CHEMISTRY

BOOKS - SAI CHEMISTRY (TELUGU ENGLISH)

d AND f BLOCK ELEMENTS

Mcq S

1. When $AgNO_3$ solution is added in excess to 1M solution of $CoC1_3cxNH_3$ one mole of AgCl is formed ? What is the value if 'X'?

A. 1

B. 4

C. 3

D. 2

Answer: (a)

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2. In which of the following coordination compounds, the central metal ion is in Zero oxidation sate ?

A. $\left[Fe(H_2O)_6\right]Cl_3$

B. $K_4\left[F_2(CN)_6\right]$

C. $Fe(CO)_5$

D. $\left[Fe(H_2O)_6\right]Cl_2$

Answer: (c

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3. The percentage of lanthanides and iorn , respectively , in Misch metal are

A. 50, 50

B. 75 , 25

C. 90, 10

D. 95, 5

Answer: (d)

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4. Which one of the following lanthanic ions does not exhibit paramagnetism ?

A. Lu^{3+}

B. Ce^{3+}

C. Cu^{3+}

D. Yb^{3+}

Answer: (a)

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5. The increasing order fo field strenth of lilgands is

A. $NH_3 < H_2O < Cl < CO < CN^-$

B. $Cl^- H_2O < NH_3 < CN^- CO$

C. $Cl^\prec CO < CN^\prec H_2O < NH_3$

D. $CN^- < CO < NH_3 < Cl^- < H_2O$

Answer: (b)

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6. Which one of the following prussian blue colour ?

A. $Fe_2\left[Fe(CN)_6\right]$

B. $Na_4\left[Fe(CN)_6\right]$

C. $Fe_3\left\{Fe(CN)_6\right]_3$

D. $Fe\left[Fe(CN)_6\right]_3$

Answer: (d)

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7. A coordiante complex contains Co^3, Cl and NH_3 . When dissolved in water , one mole of this complex gave a total of 3 moles of ions . The complex is

A. $\left[Co(NH_3)_6\right]Cl_3$

B. $\left[Co(Nh_3)_5Cl\right]Cl_2$

C. $\left[Co(NH_3)_4\right]Cl_2\right]Cl$

D. $\left[Co(NH_3)_3Cl_3\right]$

Answer: (b)

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8. Identify the orderin which the spin only magnetic moment (in BM) increases for the following four ions

(I) Fe^{2+}

(II) Ti^{2+}

(III) Cu^{2+}

(IV) V^{2+}.

A. I,II,IV,III

B. IV,I,II,III

C. III,IV,I,II

D. III,II,IV,I

Answer: (d)

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9. Which of the following is a correct statement ?

A. Aquwous solution of Cu^{+} and Zn^{2+} are colourless

B. Aqueous solution of Cu^{2+} and Zn^{2+} are colourless

C. Aqueous solution of Fe^{3+} is green in colour

D. Aqueous soltution of MnO_4^- is colourless

Answer: (a)

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10. Which one of the following sets correctly represents the increase in the paramagnetic property of the ions ?

A. $Cu^{2+} > V^{2+} > Cr_{2+} > Mn^{2+}$

B. $Cu^{2} + < Cr^{2} + < V^{2} + < Mn^{2+}$

C. $Cu^{2+} < V^{2+} < Cr^{2+} < Mn^{2+}$

D. $V^{2+} < Cu^{2+} < Cr^{2+} < Mn^{2+}$

Answer: c

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11. Aliminium rects with NaOH and forms copmpund 'X' . IF the coordination number of aluminimum in 'X' is 6, the correct formula of X is

A. $[A](H_2O)_4(OH)_2]^+$

B. $[A1(H_2O)_3(OH)_3]$

C. $[A1(H_2O)_2]^-$

D. $[Al(H_2O)_6](OH)_3$

Answer: (c

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12. 1.5 of $CdCI_3$ was found to contain of 0.9 g of Cd. Calculate the atomic of Cd.

A. 118

B. 112

C. 106.5

D. 53.25

Answer: (c

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13. $\left[Co(NH)_3\right)_5 SO_4\Big]Br$ and $[Co(NH_3)Br]SO_4$ are a pair of ..... Isomers

A. (a) ionisastion

B. (b) ligand

C. coordination

D. (d) hydrate

Answer: (a)

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14. Which of the following pair of transition metal ions, have the same calculate values of magnetic moment ?

