

# DPP

DAILY PRACTICE PROBLEMS

Class : XII<sup>th</sup>  
Date :

## Solutions

Subject : CHEMISTRY  
DPP No. : 10

### Topic :- Coordination Compounds

1 (b)  
Follow IUPAC rules.

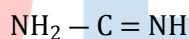
2 (b)  
 $2\text{CuSO}_4 + 10\text{KCN} \rightarrow 2\text{K}_3\text{Cu}(\text{CN})_4 + (\text{CN})_2 + 2\text{K}_2\text{SO}_4$

3 (c)  
Follow definition of hydration isomerism.

4 (c)  
Urea,  $\text{NH}_2 - \text{C} - \text{NH}_2$



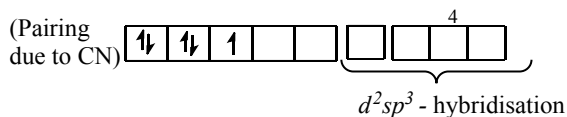
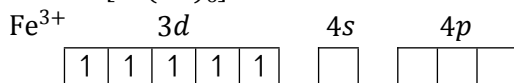
shows tautomerism as



6 (b)  
 $\text{C}_6\text{H}_5\text{ONa} + \text{RX} \rightarrow \text{C}_6\text{H}_5\text{OR}$  (Anisole)

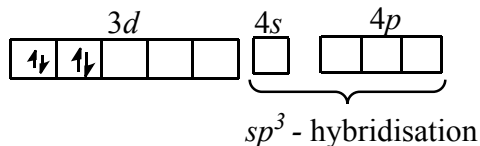
7 (c)  
Diamagnetic substances have all paired electron.

1.  $[\text{Fe}(\text{CN})_6]^{3-}$  Oxidation state of Fe = +3



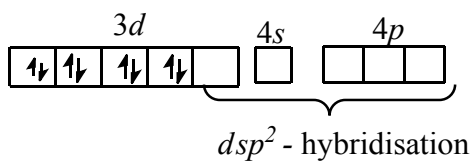
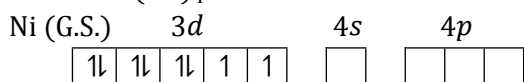
It has one unpaired electron and is paramagnetic.

2.  $[\text{NiCl}_4]^{2-}$  Oxidation state of Ni = +2



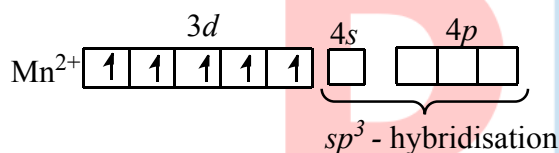
It has two unpaired electrons and is paramagnetic

3.  $\text{Ni}(\text{CO})_4$  Oxidation state of Ni=0



It has no unpaired electron and is diamagnetic

4.  $[\text{MnCl}_4]^{2-}$  Oxidation state of Mn = +2



$\therefore$  It is paramagnetic as it has five unpaired electrons.

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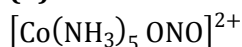
(a)

$\text{CN}^-$  is strongest field ligand. The spectrochemical series order is:

$\text{I}^- < \text{Br}^- < \text{Cl}^- < \text{F}^- < [\text{C}_2\text{O}_4]^{2-} < \text{H}_2\text{O} < \text{py} < \text{NH}_3 < \text{en} < \text{NO}_2^- < \text{CN}^- < \text{CO}$ .

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(b)



Penta ammine nitrito cobalt (III) ion.

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(c)

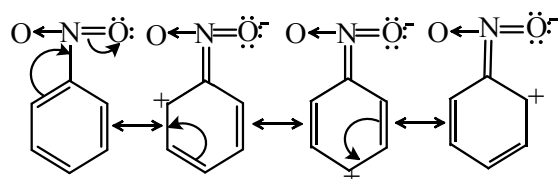
In  $[\text{Ag}(\text{NH}_3)_2]\text{Cl}$ ,  $\text{Ag}^+$  contains  $d^{10}$  configuration. As others contain unpaired electrons

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(c)

$\text{CH}_3$  gp., an  $o$ - and  $p$ -directing group attached in nucleus activates the ring for  $\text{S}_\text{E}$  reactions.

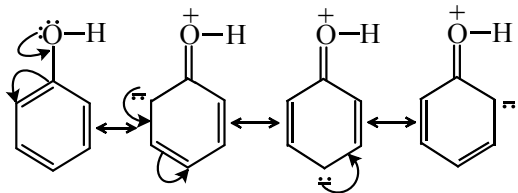
The presence of  $m$ -directing groups in benzene nucleus simply decreases electron density at  $o$ - and  $p$ -, whereas no change in electron density at  $m$ -position is noticed.



On the contrary  $o$ - and  $p$ -directing groups in nucleus increases the electron density at  $o$ -

and *p*-position.

Thus, presence of *o*- and *p*-directing groups provide seats for  $S_E$  reactions or activates the ring, whereas presence of *m*-directing groups does not activate the ring and thus, deactivate the ring for  $S_E$  reactions

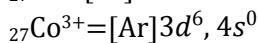


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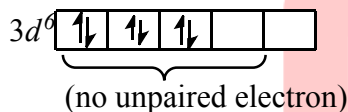
(d)

In both  $[\text{Co}(\text{NH}_3)_6]^{3+}$  and  $[\text{CoF}_6]^{3+}$ , Co is present as  $\text{Co}^{3+}$ .

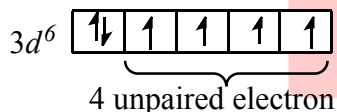
Thus, the electronic configuration of Co is



In case of  $[\text{Co}(\text{NH}_3)_6]^{3+}$ ,  $\text{NH}_3$  is a strong field ligand, so pairing of electrons in  $3d$ -orbital takes place.



In  $[\text{CoF}_6]^{3+}$ , F is a weak field ligand, thus doesn't cause pairing. Hence,



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(d)

It is a test for primary amines. No doubt 2,4-dimethylaniline is also primary amine but it does not give test due to steric hindrance.

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(b)

$\text{CN}^-$  is strong field ligand because it is an example of pseudohalide. Pseudohalide ions are stronger coordinating ligands and they have the ability to form  $\sigma$  bond and  $\pi$ -bond.

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(b)

Higher the charge and smaller the size of ligand, more stable is the complex formed

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

**PE**