$

The correct answer is

(A) A – V, B – II, C – IV, D – I
(B) A – II, B – I, C – IV, D – III
(C) A – II, B – I, C – V, D – III
(D) A – III, B – II, C – I, D – V

Answer: (B) A – II, B – I, C – IV, D – III · The council's preliminary key

Q62 TS EAMCET 2023 · 14 May · Shift 2 MCQ

The sum of oxidation state and co-ordination number of central metal atom is maximum with respect to which of the following complex?

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(A) $K_3[Cr(C_2O_4)_3]$
(B) $[Cr(CO)_6]$
(C) $K_2[PtCl_6]$
(D) $K_4[Fe(CN)_6]$

Answer: (C) $K_2[PtCl_6]$ · The council's preliminary key

Q63 TS EAMCET 2023 · 13 May · Shift 1 MCQ

According to Werner's theory, the number of groups bonded to the central metal atom / ion in a coordination complex represent

(A) Oxidation state
(B) Primary valency
(C) Secondary Valency
(D) Polyhedron

Answer: (C) Secondary Valency · The council's preliminary key

Q64 TS EAMCET 2023 · 13 May · Shift 2 MCQ

Identify the correct set for $[Co(NH_3)_6]^{3+}$ ion. (hybridisation of Co^{3+}, type of complex, number of unpaired electrons in the complex ion respectively)

(A) d^2sp^3, inner orbital complex, zero
(B) sp^3d^2, outer orbital complex, three
(C) d^2sp^3, inner orbital complex, two
(D) sp^3d^2, outer orbital complex, zero

Answer: (A) d^2sp^3**, inner orbital complex, zero** · The council's preliminary key

Q65 TS EAMCET 2023 · 12 May · Shift 1 MCQ

Match the following

List-I (complex)	List-II (electronic configuration of metal/ion)
A. $[Co(NH_3)_6]^{3+}$	I. $t_{2g}^5 e_g^0$
B. $[CoF_6]^{3-}$	II. $t_{2g}^6 e_g^0$
C. $[Ni(CO)_4]$	III. $t_{2g}^4 e_g^2$
D. $[Fe(CN)_6]^{3-}$	IV. $t_2^4 e^6$

The correct answer is

(A) A – II, B – III, C – IV, D – I
(B) A – III, B – IV, C – II, D – I
(C) A – IV, B – III, C – I, D – II
(D) A – II, B – I, C – IV, D – III

Answer: (A) A – II, B – III, C – IV, D – I · The council's preliminary key

Q66 TS EAMCET 2023 · 12 May · Shift 2 MCQ

Identify the incorrect match from the following

(A) $[Cr(H_2O)_6]Br_2$ - Paramagnetic
(B) $Na_4[Fe(CN)_6]$ - Diamagnetic
(C) $[Ni(CO)_4]$ - Paramagnetic
(D) $Na_2[NiCl_4]$ - Paramagnetic

Answer: (C) $[Ni(CO)_4]$ - Paramagnetic · The council's preliminary key

Q67 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

The pair in which both the species have same magnetic moment (spin only) is

(A) $[CoCl_4]^{2-}$, $[Fe(H_2O)_6]^{2-}$
(B) $[Mn(H_2O)_6]^{2+}$, $[Cr(H_2O)_6]^{2+}$
(C) $[Cr(H_2O)_6]^{2+}$, $[Fe(H_2O)_6]^{2+}$
(D) $[Cr(H_2O)_6]^{2+}$, $[CoCl_4]^{2-}$

Answer: (C) $[Cr(H_2O)_6]^{2+}$, $[Fe(H_2O)_6]^{2+}$ · The council's preliminary key

Q68 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Secondary valences of the following complexes based on their reactions with excess $AgNO_3$ are

Formula of the complexes	Moles of AgCl precipitated per mole of complex
I) $CoCl_3.6H_2O$	3
II) $NiCl_3.6H_2O$	2
III) $Co(SO_4)Br.5NH_3$	1

(A) I: 4, II: 6, III: 6
(B) I: 6, II: 4, III: 4
(C) I: 6, II: 4, III: 6
(D) I: 6, II: 6, III: 6

Answer: (D) I: 6, II: 6, III: 6 · The council's preliminary key

Q69 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

A metal complex absorbed orange light. The colour in which it appears is

(A) yellow
(B) yellow – green
(C) red
(D) green – blue

Answer: (D) green – blue · The council's preliminary key

Q70 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The correct order of decreasing field strength of the below given ligands is
I: NCS^- II: S^{2-} III: en IV: SCN^-

(A) I > II > IV > III
(B) III > II > IV > I
(C) III > I > IV > II
(D) III > IV > I > II

Answer: (C) III > I > IV > II · The council's preliminary key

Q71 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Among the given complexes that possess "CO" ligand bridges are
$[Co_2(CO)_8]$ (I), $[Fe_3(CO)_{12}]$ (II), $[Mn_2(CO)_{10}]$ (III), $[Fe_2(CO)_9]$ (IV)

(A) I, II and III
(B) II, III and IV
(C) I, II and IV
(D) I, III and IV

Answer: (C) I, II and IV · The council's preliminary key

Q72 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

According to valence bond theory the metal atom or ion can make use of which of the following orbitals to yield hybrid orbitals, that can form bonds with ligands.