A. $Ti^{2}+$ and $V^{2}+$

B. $Fe^{2}+$ and $Cu^{2}+$

C. $Cr^{2}+$ and $Fe^{2}+$

D. $Co^{2}+$ and $Ti^{2}+$

Answer: (c

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15. What is the correct order of spin only magnetic moment (in BM) of $Mn^{2}+$ and $V^{2}+$?

A. $Ti^{2}+ > V^{2}+ > Cr^{2}+$

B. $V^{2}+ > Cr^{2}+ > Mn^{2}+$

C. $Mn^{2}+ + > Cr^{2}+ > V^{2}+$

D. $Cr^{2}+ > V^{2}+ > Mn^{2}+$

Answer: (c

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16. A complex compound of Co^{3+} with molecular formula $COCl_x.yNH_3$ gives a totall of 3 ions when dissolved in water. How many Cl^- ions when the primary and secondary valency in this complex ?

A. 3

B. 1

C. 4

D. Zero

Answer: (b)

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17. Which of the following pairs of ions are colourless?

A. Ti^{3+} ,Cu^{2+}

B. Se^{3+} , Zn^{2+}

C. CO^{2+} , Fe^{3+}

D. Ni^{2+}, V^{3+}

Answer: (b)

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18. Which of the following pairs of ions has same paramagnetic character?

A. Cu^{2+}, Ti^{3+}

B. Mn^{2+}, Cu^{2+}

C. Ti^{2+}, Cu^{2+}

D. Ti^{3+}, Ni^{2+}

Answer: (a)

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19. Ferrous ion changes to X ions , on reacting with acidified hydrogen peroxide . The number of d-electrons present in X and its magnetic moment (in BM) are , respectively

A. 6and 6.93

B. 5and 5.92

C. 5 and 4.9

D. 4 and 5.92

Answer: (b)

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20. The caculated magnetic moment (in Bohr magnetons) of Cu^{2+} ion is

A. 1.73

B. Zero

C. 2.6

D. 3.4

Answer: (a)

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21. Iron sulphide is heated in air to form A, an axide of sulphir. A is dissolved in water to give an acid . The basicity of this acid is

A. 2

B. 3

C. 1

D. Zero

Answer: (a)

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22. Which one of the following ions is colourless in aqueous solution ?

A. $Cu^2 +$

B. $Ti^2 +$

C. $Ni^2 =$

D. $Mn^2 +$

Answer: (d)

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23. Which one of the following ions is colourless in aqueous solution ?

A. Ti^{3+}

B. $Cu^{2+} < Cr^{2+} < V^{2+} < Mn^{2+}$

C. Ni^{2+}

D. Zn^{2+}

Answer: (d)

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24. Which one of the following ions is colourless in aqueous solution ?

A. Ti^{3+}

B. Sn and Zn

C. Cu and Sn

D. Cu and Zn

Answer: (d)

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25. Which one of the following ions is colourless in aqueous solution ?

A. Ti^3+

B. $Na \rightarrow Na^{+}$

C. $CrO^{2}+ \rightarrow Cr_{2}O_{7}^{2}-$

D. $Zn^{2}+ \rightarrow Zn$

Answer: (c

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26. Which one of the following ions is colourless in aqueous solution ?

A. Ti^{3+}

B. $Mn^{2}+, Fe^{3}+$

C. $Mn^{2}+, Ni^{2}+$

D. $Ti^{3}+, CO^{2}+$

Answer: (b)

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27. The oxidation dissove in excess of NH_4OH.

The cation present in this solution is

A. (+)6

B. (+)7

C. (+)5

D. (+)8

Answer: (b)

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28. Silver chlorides dissolve in excess of NH_4OH.

The cation present in this solution is

A. Ag^+

B. $\left[Ag(NH_3)_2\right]^+$

C. $\left[Ag(NH)_3)_4\right]^+$

D. $[Ag(NH_3)]^+$

Answer: (b)

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29. The effective atomic number of Cr in $[Cr(NH_3)_6]Cl_3$ is

A. 35

B. 36

C. 27

D. 33

Answer: (d)

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30. Which one of the following reacts with concentrated sulphuric acid ?

A. Au

B. Ag

C. Pt

D. Pb

Answer: (b)

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31. Silver contaning lead as an impurity is removed by

A. poling

B. cupellation

C. lavigation

D. distillation

Answer: (b)

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32. Which of the following sets of element does not belong to transition element sset?

