

**D & F Block elements Assignment - II**

- Which one is wrong in the following statements  
 (a) Gold is considered to be the king of metals (b) Gold is soluble in mercury  
 (c) Copper is added to gold to make it hard (d) All of these
- Which one of the following is an example of non-typical transition elements  
 (a) *Li, K, Na* (b) *Be, Al, Pb* (c) *Zn, Cd, Hg* (d) *Ba, Ca, Sr*
- The substance used in cancer therapy is  
 (a) *Rn* (b) *Ni* (c) *Fe* (d) *Co*
- Zn* is related to which group  
 (a) IIB (b) IIA (c) IA (d) IB
- In solution of  $AgNO_3$ , if *Cu* is a solution become blue due to  
 (a) Oxidation of *Ag* (b) Oxidation of *Cu* (c) Reduction of *Ag* (d) Reduction of *Cu*
- Super conductors are derived from compounds of  
 (a) *p*-block elements (b) Lanthanides (c) Actinides (d) Transition elements
- An element is in  $M^{3+}$  form. Its electronic configuration is  $[Ar]3d^1$  the ion is  
 (a)  $Ti^{3+}$  (b)  $Ti^{4+}$  (c)  $Ca^{2+}$  (d)  $Sc^+$
- Assertion (A):** cuprous ion ( $Cu^+$ ) has unpaired electrons while cupric ion ( $Cu^{++}$ ) does not  
**Reason (R):** Cuprous ion ( $Cu^+$ ) is colourless where as cupric ion ( $Cu^{++}$ ) is blue in the aqueous solution  
 (a) Both *A* and *R* are true and *R* is a correct explanation of *A* (b) Both *A* and *R* are true but *R* is not a correct explanation of *A*  
 (c) *A* is true but *R* is false (d) Both *A* and *R* are false  
 (e) *A* is false but *R* is true
- Atomic number of *Cr* and *Fe* are 24 and 26 respectively. Which of the following is paramagnetic with the spin of electron  
 (a)  $[Cr(NH_3)_6]^{+3}$  (b)  $[Fe(CO)_5]$  (c)  $[Fe(CN)_6]^{-4}$  (d)  $[Cr(CO)_6]$
- Transition metal with low oxidation number will act as  
 (a) A base (b) An acid (c) An oxidising agent (d) None of these
- The higher number of unpaired electrons are in  
 (a) *Fe* (b)  $Fe^+$  (c)  $Fe^{+2}$  (d)  $Fe^{+3}$
- The atomic number of vanadium (*V*), chromium (*Cr*), manganese (*Mn*) and iron (*Fe*) are respectively 23, 24, 25 and 26 which one of these may be expected to have the highest second ionization enthalpy  
 (a) *V* (b) *Cr* (c) *Mn* (d) *Fe*
- Which of the following transition metals can have highest oxidation state  
 (a) *Cr* (b) *Co* (c) *Ni* (d) *Cu*
- Most common oxidation states of *Cs* (cesium) are  
 (a) +2, +3 (b) +2, +4 (c) +3, +4 (d) +3, +5
- In the reduction of dichromate by *Fe(II)* the number of electrons involved per chromium atom is  
 (a) 2 (b) 3 (c) 4 (d) 1
- $Mn^{++}$  can be converted into  $Mn^{7+}$  by reacting with  
 (a)  $SO_2$  (b)  $Cl_2$  (c)  $PbO_2$  (d)  $SnCl_2$
- Which compound has coloured aqueous solution  
 (a)  $Zn(NO_3)_2$  (b)  $LiNO_3$  (c)  $Co(NO_3)_2$  (d)  $Ba(NO_3)_2$
- The basic character of the transition metal monoxides follows the order  
 (a)  $TiO > VO > CrO > FeO$  (b)  $VO > CrO > TiO > FeO$   
 (c)  $CrO > VO > FeO > TiO$  (d)  $TiO > FeO > VO > CrO$   
 (Atomic no. *Ti* = 22, *V* = 23, *Cr* = 24, *Fe* = 26)
- $FeS_2$  is  
 (a) Artificial silver (b) Fool's gold (c) Mohr's salt (d) Cast iron
- Which one of the following metallic hydroxides does not dissolve in sodium hydroxide solution  
 (a)  $Zn(OH)_2$  (b)  $Al(OH)_3$  (c)  $Fe(OH)_3$  (d)  $Pb(OH)_2$
- Iron loses magnetic property at  
 (a) Melting point (b) 1000K (c) Curie point (d) Boiling point
- Red hot iron absorbs  $SO_2$  giving the product  
 (a)  $FeS + O_2$  (b)  $Fe_2O_3 + FeS$  (c)  $FeO + FeS$  (d)  $FeO + S$
- Which of the following elements does not form amalgam  
 (a) *Fe* (b) Silver (c) Zinc (d) Cobalt
- Iron is extracted from magnetite by reduction with  
 (a)  $H_2$  (b) *C* (c) *Mg* (d) *Al*

