DPP
DAILY PRACTICE PROBLEMS

Class : XIIth
Date :

Solutions

Subject : CHEMISTRY
DPP No. : 5

Topic :- Coordination Compounds

1 **(d)**
—OH is *o*-and *p*-directing gp.

2 **(c)**
$[Fe(\eta^5 - C_2H_5)_2]$ is the organometallic compound which has σ and π bonds present

3 **(d)**
BHC is $C_6H_6Cl_6$ a saturated cyclic molecule.

4 **(b)**
The complexes can be written as follows
$[Co(NH_3)_6]Cl_3, [Co(NH_3)_5Cl]Cl_2, [Co(NH_3)_4Cl_4]Cl$
Hence, no. of primary valencies are 3, 2 and 1 respectively

5 **(d)**
$[Cr(NH_3)_5\ NO_2]Cl_2$ compound shows linkage isomerism because it has NO_2 group which is ambidentate ligand.
It can be linked *via* N atom (—NO_2) or *via* O atom (—ONO) to form two different isomers.

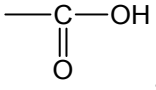
6 **(a)**
In $[Sc(H_2O)_6]^{3+}$,
Oxidation state of Sc is +3.
Sc (ground state)

	$3d$					$4s$	$4p$		
	↑					↑↓			

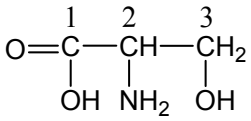
Sc^{3+}

∵ Sc^{3+} has no unpaired electron.
∴ $[Sc(H_2O)_6]^{3+}$ is diamagnetic and colourless.

7 **(b)**
$[MA_5B]$ due to absence of symmetry of 'B' ligand cannot exist in the form of *cis-trans* isomer.

8 **(c)**
Out of the 3 functional groups attached  group

will be the principal functional group and rest as the substituents



2-amino-3-hydroxy propanoic acid

9 **(a)**

A transition metal complex absorbs visible light only when it has unpaired electron. Ni^{2+} in strong field ligand has configuration as

10 **(a)**

The directive influence order and tendency to release electron for *o*-and *p*-directing group is,

$O_2^- > NR_2 > NHR > NH_2 > OH > OCH_3 \approx NHCOCH_3 > CH_3 > X$

11 **(b)**

(a) In MnO_2, $FeCl_3$oxidation states of Mn and Fe are +4 and +3 respectively.

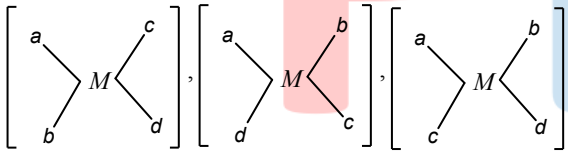
(b) In $(MnO_4)^-$,CrO_2Cl_2 oxidation states of Mn and Cr are +7 and +6 respectively.

(c) In $[Fe(CN)_6]^{3-}$,$[Co(CN)_3]$ oxidation states of Fe and Co are +3 and +3 respectively.

(d) $[NiCl_4]^{2-}$,$[CoCl_4]^-$ oxidation states of Ni and Co are +2 and +3 respectively.

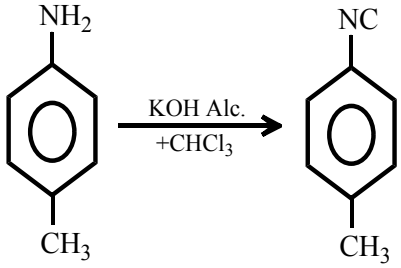
12 **(c)**

$[M(abcd)]$ complex is square planar so will have three geometrical isomers.



13 **(b)**

This is carbylamines reaction.



14 **(a)**

An experimental fact depending upon the ability of the ligand to cause crystal field splitting (*i.e.*, strength of ligand).

15 **(d)**

$K_3[Fe(CN)_5NO]$

Potassium pentacyanonitrosyl ferrate (II).

16 **(c)**

The *d*-*d* excitation is responsible for colour of $Ti(H_2O)_6^{3+}$ which has one unpaired electron.

17 **(c)**

The oxidation number of Fe in K_4 $[Fe(CN)_6]$is +2.

19 **(b)**

Both Ag and Au are extracted by complex formation method.

20 **(b)**

EAN $= 24 - 3 + 2 \times (6) = 33$.

ANSWER-KEY										
Q.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
A.	**D**	**C**	**D**	**B**	**D**	**A**	**B**	**C**	**A**	**A**
Q.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
A.	**B**	**C**	**B**	**A**	**D**	**C**	**C**	**A**	**B**	**B**