(A) $(n-1)d,\ (n-1)s,\ np$
(B) $(n-1)d,\ ns,\ np$
(C) $(n-1)d,\ ns,\ (n-1)p$
(D) $nd,\ (n-1)s,\ (n-1)p$

Answer: (B) $(n-1)d,\ ns,\ np$ · The council's preliminary key

Q73 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The IUPAC name of the following complex is
$[Cr(NH_3)_3(H_2O)_2Cl]Cl_2$

(A) Triamminediaqua chlorido chromium (III) chloride
(B) Diaquatriammine chlorido chromium (III) chloride
(C) Chlorido diaquatriammine chromium (III) chloride
(D) Triammine diaqua trichlorido chromium (III)

Answer: (A) Triamminediaqua chlorido chromium (III) chloride · The council's preliminary key

Q74 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The IUPAC name of the following complex is $[Co(NH_2CH_2CH_2NH_2)_2Br_2]Br$

(A) Bis (ethane-1, 2- diamine) dibromido cobalt (III) bromide
(B) Di (ethane-1, 2- diamine) dibromido cobalt (III) bromide
(C) Tribromido bis (ethane-1, 2- diamine) cobalt (III)
(D) Dibromido bis (ethylene diamine) cobalt (III) bromide

Answer: (D) Dibromido bis (ethylene diamine) cobalt (III) bromide · The council's preliminary key

Q75 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The hybridization of metals involved in the following complexes, respectively are
$[\mathrm{Mn(CN)_6}]^{3-}$, $[\mathrm{CoF_6}]^{3-}$

(A) $\mathrm{sp^3d^2}$, $\mathrm{sp^3d^2}$
(B) $\mathrm{sp^3d^2}$, $\mathrm{d^2sp^3}$
(C) $\mathrm{d^2sp^3}$, $\mathrm{d^2sp^3}$
(D) $\mathrm{d^2sp^3}$, $\mathrm{sp^3d^2}$

Answer: (D) $\mathrm{d^2sp^3}$, $\mathrm{sp^3d^2}$ · The council's preliminary key

Q76 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The set with only ambidentate ligands in the following is

(A) $NO_3^{\ominus}$, $Br^{\ominus}$, $C_2O_4^{2\ominus}$
(B) $NO_2^{\ominus}$, $CN^{\ominus}$, $SCN^{\ominus}$
(C) $NO_2^{\ominus}$, $C_2O_4^{2\ominus}$, NH_3
(D) $SCN^{\ominus}$, CO, NH_3

Answer: (B) $NO_2^{\ominus}$, $CN^{\ominus}$, $SCN^{\ominus}$ · The council's preliminary key

Q77 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

The correct order about the number of unpaired electrons present in the following complexes is
$[\mathrm{Fe(CN)_6}]^{4-}$ (I) $[\mathrm{Fe(H_2O)_6}]^{2+}$ (II) $[\mathrm{Co(H_2O)_6}]^{2+}$ (III)

(A) II > III > I
(B) II > I > III
(C) I > II > III
(D) III > II > I

Answer: (A) II > III > I · The council's preliminary key

Q78 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

An element 'X' with atomic number 13 forms a complex of the type $[\mathrm{XCl(H_2O)_5}]^{2+}$. The covalency and oxidation state of X in it are respectively

(A) 5, +2
(B) 6, +2
(C) 5, +3
(D) 6, +3

Answer: (D) 6, +3 · The council's preliminary key

Q79 AP EAPCET 2022 · 5 Jul · Shift 1 MCQ

The homoleptic complex in the following is

(A) $[Co(NH_3)_4Br_2]^{\oplus}$
(B) $[Co(C_2O_4)\ (NH_3)_4]^{\oplus}$
(C) $[Co(NH_3)_6]^{3\oplus}$
(D) $[Co(CN)_4Cl_2]^{\ominus}$

Answer: (C) $[Co(NH_3)_6]^{3\oplus}$ · The council's preliminary key

Q80 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The crystal filed theory is successful in explaining which of the following?
I. Ligands as point charges; II. Formation and structures of complexes.
III. colour; IV. Magnetic properties; V. covalent character of metal-ligand bonding.

(A) I, II, III only
(B) II, III, IV only
(C) III, IV, V only
(D) II, IV, V only

Answer: (B) II, III, IV only · The council's preliminary key

Q81 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

The different types of bonds present in $\mathrm{CuSO_4 \cdot 5\,H_2O}$ are _____

(A) Only Ionic and Covalent
(B) Only Ionic, Covalent and Coordinate covalent
(C) Only Covalent, Coordinate covalent and Hydrogen bonding
(D) Ionic, Covalent, Coordinate covalent, Hydrogen bonding only

Answer: (D) Ionic, Covalent, Coordinate covalent, Hydrogen bonding only · The council's preliminary key

Q82 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Which of the following gives the maximum number of ions in aqueous solution?

(A) $Ni(CO)_4$
(B) $CoCl_3 \cdot 5\,H_2O$
(C) $PtCl_4 \cdot 6\,NH_3$
(D) $[Cr(NH_3)_3(NO_2)_3]$

Answer: (C) $PtCl_4 \cdot 6\,NH_3$ · The council's preliminary key

Q83 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

Match the following based on valence bond theory?
Hybridization | Geometry | Complex structure
(a) sp^3 | (i) Square planar | (p) $[Fe(CN)_6]^{3-}$
(b) d^2sp^3 | (ii) Tetrahedral | (q) $[ZnCl_4]^{2-}$
(c) dsp^2 | (iii) Octahedral | (r) $[Ni(NH_3)_4]^{2+}$
(s) $[Ag(CN)_2]^-$

(A) (a-ii-q), (b-iii-p), (c-i-r)
(B) (a-ii-q), (b-iii-r), (c-i-s)
(C) (a-i-q), (b-iii-p), (c-ii-r)
(D) (a-ii-r), (b-iii-s), (c-i-q)

Answer: (A) (a-ii-q), (b-iii-p), (c-i-r) · The council's preliminary key

Q84 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Which among the following doesn't form a white precipitate with $AgNO_3$ solution?

(A) $[Co(NH_3)_6]Cl_3$
(B) $[Co(NH_3)_5Cl]Cl_2$
(C) $[Co(NH_3)_4Cl_2]Cl_2$ (sic)
(D) $[Co(NH_3)_3Cl_3]$

Answer: (D) $[Co(NH_3)_3Cl_3]$ · The council's preliminary key

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Q85 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Which among the following is most paramagnetic?

