



CHEMISTRY

BOOKS - BITSAT GUIDE

COORDINATION COMPOUNDS

Practice Exercise

1. According of Lewis, the ligands are

A. acidic in nature

B. basic in nature

C. neither acidic nor basic

D. some are bais and others are cidic

Answer:



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2. Which of the following represent hexadentate ligand?

A. 2,2-bipyidyl

B. DMG

C. Ethylenediamine

D. None of thses

Answer: D



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3. In $CuSO_4 \cdot 5H_2O$ copper is coordinated to

- A. 5 water molecules
- B. 4 water molecules
- C. one sulphate ion
- D. one water molecules

Answer:



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4. Coordination number of Cr is six. A complex ion of Cr with $C_2O_4^{2-}$ and superoxide ion, O_2^{2-} has the formula, $[Cr(CO_2O_4)_x(en)_y(O_2)_z]^-$. The ratio $x:y:z$ will be

A. 1:1:1

B. 1:1:2

C. 1:2:2

D. 2:1:1

Answer:



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

A. 2

B. 3

C. 0

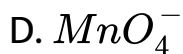
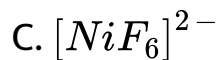
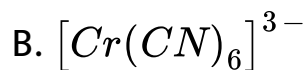
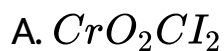
D. 1

Answer:



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6. Identify the species with an atom in +6 oxidation state present in the following complexes.



Answer:



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7. the oxidation state of cobalt in 

A. 2

B. 3

C. 4

D. 6

Answer:



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8. The coordination number of Co in $[(Co(NH_3)_5Cl)Cl_2]$ is

A. 2

B. 5

C. 6

D. 1

Answer:



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9. The type of isomerism shown by

$[Co(en)_2(NCS)_2]Cl$ and $[Co(en)_2(NCS)Cl]NCS$ is

A. coordination

B. ionisation

C. linkage

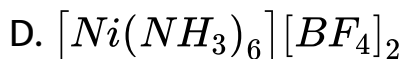
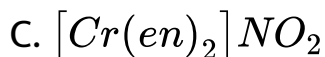
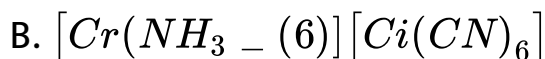
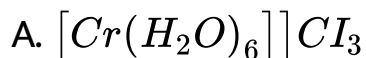
D. All of the above

Answer:



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10. Which of the following compounds would exhibit coordination isomerism ?



Answer:



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11. The planar complex $Maabcd$ gives

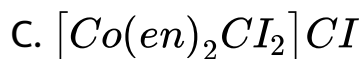
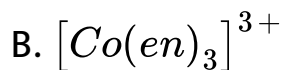
- A. two optical isomers
- B. two geometrical isomers
- C. three geometrical isomers
- D.

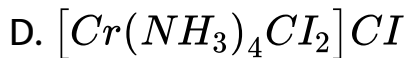
Answer:



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12. Which will not show geometrical is shown by



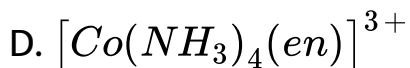
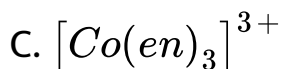
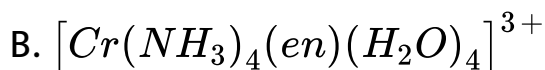


Answer:



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13. Geometrical isomerism is shown by

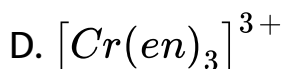
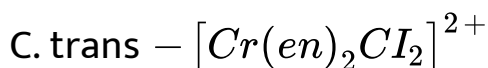
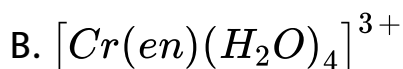
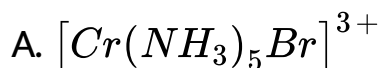


Answer:



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14. Optical isomerism is exhibited by



Answer:



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15. The number of isomers of $[Cu(NH_3)_4][PtCl_4]$ are

A. 6

B. 3

C. 4

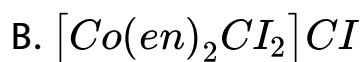
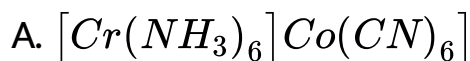
D. 5

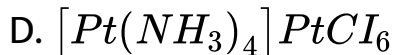
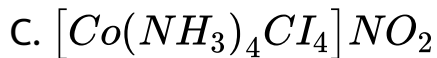
Answer:



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16. Amongst the following pair of enantiomers is given by





Answer:



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exhibit which type of isomerism ?

