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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 3

Inorganic Chemistry : Coordination Compound

DPP No. : 3

1. Which one of the following is the correct order of spin – only magnetic moment for the given complexes?

(1) $[Fe(CN)_6]^{3-} > [Co(H_2O_6)]^{2+} > [MnCl_6]^{3-}$

(2) $[MnCl_6]^{3-} > [Fe(CN)_6]^{3-} > [Co(H_2O)_6]^{2+}$

(3) $[MnCl_6]^{3-} > [Co(H_2O)_6]^{2+} > [Fe(CN)_6]^{3-}$

(4) $[Co(H_2O)_6]^{2+} > [MnCl_6]^{3-} > [Fe(CN)_6]^{3-}$

2. The type of isomerism shown by the complex $[CoCl_2/(en)_2]$ is :

(1) Geometrical isomerism (2) Linkage isomerism

(3) Ionization isomerism (4) Coordination isomerism

3. Match **List–I** with **List-II**

	List-I		**List-II**
	(Complexes)		**(Types)**
(a)	$[Co(NH_3)_5NO_2]Cl_2$ and $[Co(NH_3)_5ONO]Cl_2$	(i)	Ionisation isomerism
(b)	$[Cr(NH_3)_6]Co(CN_6)]$ and $[Cr(CN)_6]$ $[Co(NH_3)_6]$	(ii)	coordination isomerism
(c)	$[Co(NH_3)_5(So_4)]Br$ and $[Co(NH_3)_5Br]SO_4$	(iii)	linkage isomerism
(d)	$[Cr(H_2O)_6]Cl_3$ and $[Cr(H_2O)_5Cl]Cl_2.H_2O$	(iv)	solvate isomerism

Choose the **correct answer** from the options given below :

(1) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)

(2) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)

(3) (a) – (iii), (b) – (ii), (c) – (i), (d) – (iv)

(4) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)

4. Type of isomerism exhibited by compounds $[Cr(H_2O)_6]Cl_3$, $[Cr(H_2O)_5Cl]Cl_2.H_2O$, $[Cr(H_2O)_4Cl_2]Cl.2H_2O$ and the value of coordination number (CN) of central metal ion in all these compounds, respectively is:

(1) Geometrical isomerism, CN=2 (2) Optical isomerism, CN=4

(3) Ionisation isomerism, CN=4 (4) Solvate isomerism, CN=6

5. Which of the following complexes is used to be as an anticancer agent ?

(1) mer-$[Co(NH_3)_3Cl]$ (2) Cis - $[Pt\ Cl_2(NH_3)_2]$

(3) cis - $K_2[Pt\ Cl_2Br_2]$ (4) Na_2CoCl_4

6. Which of the following statement is false ?

(1) Mg^{2+} ions are important in the green parts of plants.

(2) Mg^{2+} ions from a complex with ATP.

(3) Ca^{2+} ions are important in blood clotting.

(4) Ca^{2+} ions are not important in maintaining the regular beating of the heart.

7. Which of the following has longest C–O bond length ? (Free C–O bond length in CO is 1.128Å)

(1) $[Mn(CO)_6]^+$ (2) $Ni(CO)_4$ (3) $[Co(CO)_4]^{\ominus}$ (4) $[Fe(CO)_4]^{2-}$

8. An example of a sigma bonded organometallic compound is

(1) Ruthenocene (2) Grignard's reagent (3) Ferrocene (4) Cobaltocene

9. Iron carbonyl, $Fe(CO)_5$ is :

(1) tetranuclear (2) dinuclear (3) trinuclear (4) mononuclear

10. Ethylene diamineteraacetate (EDTA) ion is :

(1) Unidentate ligand

(2) Bidentate ligand with two "N" donor atoms

(3) Tridentate ligand with three "N" donor atoms

(4) Hexadentate ligand with four "O" and two "N" doner atoms

11. The order of energy absorbed which is responsible for the colour of complexes

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

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

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

is

(1) (C) > (A) > (B) (2) (B) > (A) > (C)

(3) (A) > (B) > (C) (4) (C) > (B) > (A)

12. The number of bridging carbonyl groups in $[Co_2(CO)_8]$and $[Mn_2(CO)_{1O}]$, respectively are

(1) 2 and 2 (2) 2 and 4 (3) 0 and 2 (4) 2 and 0

Answer Key

1.	(3)	**2.**	(1)	**3.**	(3)	**4.**	(4)	**5.**	(2)	**6.**	(4)	**7.**	(4)
8.	(2)	**9.**	(4)	**10.**	(4)	**11.**	(1)	**12.**	(4)				