(A) $[\mathrm{Cr(H_2O)_6}]^{3+}$
(B) $[\mathrm{Fe(H_2O)_6}]^{2+}$
(C) $[\mathrm{Cu(H_2O)_6}]^{2+}$
(D) $[\mathrm{Zn(H_2O)_2}]^{2+}$ (sic)

Answer: (B) $[\mathrm{Fe(H_2O)_6}]^{2+}$ · The council's preliminary key

Q86 AP EAPCET 2021 · 24 Aug · Shift 2 MCQ

The geometries of $[Ni(CO)_4]$, $[PtCl_4]^{2-}$ and $[Co(NH_3)_6]^{3+}$ respectively are:

(A) Tetrahedral, Tetrahedral and Octahedral
(B) Tetrahedral, Square planar and Square pyramidal
(C) Square planar, Square planar and Octahedral
(D) Tetrahedral, Square planar and Octahedral

Answer: (D) Tetrahedral, Square planar and Octahedral · The council's preliminary key

Q87 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

Atomic number of Cr, Fe and Co are 24, 26 and 27 respectively. Which of the following inner orbital octahedral complexes are paramagnetic?

(A) $[\mathrm{Co(NH_3)_6}]^{3+}$
(B) $[\mathrm{Co(CN)_3}]^{3+}$ (sic)
(C) $[\mathrm{Fe(CN)_6}]^{4-}$
(D) $[\mathrm{Cr(CN)_6}]^{3-}$

Answer: (D) $[\mathrm{Cr(CN)_6}]^{3-}$ · The council's preliminary key

Q88 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

Which of the following complexes formed by Nickel is tetrahedral and paramagnetic?

(A) $[Ni(CN)_4]^{2-}$
(B) $[Ni(CO)_4]$
(C) $[Ni(Cl)_4]^{2-}$
(D) $[Ni(NH_3)_6]^{2+}$

Answer: (C) $[Ni(Cl)_4]^{2-}$ · The council's preliminary key

Q89 AP EAPCET 2021 · 19 Aug · Shift 1 MCQ

What is coordination of the metal in $[\mathrm{Co(en)_2Cl_2}]$?

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(A) 3
(B) 4
(C) 5
(D) 6

Answer: (D) 6 · The council's preliminary key

Q90 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The correct order of field strength of the following ligands is

(A) $N^{3-} > C_2O_4^{2-} > NH_3 > CO$
(B) $N^{3-} > NH_3 > C_2O_4^{2-} > CO$
(C) $CO > NH_3 > C_2O_4^{2-} > N^{3-}$
(D) $CO > N^{3-} > NH_3 > C_2O_4^{2-}$

Answer: (C) $CO > NH_3 > C_2O_4^{2-} > N^{3-}$ · The council's preliminary key

Q91 TS EAMCET 2021 · 6 Aug · Shift 2 MCQ

The Wilkinson catalyst is

(A) $[(PPh_3)_2\,RhCl_2]$
(B) $[(PPh_3)_3\,RhCl]$
(C) $[(PPh_3)\,RhCl_3]$
(D) $[(PPh_3)_4\,RhCl]$

Answer: (B) $[(PPh_3)_3\,RhCl]$ · The council's preliminary key

Q92 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The number of H_2O molecules participating in hydrogen bonding in $CuSO_4 \cdot 5H_2O$ is/are

(A) 4
(B) 2
(C) 1
(D) 0

Answer: (C) 1 · The council's preliminary key

Q93 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

The magnetic moment of the high spin complex is 5.92 BM. What is the electronic configuration?

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(A) $t_2g^3\, eg^1$
(B) $t_2g^4\, eg^2$
(C) $t_2g^3\, eg^2$
(D) $t_2g^5\, eg^0$

Answer: (C) $t_2g^3\, eg^2$ · The council's preliminary key

Q94 TS EAMCET 2021 · 5 Aug · Shift 1 MCQ

According to Valence Bond Theory, the number of unpaired electrons present in $[MnCl_6]^{3-}$, $[Fe(CN)_6]^{3-}$ and $[Co(C_2O_4)_3]^{3-}$, respectively, are

(A) 0 ; 5 ; 0
(B) 4 ; 3 ; 2
(C) 4 ; 1 ; 0
(D) 5 ; 4 ; 3

Answer: (C) 4 ; 1 ; 0 · The council's preliminary key

Q95 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The reaction of aqueous $[Ni(H_2O)_6]^{2+}$ is performed by the addition of a bidentate ligand ethane-1, 2, diamine (en)
Match the following
$[Ni(H_2O)_6]^{2+}$: en molar ratio Colour of the product
A) 1 : 1 I) Pale blue
B) 1 : 2 II) Blue / Purple
C) 1 : 3 III) Violet
IV) Green
The correct match is

(A) A-I, B-II, C-III
(B) A-II, B-III, C-IV
(C) A-III, B-I, C-II
(D) A-IV, B-I, C-III

Answer: (A) A-I, B-II, C-III · The council's preliminary key

Q96 TS EAMCET 2021 · 5 Aug · Shift 2 MCQ

The number of bridged CO ligands present in $Fe_2(CO)_9$ and $CO_2(CO)_8$, respectively, are

(A) 2, 1
(B) 2, 2
(C) 2, 3
(D) 3, 2

Answer: (D) 3, 2 · The council's preliminary key

Q97 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

The oxidation number of central metal in $[Pt(NH_3)_2Cl(NO_2)]$ and $[CoCl_2(en)_2]^{\oplus}$, respectively, are

(A) +2 ; +1
(B) +2 ; +2
(C) +2 ; +3
(D) +3 ; +2

Answer: (C) +2 ; +3 · The council's preliminary key

Q98 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

Match the following
Column-I (Complex):
A) $[Ni(CN)_4]^{2-}$
B) $[Ni(CO)_4]$
C) $[NiCl_4]^{2-}$
Column-II (Structure / Geometry / Property):
I) Tetrahedral / Paramagnetic
II) Tetrahedral / Diamagnetic
III) Square planar / Diamagnetic
The correct match is

(A) A-II, B-I, C-III
(B) A-I, B-II, C-III
(C) A-III, B-II, C-I
(D) A-III, B-I, C-II

Answer: (C) A-III, B-II, C-I · The council's preliminary key

Q99 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The oxidation state and covalency of Al in $[AlCl(H_2O)_5]^{2+}$ are_____ and _____ respectively

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(A) -3 & 3
(B) $+3$ & 3
(C) -3 & 6
(D) $+3$ & 6

Answer: (D) $+3$ & 6 · The council's preliminary key

Q100 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The oxidation state of Co in $K[Co(CO)_4]$ is

(A) $+3$
(B) -3
(C) $+1$
(D) -1

Answer: (D) -1 · The council's preliminary key

Q101 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

$\mathrm{Cr(CO)}_x$ find the value of x?