A. Geometrical

B. Optical

C. Linkage

D. Ionisation

Answer:



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18. The difference in colour is due to

- A. optical isomerism
- B. geometrical
- C. linkage isomerism
- D. nuclear isomerism

Answer:



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19. EAN of iron in $K_4[Fe(CN)_6]$ is

A. 36

B. 34

C. 38

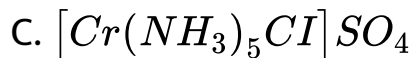
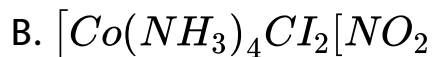
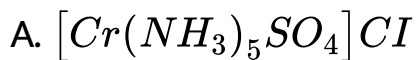
D. 40

Answer:



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20. Which of the following complexes will give white precipitate with $BaCl_2$ solution?



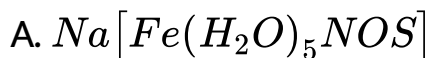
D. Both (a) and (c)

Answer:



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21. Sodium nitroprusside when added to an alkaline solution of sulphide ions produces purple colourations due to the formation of



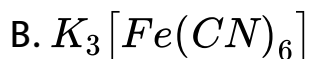
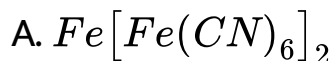


Answer:



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22. Which of the following has highest conductivity in water ?





Answer:



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23. How many moles of $AgCl$ would be obtained, when 100 mL of 0.1 M $Co(NH_3)_5Cl_3$ is treated with excess of $AgNO_3$?

A. 0.01

B. 0.02

C. 0.03

D. None of these

Answer:



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24. High spin complex $[FeCl_6]^{3-}$ has the d-configuration

A. $t_{2g}^3 e_g^2$

B. t_{2g}^5

C. $t_{2g}^2 e_g^3$

D. e_g^5

Answer:



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25. Unpaired electrons in $[FeCl_6]^{3+}$ and $[Fe(CN)_4]^{2-}$ and respectively

A. 5 and 2

B. 5 and 1

C. 3 and 2

D. 2 and 3

Answer:



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26. Among the complexes, $[Ni(CO)_4]$, $[Ni(CN)_4]^{2-}$ and $[NiCl_4]^{2-}$

- A. $[Ni(CO)_4]$ is diamagnetic but $[Ni(CO)_4]$ and $[Ni(CN)_4]^{2-}$ are paramagnetic
- B. $[Ni(CN)_4]^{2-}$ and $[Ni(CO)_4]$ are diamagnetic but $[NiCl_4]^{2-}$ is paramagnetic
- C. $[Ni(CI_4)]^{2-}$ and $[Ni(CO)_4]$ are diamagnetic but $[Ni(CN)_4]^{2-}$ is paramagnetic
- D. $[Ni(C)_4]^{2-}$ and $[Ni(CO)_4]^{-2}$ are diamagnetic but $[Ni(CO)_4]$ is paramagnetic

Answer:



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27. Which of the following shell from an octahedral complex

A. d^4 (low spin)

B. d^2 (high spin)

C. d^6 (low spin)

D. None of thses

Answer:



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28. The geometry of the compound $[Ot(NH_3)_2CI_2]$ is

A. square planar

B. pyramidal

C. tetrahedral

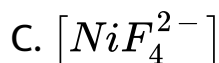
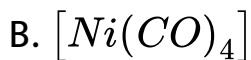
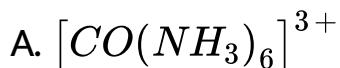
D. octahedral

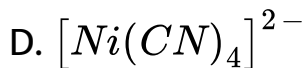
Answer:



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29. Which of the following is paramagnetic ?





Answer:



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30. The value for crystal field stabilisation energy for an octahedral complex, $[CoCl_6]^{4-}$ is 18000 cm^{-1} . The value of crystal field stabilisation energy for tetrahedral complex is

A. 16000 cm^{-1}

B. 8000 cm^{-1}

C. 20000 cm^{-1}

D. 18000cm^{-1}

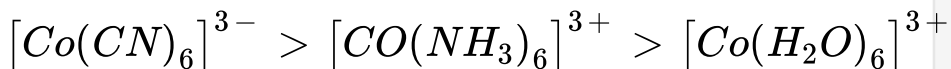
Answer:



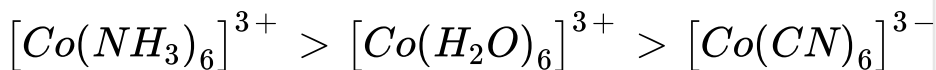
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31. The colour of the coordination compounds depends on the crystal field splitting . What will be the correct order of absorption of wavelength of light in the visible region, for the complexes, $[Co(NH_3)_6]^{3+}$ and $[Co(H_2O)_6]^{3+}$?

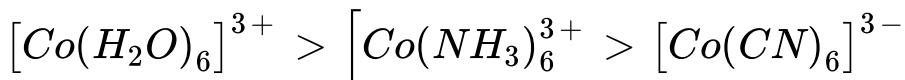
A.



