

PART 1 - CHEMISTRY

Topic : Coordination compounds

SECTION-A : (Maximum Marks : 8)

This section contains **TWO** questions.

Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.

For each question, choose the option corresponding to the correct answer.

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If **ONLY** the correct option is chosen;

Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);

Negative Marks : -1 In all other cases.

1. The correct order of the wavelength maxima of the absorption band in the ultraviolet-visible region for the given complexes is [JEE Advanced 2025 Paper 1]

- (A) $[\text{Co}(\text{CN})_6]^{3-} < [\text{Co}(\text{NH}_3)_6]^{3+} < [\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+} < [\text{Co}(\text{NH}_3)_5(\text{Cl})]^{2+}$
 (B) $[\text{Co}(\text{NH}_3)_5(\text{Cl})]^{2+} < [\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+} < [\text{Co}(\text{NH}_3)_6]^{3+} < [\text{Co}(\text{CN})_6]^{3-}$
 (C) $[\text{Co}(\text{CN})_6]^{3-} < [\text{Co}(\text{NH}_3)_5(\text{Cl})]^{2+} < [\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+} < [\text{Co}(\text{NH}_3)_6]^{3+}$
 (D) $[\text{Co}(\text{NH}_3)_6]^{3+} < [\text{Co}(\text{CN})_6]^{3-} < [\text{Co}(\text{NH}_3)_5(\text{Cl})]^{2+} < [\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$

Scan or tap for the full solution



2. Among the following options, select the option in which each complex in Set-I shows geometrical isomerism and the two complexes in Set-II are ionization isomers of each other.

[en = $\text{H}_2\text{NCH}_2\text{CH}_2\text{NH}_2$]

[JEE Advanced 2024 Paper 1]

- (A) Set-I: $[\text{Ni}(\text{CO})_4]$ and $[\text{PdCl}_2(\text{PPh}_3)_2]$
 Set-II: $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Cl}$
 (B) Set-I: $[\text{Co}(\text{en})(\text{NH}_3)_2\text{Cl}_2]$ and $[\text{PdCl}_2(\text{PPh}_3)_2]$
 Set-II: $[\text{Co}(\text{NH}_3)_6][\text{Cr}(\text{CN})_6]$ and $[\text{Cr}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$
 (C) Set-I: $[\text{Co}(\text{NH}_3)_3(\text{NO}_2)_3]$ and $[\text{Co}(\text{en})_2\text{Cl}_2]$
 Set-II: $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ and $[\text{Co}(\text{NH}_3)_5(\text{SO}_4)]\text{Cl}$
 (D) Set-I: $[\text{Cr}(\text{NH}_3)_5\text{Cl}]\text{Cl}_2$ and $[\text{Co}(\text{en})(\text{NH}_3)_2\text{Cl}_2]$
 Set-II: $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$ and $[\text{Cr}(\text{H}_2\text{O})_5\text{Cl}]\text{Cl}_2 \cdot \text{H}_2\text{O}$

Scan or tap for the full solution



Space for Rough Work

SECTION-B : (Maximum Marks : 24)

This section contains **SIX** questions.

The answer to each question is a **NUMERICAL VALUE**.

For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -0.30, 30.27, -127.30) in the place designated to enter the answer.

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If ONLY the correct answer is entered;

Zero Marks : 0 In all other cases.

3. The total number of all possible isomers for the square planar complex with formula $K[M(NCS)(NO_2)(gly)]$ is ____.

(M = metal ion and gly = $NH_2CH_2COO^-$)

[JEE Advanced 2026 Paper 1]

Scan or tap for the
full solution



4. Consider that the coordinating atoms of the ligands in $cis-[Co(NH_3)_4Cl_2]Cl$ and $mer-[Co(NH_3)_3Cl_3]$ octahedral complexes are at the vertices of an octahedron. The sum of total number of the triangular faces in both the complexes having one N atom and two Cl atoms at their corners is ____.

[JEE Advanced 2026 Paper 2]

Scan or tap for the
full solution



5. The sum of the spin only magnetic moment values (in B.M.) of $[Mn(Br)_6]^{3-}$ and $[Mn(CN)_6]^{3-}$ is ____.

[JEE Advanced 2025 Paper 2]

Scan or tap for the
full solution



6. Among $V(CO)_6$, $Cr(CO)_5$, $Cu(CO)_3$, $Mn(CO)_5$, $Fe(CO)_5$, $[Co(CO)_3]^{3-}$, $[Cr(CO)_4]^{4-}$, and $Ir(CO)_3$, the total number of species isoelectronic with $Ni(CO)_4$ is ____.

[Given, atomic number: V = 23, Cr = 24, Mn = 25, Fe = 26, Co = 27, Ni = 28, Cu = 29, Ir = 77]

[JEE Advanced 2024 Paper 1]

Scan or tap for the
full solution



7. Among the following complexes, the total number of diamagnetic species is ____.

$[Mn(NH_3)_6]^{3+}$, $[MnCl_6]^{3-}$, $[FeF_6]^{3-}$, $[CoF_6]^{3-}$, $[Fe(NH_3)_6]^{3+}$, and $[Co(en)_3]^{3+}$

[Given, atomic number: Mn = 25, Fe = 26, Co = 27; en = $H_2NCH_2CH_2NH_2$]

[JEE Advanced 2024 Paper 1]

Scan or tap for the
full solution



Space for Rough Work

8. Among $[\text{Co}(\text{CN})_4]^{4-}$, $[\text{Co}(\text{CO})_3(\text{NO})]$, XeF_4 , $[\text{PCl}_4]^+$, $[\text{PdCl}_4]^{2-}$, $[\text{ICl}_4]^-$, $[\text{Cu}(\text{CN})_4]^{3-}$ and P_4 the total number of species with tetrahedral geometry is _____. [JEE Advanced 2024 Paper 2]

Scan or tap for the
full solution



pyqside.com

Space for Rough Work

JEE ADVANCED COORDINATION COMPOUNDS — PYQS

Test Pattern : **JEE (Advanced)**

ANSWER KEY

SECTION-A

[illegible]

SECTION-B

Ques.	3	4	5	6	7	8						
Ans.	8	6	7.5 to 7.8	1	1	5						