(A) 4
(B) 6
(C) 2
(D) 1

Answer: (B) 6 · The council's preliminary key

Q102 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

The oxidation state and covalency of Al in $[AlCl(H_2O)_5]^{2+}$ respectively are

(A) $+3$ & 6
(B) $+6$ & 3
(C) $+1$ & 2
(D) -2 & 1

Answer: (A) $+3$ & 6 · The council's preliminary key

Q103 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

Which complex among the following has the highest value of spin only magnetic moment
$[\mathrm{Fe\,(CN)_6}]^{3-}$, $[\mathrm{Fe\,(CN)_6}]^{4-}$, $[\mathrm{Ni\,(CN)_4}]^{2-}$, $[\mathrm{Ni\,Cl_4}]^{2-}$

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(A) $[\mathrm{Fe}\,(\mathrm{CN})_6]^{3-}$
(B) $[\mathrm{Fe}\,(\mathrm{CN})_6]^{4-}$
(C) $[\mathrm{Ni}\,(\mathrm{CN})_4]^{2-}$
(D) $[\mathrm{Ni}\,\mathrm{Cl}_4]^{2-}$

Answer: (D) $[\mathrm{Ni}\,\mathrm{Cl}_4]^{2-}$ · Checked by our team

Q104 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Which of the following complex ion shows geometrical isomerism?

(A) $[Cr(H_2O)_4Cl_2]^+$
(B) $[Pt(NH_3)_3Cl]^+$
(C) $[Co(NH_3)_6]^{+3}$
(D) $[Co(CN)_5(NC)]^{3-}$

Answer: (A) $[Cr(H_2O)_4Cl_2]^+$ · The council's preliminary key

Q105 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Oxidation number of Cr in $[Cr(CO)_6]$ is

(A) $+6$
(B) -6
(C) $+3$
(D) 0

Answer: (D) 0 · The council's preliminary key

Q106 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The correct order for wavelengths of absorption in the visible region for the following complexes will be

(A) $[\mathrm{Ni(NH_3)_6}]^{2+} < [\mathrm{Ni(H_2O)_6}]^{2+} < [\mathrm{Ni(NO_2)_6}]^{4-}$
(B) $[\mathrm{Ni(NO_2)_6}]^{4-} < [\mathrm{Ni(NH_3)_6}]^{2+} < [\mathrm{Ni(H_2O)_6}]^{2+}$
(C) $[\mathrm{Ni(NH_3)_6}]^{2+} < [\mathrm{Ni(NO_2)_6}]^{4-} < [\mathrm{Ni(H_2O)_6}]^{2+}$
(D) $[\mathrm{Ni(NO_2)_6}]^{4-} < [\mathrm{Ni(H_2O)_6}]^{2+} < [\mathrm{Ni(NH_3)_6}]^{2+}$

Answer: (B) $[\mathrm{Ni(NO_2)_6}]^{4-} < [\mathrm{Ni(NH_3)_6}]^{2+} < [\mathrm{Ni(H_2O)_6}]^{2+}$ · The council's preliminary key

Q107 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

Which among the following complexes can named "Dichlorido -bis- (ethane- 1, 2 -diamine) - platinum (IV) nitrate"

(A) $[Pt\,Cl_2\,(en)_2]\,(NO_3)_2$
(B) $[Pt\,Cl_2\,(en)_2]\,(NO_3)_4$
(C) $[Pt\,Cl_2\,(en)_2(NO_3)]$
(D) $[Pt\,Cl_2\,(en)_2(NO_2)]$

Answer: (A) $[Pt\,Cl_2\,(en)_2]\,(NO_3)_2$ · The council's preliminary key

Q108 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

Which of the following outer octahedral complexes have same number of unpaired electrons?
1) $[MnCl_6]^{3-}$
2) $[FeF_6]^{3-}$
3) $[CoF_6]^{3-}$
4) $[Ni(NH_3)_6]^{2+}$

(A) 1 & 3
(B) 1 & 2
(C) 3 & 4
(D) 2 & 3

Answer: (A) 1 & 3 · The council's preliminary key

Q109 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

Among the following Cr(III) complexes, which one will have the highest octahedral crystal field splitting?

(A) $[CrF_6]^{3-}$
(B) $[Cr(H_2O)_6]^{3+}$
(C) $[Cr(NH_3)_6]^{3+}$
(D) $[Cr(CN)_6]^{3-}$

Answer: (D) $[Cr(CN)_6]^{3-}$ · Official TGCHE final key

Q110 TS EAMCET 2020 · 14 Sep · Shift 2 MCQ

Which compound is zero valent metal complex?

(A) $[Cu(NH_3)_4]SO_4$
(B) $[Pt(NH_3)_2Cl_2]$
(C) $[Ni(CO)_4]$
(D) $K_3[Fe(CN)_6]$

Answer: (C) $[Ni(CO)_4]$ · Official TGCHE final key

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Q111 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

Coordination number of Fe in the complexes $[Fe(CN)_6]^{4-}$, $[Fe(CN)_6]^{3-}$ and $[FeCl_4]^-$ would be respectively

(A) 2, 3, 3
(B) 6, 6, 4
(C) 6, 3, 3
(D) 6, 4, 6

Answer: (B) 6, 6, 4 · Official TGCHE final key

Q112 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

Which of the following correctly represents the order of ligands in spectrochemical series?