A. Fe, Co, Ni

B. Cu, Ag, Au

C. Ti, Zr, Hf

D. Ga, In, Tl

Answer: (d)

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33. The electronic configuration of chromium (Z=24) is

A. $[Ar]3d^4, 4s^2$

B. $[Ar]3d^5, 4S^1$

C. $[Kr]4d^4, S5s^2$

D. $[Kr]4d^6, 5s^1$

Answer: (b)

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34. When $AbNO_3$ solution is added in excess to 1M solution of $CoC1_3ccNH_3$ one mole of AgCl is formed ? What is the value if 'X'?

A. silver is more electropositive than zinc

B. Zinc forms a complex readyily with cyanide

C. Zinc forms a complex readily with cyanide

D. Both Zn^2+ and Ag^+ ions have d^10 electronic configuration

Answer: (c

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35. Hg stick to the surface of the glass , When it comes in contact with

A. H_2O

B. HNO_3

C. O_3

D. I_2

Answer: (b)

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36. The element that can exhibit highest number of oxidation state amongst the following , is

A. v

B. Mn

C. Ni

D. Co

Answer: (b)

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37. The number of moles of $AgCl$ precipitated when excess $AgNO_3$ is mixed one mole of $\left[Cr(NH_3)_4Cl_2\right]$ Cl, is

A. 0

B. (1.0)

C. (2.0)

D. (3.0)

Answer: (b)

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38. The metal that forms a self protecting film of oxide to prevent corrosion, is

A. Cu

B. Al

C. Pt

D. Au

Answer: (b)

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39. An example of a non - transitional element is

A. cobalt

B. lead

C. cerium

D. silver

Answer: (b)

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40. The ion that is likely to be colourless in aqueous solution, is

A. Ti^{3+}

B. V^{3+}

C. Mn^{2+}

D. Zn^{2+}

Answer: (d)

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41. The oxidation state of Mo in $(MO_2Cl_8)^{4-}$ ion is

A. (-)4

B. (-)2

C. (+)6

D. (+)2

Answer: (d)

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42. When the same amount of zinc is treated with excess if H_2SO_4 and with excess if NaOH, the ratio of the volumes of H_2 evolved , is

A. 3:2

B. 1:2

C. $2:1$

D. $1:1$

Answer: (d)

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43. The reagent used for concentrating silver ore , is

A. HI

B. HNO_3

C. KCN

D. NH_3

Answer: (c

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44. Which of the following alloys contains Cu and Zn ?

A. Bronze

B. Brass

C. Gun metal

D. Type metal

Answer: (b)

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45. The 4 F level is successively filled up in

A. alkalil metals

B. rare gases

C. lanthanides

D. actinides

Answer: (c

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46. Silver is extracted from its

A. Sulphide ore

B. oxide ore

C. nitrate ore

D. halide ore

Answer: (a)

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47. Oxides of iron in the blast furnace get reduced due to the action of ..... On haemattie .

A. Carbon monoxide

B. aluminium

C. carbon

D. carbon dioxide

Answer: (a)

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48. The paramagnetic character of transition metals is due to the presence of unpaired electron in

A. s-orbital

B. p-orbital

C. d-orbital

D. f-orbital

Answer: (c

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49. Transition element exhibit variable valency on account of ..... d- orbitals .

A. completely filled

B. empty

C. incompletely filled

D. both (b) and (c

Answer: (c

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50. Inner transition element exhibit different coloured compound on account of unfilled are ....

A. s- orbital

B. p- orbital

C. d-orbital

D. f-orbital

Answer: (d)

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51. A solution of $Cr(NO_3)_3$ slowly turns green when cone. HCl is added due to the formation of

A. Cr^{3+}

B. $Cr(OH)_3$

C. $CrCl_3$

D. None of these

Answer: (c

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52. Cuprous ion is colourless while cupric ion is coloured because

A. both have unpaired electrons in the d-orbital

B. Cuprous ion has incomplete d- orbitals and cupric ion has incomplete d- orbitals

C. both ion has incomplete d- orbital and cupric ion has complete d- orbitals

D. both have unpaired electrons in the d-orbital

Answer: (b)

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53. In the reaction ,

$\left(C_2O_4^2 + MnO_4^{-} + H^+\right) \rightarrow \left(H_2O + Mn^2 + \right) + Co_2$

, the reductant is

A. MnO_4^-

B. H^+

C. $Mn^2 +$

D. $C_2O_4^2 -$

Answer: (d)