



TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 2

Inorganic Chemistry : Coordination Compound

DPP No. : 2

- A magnetic moment of 1.73 BM will be shown by one among the following :
 (1) $[\text{Ni}(\text{CN})_4]^{2-}$ (2) TiCl_4 (3) $[\text{CoCl}_6]^{4-}$ (4) $[\text{Cu}(\text{NH}_3)_4]^{2+}$
- Among the following complexes the one which shows Zero crystal field stabilizations energy (CFSE)
 (1) $[\text{Ni}(\text{H}_2\text{O})_6]^{3+}$ (2) $[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$ (3) $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ (4) $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$
- Which of these statements about $[\text{Co}(\text{CN})_6]^{3-}$ is true ?
 (1) $[\text{Co}(\text{CN})_6]^{3-}$ has four unpaired electrons and will be in a low-spin configuration.
 (2) $[\text{Co}(\text{CN})_6]^{3-}$ has four unpaired electrons and will be in a high-spin configuration.
 (3) $[\text{Co}(\text{CN})_6]^{3-}$ has no unpaired electrons and will be in a high-spin configuration.
 (4) $[\text{Co}(\text{CN})_6]^{3-}$ has no unpaired electrons and will be in a low-spin configuration.
- Jahn-Teller effect is not observed in high spin complexes of
 (1) d^9 (2) d^7 (3) d^8 (4) d^4
- Correct increasing order for the wavelength of absorption in the visible region for the complexes of Co^{3+} is :
 (1) $[\text{Co}(\text{en})_3]^{3+}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$ (2) $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$, $[\text{Co}(\text{en})_3]^{3+}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$
 (3) $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$, $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{Co}(\text{en})_3]^{3+}$ (4) $[\text{Co}(\text{NH}_3)_6]^{3+}$, $[\text{Co}(\text{en})_3]^{3+}$, $[\text{Co}(\text{H}_2\text{O})_6]^{3+}$
- What is the correct electronic configuration of the central atom in $\text{K}_4[\text{Fe}(\text{CN})_6]$ based on crystal field theory
 (1) $e^4 t_2^2$ (2) $t_{2g}^4 e_g^2$ (3) $t_{2g}^6 e_g^0$ (4) $e^3 t_2^3$
- Aluminium chloride in acidified aqueous solution forms a complex 'A', in which hybridisation state of Al is 'B'. What are 'A' and 'B' respectively ?
 (1) $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$, sp^3d^2 (2) $[\text{Al}(\text{H}_2\text{O})_4]^{3+}$, sp^3
 (3) $[\text{Al}(\text{H}_2\text{O})_4]^{3+}$, dsp^2 (4) $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$, d^2sp^3

8. The crystal field stabilization energy (CFSE) for $[\text{CoCl}_6]^{4-}$ is 18000 cm^{-1} , the CFSE for $[\text{CoCl}_4]^{2-}$ will be
 (1) 6000 cm^{-1} (2) 16000 cm^{-1} (3) 18000 cm^{-1} (4) 8000 cm^{-1}
9. Which of the following is the **correct** order of increasing field strength of ligands to form coordination compounds ?
 (1) $\text{SCN}^- < \text{F}^- < \text{CN}^- < \text{C}_2\text{O}_4^{2-}$ (2) $\text{F}^- < \text{SCN}^- < \text{C}_2\text{O}_4^{2-} < \text{CN}^-$
 (3) $\text{CN}^- < \text{C}_2\text{O}_4^{2-} < \text{SCN}^- < \text{F}^-$ (4) $\text{SCN}^- < \text{F}^- < \text{C}_2\text{O}_4^{2-} < \text{CN}^-$
10. Match **List-I** with **List-II**.

	List-I		List-II
(a)	$[\text{Fe}(\text{CN})_6]^{3-}$	(i)	5.92 BM
(b)	$[\text{Fe}(\text{H}_2\text{O})_6]^{3+}$	(ii)	0 BM
(c)	$[\text{Fe}(\text{CN})_6]^{4-}$	(iii)	4.90 BM
(d)	$[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$	(iv)	1.73 BM

Choose the correct answer from the options given below.

- (1) (a) – (ii), (b) – (iv), (c) – (iii), (d) – (i) (2) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii)
 (3) (a) – (iv), (b) – (i), (c) – (ii), (d) – (iii) (4) (a) – (iv), (b) – (ii), (c) – (i), (d) – (iii)

Answer Key

1. (4) 2. (2) 3. (4) 4. (3) 5. (1) 6. (3) 7. (1)
 8. (4) 9. (4) 10. (3)