(A) $Br^- < Cl^- < NH_3 < H_2O$
(B) $I^- < Br^- < H_2O < [OH]^-$
(C) $F^- < Cl^- < H_2O < NH_3$
(D) $I^- < Cl^- < H_2O < en$

Answer: (D) $I^- < Cl^- < H_2O < en$ · Official TGCHE final key

Q113 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

The correct match for complex with its magnetic behaviour in the following is

(A) $[Zn(OH_2)_6]^{2+}$; paramagnetic
(B) $[Co(NH_3)_6]^{3+}$; diamagnetic
(C) $[CoF_6]^{3-}$; diamagnetic
(D) $[V(OH_2)_6]^{2+}$; diamagnetic

Answer: (B) $[Co(NH_3)_6]^{3+}$ **; diamagnetic** · Official TGCHE final key

Q114 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

The coordination complex $[Co(OH_2)_6]^{2+}$ has one unpaired electron, which of the following statements are true?
(i) The complex is octahedral.
(ii) The complex is an outer orbital complex.
(iii) The complex is diamagnetic.

(A) (i) and (iii) only
(B) (i), (ii) and (iii)
(C) (i) and (ii) only
(D) (ii) and (iii) only

Answer: (C) (i) and (ii) only · Official TGCHE final key

Q115 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Which sets of the d- orbitals are directly oriented towards the ligands in octahedral coordination compounds?

(A) $d_{x^2-y^2}$ and d_{xy}
(B) d_{z^2} and d_{yz}
(C) d_{xz} and d_{xy}
(D) $d_{x^2-y^2}$ and d_{z^2}

Answer: (D) $d_{x^2-y^2}$ and d_{z^2} · Official TGCHE final key

Q116 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

Which one of the following has the highest molar conductivity?

(A) Penta carbonyl iron(0)
(B) Hexaaqua-chromium (III) bromide
(C) Tetraamine-dichloro-cobalt (III) chloride
(D) potassium hexacyanoferrate (II)

Answer: (D) potassium hexacyanoferrate (II) · Official TGCHE final key

Q117 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

In the octahedral crystal field, the correct order of splitting in Cr^{3+} complexes for I^-, H_2O, NH_3 and CN^- is

(A) $CN^- < NH_3 < H_2O < I^-$
(B) $NH_3 < H_2O < I^- < CN^-$
(C) $CN^- < I^- < H_2O < NH_3$
(D) $I^- < H_2O < NH_3 < CN^-$

Answer: (D) $I^- < H_2O < NH_3 < CN^-$ · Official TGCHE final key

Q118 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

The coordination number and oxidation state of Cr in $K_3[Cr(C_2O_4)_3]$ are respectively

(A) 3 and 3
(B) 3 and 0
(C) 6 and 3
(D) 4 and 2

Answer: (C) 6 and 3 · Official TGCHE final key

Q119 TS EAMCET 2019 · 6 May · Shift 1 MCQ

How many water molecules present in $CuSO_4 \cdot 5H_2O$ are hydrogen bonded?

(A) 5
(B) 1
(C) 4
(D) 2

Answer: (B) 1 · Official TGCHE final key

Q120 TS EAMCET 2019 · 6 May · Shift 1 MCQ

Which one of the following is tris (ethane-1, 2-diammine) cobalt (III) sulphate?

(A) $[Co(en)_2]_2(SO_4)_3$
(B) $[Co(en)_2\,SO_4]$
(C) $[Co(en)_3]SO_4$
(D) $[Co(en)_3]_2(SO_4)_3$

Answer: (D) $[Co(en)_3]_2(SO_4)_3$ · Official TGCHE final key

Q121 TS EAMCET 2019 · 4 May · Shift 1 MCQ

The name of the compound $([Ag(NH_3)_2][Ag(CN)_2])$ is

(A) dicyanoargentate (I) diammino (I) silver.
(B) diamino silver dicyanate
(C) diammine silver (I) dicyanoargentate (I)
(D) silver diamminedicyano Argentate

Answer: (C) diammine silver (I) dicyanoargentate (I) · Official TGCHE final key

Q122 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The correct order of the increasing magnetic moments for the following ions is
$NiCl_4^{2-}$; $Fe(H_2O)_6^{2+}$; $Ni(CN)_4^{2-}$; $Cu(H_2O)_6^{2+}$

(A) $Ni(CN)_4^{2-} < Cu(H_2O)_6^{2+} < NiCl_4^{2-} < Fe(H_2O)_6^{2+}$
(B) $NiCl_4^{2-} < Ni(CN)_4^{2-} < Fe(H_2O)_6^{2+} < Cu(H_2O)_6^{2+}$
(C) $Ni(CN)_4^{2-} < NiCl_4^{2-} < Cu(H_2O)_6^{2+} < Fe(H_2O)_6^{2+}$
(D) $Ni(CN)_4^{2-} < Cu(H_2O)_6^{2+} < Fe(H_2O)_6^{2+} < NiCl_4^{2-}$

Answer: (A) $Ni(CN)_4^{2-} < Cu(H_2O)_6^{2+} < NiCl_4^{2-} < Fe(H_2O)_6^{2+}$ · Official TGCHE final key

Q123 TS EAMCET 2019 · 3 May · Shift 1 MCQ

Which one of the following complex has the highest magnitude of Crystal Field Splitting Energy (Δ_0) ?