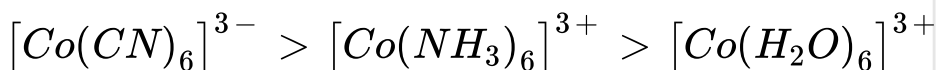
B.



C.



D.



Answer:



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32. Which of the following species is not expected to be a ligand?

A. NO

B. NH_4^+

C. $NH_2CH_2CH_2NH_2$

D. CO

Answer:

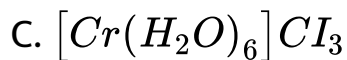


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33. Which one of the following compounds is not coloured?

A. $Na_2[CuCl_4]$

B. $Na_2[CdCl_4]$

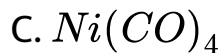
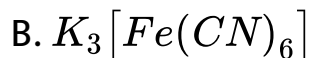
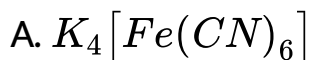


Answer:



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34. Which of the following is paramagnetic ?

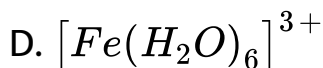
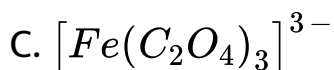
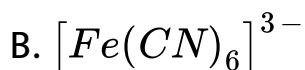
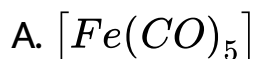


Answer:



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35. The stabilization of coordination compound due to chelation is called the chelate effect. Which of the following is the most stable complex species?



Answer:



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36. Which of the following is not an example of organometallic compound?

A. Trimethyl boron

B. Trimethyl aluminium

C. Sodium ethoxide

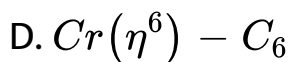
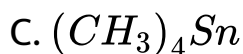
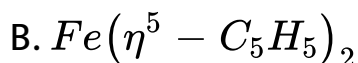
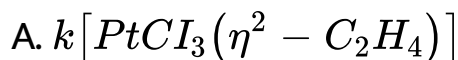
D. $Cr(\eta^6 - C_6H_6)_2$

Answer:



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37. Among the following, which is not the π bonded organometallic compound ?



Answer:



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38. Which is not a π bonded complex

A. Zeise's salt

B. Ferrocene

C. Dibenzene chromium

D. Tetraethyl lead

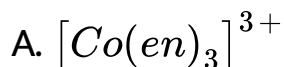
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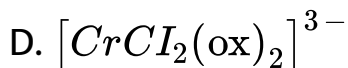
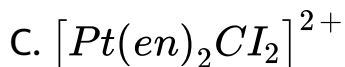
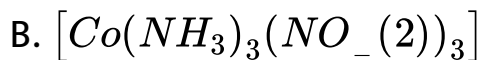


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1. Which of the following will not optical isomers ?



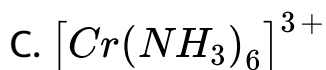
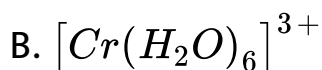
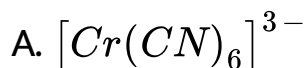


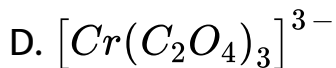
Answer:



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2. The magnitude of Δ_0 will be highest in which of the following complex.



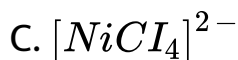
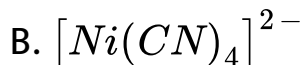
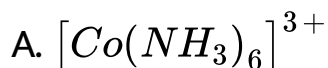


Answer:



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3. Which of the following is an outer d-orbital or high spin complex ?

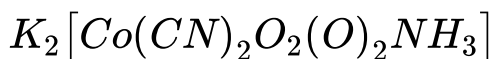


Answer:



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4. Which of the following is correct IUPAC name for



A. Potassium amminecyanoperoxobioxo-chromate
(IV)

B. Potassium amminecyanoperoxobioxo-chromate
(V)

C. Potassium amminecyanoperoxobioxo-chromate
(VI)

D. Potassium amminedicyanoperoxobioxper-
oxochromate (VI)

Answer:



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5. Ferrocene is an example of

A. sandwiched complex

B. π bonded complex

C. a complex in which all the five carbon atoms of cyclopentadiene anion are bonded to the metal

D. All of the above

Answer:



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6. $[Co(NH_3)_5] Br$ and $[Co(NH_3)_5 Br] SO_4$ is a pair of Isomers.

A. ionisation

B. ligand

C. coordination

D. hydrate

Answer:



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7. The crystal field splitting energy for octahedral (Δ_0) and tetrahedral (Δ_t) complexes is related

A. $\Delta_t = \frac{4}{9}\Delta_0$

B. $\Delta_t = \frac{1}{2}\Delta_0$

C. $\Delta_0 = (2)\Delta_t$

D. $\Delta_0 = \frac{4}{9}\Delta_t$

Answer:



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