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(A) $[Co(H_2O)_6]^{3+}$
(B) $[Co(NH_3)_6]^{3+}$
(C) $[Co(C_2O_4)_3]^{3-}$
(D) $[CoF_6]^{3-}$

Answer: (B) $[Co(NH_3)_6]^{3+}$ · Official TGCHE final key

Q124 TS EAMCET 2019 · 3 May · Shift 2 MCQ

The IUPAC name of the compound $(NH_4)_2\,[Ni\,(C_2O_4)_2\,(H_2O)_2]$ is

(A) Nickel (II) diammino dioxalato diaquate
(B) Dioxalato diammino diaquo nickelate (III)
(C) Ammonium diaquabis (oxalato) nickelate (II)
(D) Ni dioxalato diaqua (II) amminate

Answer: (C) Ammonium diaquabis (oxalato) nickelate (II) · Official TGCHE final key

Q125 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

The stepwise stability constants of a complex are given below. What is its overall reaction stability constant (β_4)?
$M + L \rightleftarrows ML;\ K_1 = 1.0 \times 10^4$
$ML + L \rightleftarrows ML_2;\ K_2 = 1.0 \times 10^3$
$ML_2 + L \rightleftarrows ML_3;\ K_3 = 1.0 \times 10^3$
$ML_3 + L \rightleftarrows ML_4;\ K_4 = 1.0 \times 10^2$
(Overall reaction : $M + 4L \rightleftarrows ML_4$)

(A) 1.0×10^{12}
(B) 12.1×10^3
(C) 1.0×10^6
(D) 1.0×10^8

Answer: (A) 1.0×10^{12} · Official APSCHE final key

Q126 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

Which of the following correctly represents Copper sulphate pentahydrate?

Question Number : 131 Question Id : 1874634451 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following correctly represents Copper sulphate pentahydrate?

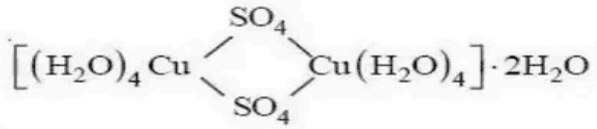
క్రింది వాటిలో ఏది కాపర్ సల్ఫేట్ పెంటాహైడ్రేట్‌ను సరిగ్గా వ్యక్తపరుచును?

Options :

1. $[Cu(SO_4)(H_2O)_3]2H_2O$

2. $[Cu(SO_4)(H_2O)_5]$

3. $[Cu(H_2O)_4]SO_4 \cdot H_2O$

4. 

(A) $[Cu(SO_4)(H_2O)_3]2H_2O$

(B) $[Cu(SO_4)(H_2O)_5]$

(C) $[Cu(H_2O)_4]SO_4 \cdot H_2O$

(D) *see figure*

Answer: (C) $[Cu(H_2O)_4]SO_4 \cdot H_2O$ · Official APSCHE final key

Q127 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

If the crystal field splitting energy of a tetrahedral complex (Δ_t) of the type $[ML_4]^{n+}$ is x eV, what is the crystal field splitting energy with respect to an octahedral complex, $[ML_6]^{n+}$?

(A) $\frac{9x}{4}$ eV

(B) $\frac{9x}{8}$ eV

(C) $\frac{4x}{9}$ eV

(D) $\frac{4x}{5}$ eV

Answer: (A) $\frac{9x}{4}$ eV · Official APSCHE final key

Q128 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

The magnetic moment of which of the following complexes is maximum?

(A) $[Co(NH_3)_6]^{3+}$
(B) $[Ni(CN)_4]^{2-}$
(C) $[CoF_6]^{3-}$
(D) $[NiCl_4]^{2-}$

Answer: (C) $[CoF_6]^{3-}$ · Official APSCHE final key

Q129 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

A metal ion (M^{n+}) forms octahedral $[ML_6]^{n+}$ and tetrahedral $[ML_4]^{n+}$ complexes with same ligand at different experimental conditions. The Δ_o of $[ML_6]^{n+}$ is 3 eV. What is the energy in eV of e_g orbital of $[ML_4]^{n+}$ complex?

(A) $\frac{4}{5}$
(B) $-\frac{4}{5}$
(C) $\frac{8}{15}$
(D) $-\frac{8}{15}$

Answer: (B) $-\frac{4}{5}$ · Official APSCHE final key

Q130 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The Δ_0 of a coordination complex of a metal ion ($3d^1$) is 1000 $kJ\,mol^{-1}$. If the energy of t_{2g} orbitals is $-400\ kJ\,mol^{-1}$, the energy (in $kJ\,mol^{-1}$) of e_g orbitals is

(A) -600
(B) 600
(C) 1000
(D) 400

Answer: (B) 600 · Official APSCHE final key

Q131 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

Which of the following complex ions is most stable?

(A) $[Co(H_2O)_6]^{3+}$
(B) $[Co(CN)_6]^{3-}$
(C) $[Co(C_2O_4)_3]^{3-}$
(D) $[CoF_6]^{3-}$

Answer: (B) $[Co(CN)_6]^{3-}$ · Official APSCHE final key

Q132 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The wavelengths of light absorbed by the complexes $[Ni(H_2O)_6]^{2+}$, $[Ni(en)_3]^{2+}$, $[Ni(H_2O)_4en]^{2+}$ are $\lambda_1, \lambda_2, \lambda_3$ respectively. The correct order of wavelengths is

(A) $\lambda_1 > \lambda_2 > \lambda_3$
(B) $\lambda_3 > \lambda_2 > \lambda_1$
(C) $\lambda_1 > \lambda_3 > \lambda_2$
(D) $\lambda_2 > \lambda_3 > \lambda_1$

Answer: (C) $\lambda_1 > \lambda_3 > \lambda_2$ · Official APSCHE final key

Q133 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

Which one of the following coordination complexes exhibits the lowest value of magnetic moment (in B.M.)?

(A) $[Cr(CN)_6]^{-3}$
(B) $[Mn(CN)_6]^{-3}$
(C) $[Fe(CN)_6]^{-3}$
(D) $[Co(CN)_6]^{-3}$

Answer: (D) $[Co(CN)_6]^{-3}$ · Official APSCHE final key

Q134 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Ethylenediamine (en)

(A) Monodendate ligand and can occupy one position in coordination polyhedron
(B) Bidendate ligand and can occupy two positions in coordination polyhedron
(C) Polydendate ligand
(D) Tridendate ligand and occupy three positions in coordination polyhedron

Answer: (B) Bidendate ligand and can occupy two positions in coordination polyhedron · The council's preliminary key

Q135 TS EAMCET 2018 · 7 May · Shift 1 MCQ

Which one of the following is square planar in structure and has diamagnetic property?

(A) $[Ni(H_2O)_6]^{2+}$
(B) $[Ni(CO)_4]$
(C) $[Ni(CN)_4]^{2-}$
(D) $[NiCl_4]^{2-}$

Answer: (C) $[Ni(CN)_4]^{2-}$ · The council's preliminary key

Q136 TS EAMCET 2018 · 5 May · Shift 1 MCQ

The electronic configuration of Cr in $Cr(CO)_6$ as calculated using Crystal Field Theory is

(A) $t_{2g}^4 e_g^0$
(B) $t_{2g}^3 e_g^1$
(C) $t_{2g}^6 e_g^0$
(D) $t_{2g}^4 e_g^2$

Answer: (C) $t_{2g}^6 e_g^0$ · The council's preliminary key

Q137 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Identify the number of complexes that are optically active
$[Co(en)_3]^{3+}$; $[Co(NH_3)_4Cl_2]^+$; $[CoCl_2(en)_2]$; $[Co(NH_3)_3(NO_2)_3]$

(A) 0
(B) 1
(C) 2
(D) 3

Options (2) or (3) were accepted. More than one answer was accepted. · The council's preliminary key

Q138 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The covalency of Al in $[AlCl(H_2O)_5]^{2+}$ is

(A) 3
(B) 5
(C) 1
(D) 6

Answer: (D) 6 · The council's preliminary key

Q139 TS EAMCET 2018 · 4 May · Shift 1 MCQ

Which of the following molecules / ions can exhibit isomerism?
A) Tetrahedral $NiCl_2Br_2^{2-}$
B) Square planar $Pt(NH_3)_2Cl_2$
C) Octahedral $Co(NH_3)_3Cl_3$
D) Square planar $Pd(NH_3)_3Br^+$
E) Octahedral $Co(en)_3^{3+}$
where, en = 1, 2 - di amino ethane

(A) A, B, C, D
(B) B, C, E
(C) B, C, D
(D) A, B, C, E

Answer: (B) B, C, E · The council's preliminary key

Q140 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Aqueous ammonia readily dissolves AgCl because

(A) NH_3 molecules readily solvate Ag^+ and Cl^- ions

(B) NH_3 molecules abstract chloride from AgCl to form NH_4Cl

(C) A soluble complex $Ag(NH_3)_6^+$ is formed

(D) A soluble complex $Ag(NH_3)_2^+$ is formed

Answer: (D) A soluble complex $Ag(NH_3)_2^+$ is formed · The council's preliminary key

Q141 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Consider the complexes

a) $[Pd(NH_3)_2ClBr]$

b) $[Pd(NH_3)_2Cl_2]$

c) $[Pd(en)Cl_2]$

d) $[Pd(en)ClBr]$

e) $[Pd(en)_2]Cl_2$

(en = ethylenediamine)

The total number of geometrical isomers of (a) is same as the total number of geometrical isomers of

(A) b

(B) c

(C) d

(D) e

Answer: (A) b · The council's preliminary key

Q142 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

The green coloured complex ion of nickel in its aqueous solution is

(A) $[Ni(en)_3]^{2+}$

(B) $[Ni(H_2O)_2(en)_2]^{2+}$

(C) $[Ni(H_2O)_4(en)]^{2+}$

(D) $[Ni(H_2O)_6]^{2+}$

Answer: (D) $[Ni(H_2O)_6]^{2+}$ · The council's preliminary key

Q143 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

Identify the complex which exhibits optical isomerism.

(A) $Co(NH_3)_5(SO_4)Br$
(B) $Co(NH_3)_5Cl_3$
(C) $Co(en)_3Cl_3$
(D) $Co(NH_3)_4(NO_2)Cl$

Answer: (C) $Co(en)_3Cl_3$ · The council's preliminary key

Q144 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

Arrange the following ligands in the order of increasing field strength
I) H_2O
II) CO
III) NH_3
IV) I^-
V) F^-

(A) IV < V < I < III < II
(B) IV < V < III < II < I
(C) V < IV < III < I < II
(D) IV < I < V < II < III

Answer: (A) IV < V < I < III < II · The council's preliminary key

Q145 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

A coordination compound is made of Co^{3+}, NH_3 and Cl^-. 0.1 M solution of this complex when treated with excess silver nitrate gave no precipitate. The formula of the complex and secondary valency of metal are respectively.

(A) $[Co(NH_3)_3Cl_3]$, 6
(B) $[Co(NH_3)_5Cl]Cl_2$, 6
(C) $[Co(NH_3)_3Cl_3]$, 3
(D) $[Co(NH_3)_4Cl_2]Cl$, 6

Answer: (A) $[Co(NH_3)_3Cl_3]$, **6** · The council's preliminary key

Q146 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

Crystal field splitting energies for octahedral (Δ_o) and tetrahedral (Δ_t) geometries caused by the same ligands are related through the expression

(A) $\Delta_o = \Delta_t$
(B) $4\Delta_o = 9\Delta_t$
(C) $9\Delta_o = 4\Delta_t$
(D) $\Delta_o = 2\Delta_t$

Answer: (B) $4\Delta_o = 9\Delta_t$ · The council's preliminary key

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Q147 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The hybridisation of atom 'X' with atomic number 27 in $[XF_6]^{3-}$ is

(A) dsp^2
(B) d^2sp^3
(C) sp^3d^2
(D) sp^3

Answer: (C) sp^3d^2 · The council's preliminary key

Q148 TS EAMCET 2017 · 12 May · Offline MCQ

Which one of the following statement is correct for d^4 ions [P = pairing energy]

(A) When $\Delta_0 > P$, low-spin complex form
(B) When $\Delta_0 < P$, low-spin complex form
(C) When $\Delta_0 > P$, high-spin complex form
(D) When $\Delta_0 < P$, both high-spin and low-spin complexes form

Answer: (A) When $\Delta_0 > P$, low-spin complex form · The council's preliminary key

Q149 AP EAMCET 2017 · 26 Apr · Shift 1 MCQ

Identify, from the following, the diamagnetic, tetrahedral complex

(A) $[Ni(CN)_4]^{2-}$
(B) $[Ni(Cl)_4]^{2-}$
(C) $[Ni(CO)_4]$
(D) $[Co(C_2O_4)_3]^{3-}$

Answer: (C) $[Ni(CO)_4]$ · The council's preliminary key

Q150 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The magnetic moment of $[CoF_6]^{3-}$ as per spin only formula (in BM) is

(A) 3.87
(B) 5.92
(C) 2.84
(D) 4.90

Answer: (D) 4.90 · The council's preliminary key

Q151 AP EAMCET 2017 · 26 Apr · Shift 2 MCQ

The electronic configuration of a metal ion in its complex is $[Ar]3d^4$. For this metal complex, $\Delta_0 < P$ (P = energy required for electron pairing in a single orbital). The distribution of electrons in the complex.

(A) $(t_{2g})^3\,(e_g)^1$
(B) $(t_{2g})^2\,(e_g)^2$
(C) $(t_{2g})^4\,(e_g)^0$
(D) $(t_{2g})^1\,(e_g)^3$

Answer: (A) $(t_{2g})^3\,(e_g)^1$ · The council's preliminary key

Q152 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

Identify the correctly matched set from the following:

(A) $[NiCl_4]^{2-}$ - Tetrahedral - Paramagnetic
(B) $[Ni(CO)_4]$ - Tetrahedral - Paramagnetic
(C) $[Ni(CN)_4]^{2-}$ - Square planar - Paramagnetic
(D) $[NiCl_4]^{2-}$ - Tetrahedral - Diamagnetic

Answer: (A) $[NiCl_4]^{2-}$ **- Tetrahedral - Paramagnetic** · The council's preliminary key

Q153 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The complex which does **not** exhibit geometrical isomerism is

(A) $[Co(NH_3)_5Cl]Cl_2$
(B) $[Co(NH_3)_4Cl_2]$
(C) $[Co(NH_3)_3(NO_2)_3]$
(D) $[Co(en)_2Cl_2]Cl$

Answer: (A) $[Co(NH_3)_5Cl]Cl_2$ · The council's preliminary key

Q154 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

The hybridisation of Ni, shape and number of unpaired electrons present in $[NiCl_4]^{2-}$ are respectively

(A) sp^3, tetrahedral, 2
(B) dsp^2, tetrahedral, 2
(C) sp^3, tetrahedral, 1
(D) sp^3, square planar, 2

Answer: (A) sp^3**, tetrahedral, 2** · The council's preliminary key

Q155 TS EAMCET 2016 · 15 May · Offline MCQ

Which one of the following **does not** exhibit geometrical isomerism ?

(A) Octahedral complex with formula $[MX_2L_4]$
(B) Square planar complex with formula $[MX_2L_2]$
(C) Tetrahedral complex with formula $[MABXL]$
(D) Octahedral complex with formula $[MX_2(L-L)_2]$

Answer: (C) Tetrahedral complex with formula $[MABXL]$ · Official TGCHE final key

Q156 AP EAMCET 2016 · 29 Apr · Offline MCQ

Select the <u>correct</u> IUPAC name of $[Co(NH_3)_5(CO_3)]Cl$

(A) Penta ammonia carbonate cobalt (III) chloride
(B) Pentammine carbonate cobalt chloride
(C) Pentammine carbonato cobalt (III) chloride
(D) Cobalt (III) pentammine carbonate chloride

Answer: (C) Pentammine carbonato cobalt (III) chloride · The council's preliminary key

Q157 AP EAMCET 2014 · 22 May · Offline MCQ

Match the following :
List-I: A) sp^3 B) dsp^2 C) sp^3d^2 D) d^2sp^3
List-II: I) $[Co(NH_3)_6]^{3+}$ II) $[Ni(CO)_4]$ III) $[Pt(NH_3)_2Cl_2]$ IV) $[CoF_6]^{3-}$ V) $[Fe(CO)_5]$
The correct answer is :

(A) A-III, B-II, C-IV, D-I
(B) A-V, B-II, C-IV, D-III
(C) A-II, B-III, C-IV, D-I
(D) A-II, B-III, C-I, D-V

Answer: (C) A-II, B-III, C-IV, D-I · The council's preliminary key

Q158 AP EAMCET 2014 · 22 May · Offline MCQ

The oxidation state and covalency of Al in $[AlCl(H_2O)_5]^{2+}$ are respectively

(A) +6, 6
(B) +3, 6
(C) +2, 6
(D) +3, 3

Answer: (B) +3, 6 · The council's preliminary key

Q159 AP EAMCET 2013 · 10 May · Offline MCQ

A compound absorbs light in the wavelength region 490-500 nm. Its complementary colour is :

(A) Red
(B) Blue
(C) Orange
(D) Blue-green

Answer: (A) Red · The council's preliminary key

Q160 AP EAMCET 2012 · 12 May · Offline MCQ

A coordinate complex contains Co^{3+}, Cl^{-} and NH_3. When dissolved in water, one mole of this complex gave a total of 3 moles of ions. The complex is

(A) $[Co(NH_3)_6]Cl_3$
(B) $[Co(NH_3)_5Cl]Cl_2$
(C) $[Co(NH_3)_4Cl_2]Cl$
(D) $[Co(NH_3)_3Cl_3]$

Answer: (B) $[Co(NH_3)_5Cl]Cl_2$ · Official APSCHE final key

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