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25. Pure conc.  $HNO_3$  makes iron passive as the surface is covered with protective layer of  
(a)  $Fe_2O_3$  (b)  $FeO$  (c)  $Fe_3O_4$  (d)  $Fe(NO_3)_3$
26. In smelting of iron, which of the following reactions takes place in Blast furnace at  $400^\circ C - 600^\circ C$   
(a)  $CaO + SiO_2 \rightarrow CaSiO_3$  (b)  $2FeS + 3O_2 \rightarrow 2Fe + 3SO_2$   
(c)  $FeO + SiO_2 \rightarrow FeSiO_3$  (d)  $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$
27. Ferric alum has the composition  $(NH_4)_2SO_4 \cdot Fe_2(SO_4)_3 \cdot xH_2O$   
(a) 7 (b) 24 (c) 6 (d) 15
28. The chemical processes in the production of steel from haematite ore involve  
(a) Reduction (b) Oxidation  
(c) Reduction followed by oxidation (d) Oxidation followed by reduction
29. Carbon monoxide reacts with iron to form  
(a)  $Fe(CO)_5$  (b)  $FeCO_2$  (c)  $FeO + C$  (d)  $Fe_2O_3 + C$
30. Heat treatment alters the properties of steel due to  
(a) Chemical reaction on heating  
(b) Partial rusting  
(c) Change in the residual energy  
(d) Change in the lattice structure due to differential rate of cooling
31. Stainless steel is an alloy of iron with  
(a) 8% Cr, 50% Mn (b) 10% Ni, 2% Mn (c) 2% Cr, 3% C (d) 12% Cr, 1% N
32. Matte contains mainly  
(a)  $Cu_2S$  and  $FeS$  (b)  $CuS$  and  $Fe_2S_3$  (c)  $Fe$  (d)  $Cu_2S$
33. A cuprous ore among the following is  
(a) Cuprite (b) Malachite (c) Chalcopyrites (d) Azurite
34. Identify the reaction that doesn't take place during the smelting process of copper extraction  
(a)  $2FeS + 3O_2 \rightarrow 2FeO + 2SO_2 \uparrow$  (b)  $Cu_2O + FeS \rightarrow Cu_2S + FeO$   
(c)  $2Cu_2S + 3O_2 \rightarrow 2Cu_2O + 2SO_2 \uparrow$  (d)  $FeO + SiO_2 \rightarrow FeSiO_3$
35. The final step for the extraction of copper from copper pyrite in Bessemer converter involves the reaction  
(a)  $4Cu_2O + FeS \rightarrow 8Cu + FeSO_4$  (b)  $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$   
(c)  $2Cu_2O + FeS \rightarrow 4Cu + Fe + SO_2$  (d)  $Cu_2S + 2FeO \rightarrow 2Cu + 2FeCO + SO_2$
36. Arrange  $Ce^{+3}$ ,  $La^{+3}$ ,  $Pm^{+3}$  and  $Yb^{+3}$  in increasing order of their ionic radii  
(a)  $Yb^{+3} < Pm^{+3} < Ce^{+3} < La^{+3}$  (b)  $Ce^{+3} < Yb^{+3} < Pm^{+3} < La^{+3}$   
(c)  $Yb^{+3} < Pm^{+3} < La^{+3} < Ce^{+3}$  (d)  $Pm^{+3} < La^{+3} < Ce^{+3} < Yb^{+3}$
37. Lanthanide contraction occurs because  
(a)  $f$ -orbital electrons are easily lost  
(b)  $f$ -orbital an incompletely filled  
(c)  $f$ -orbital electron an poor shielders of nuclear charge  
(d)  $f$ -orbital do not come out on the surface of atom and are buried inside
38. The correct order of ionic radii of  $Y^{3-}$ ,  $La^{3+}$ ,  $Eu^{3+}$  and  $Lu^{3+}$  is  
(a)  $La^{3+} < Eu^{3+} < Lu^{3+} < Y^{3-}$  (b)  $Y^{3-} < La^{3+} < Eu^{3+} < Lu^{3+}$   
(c)  $Lu^{3+} < Y^{3-} < Eu^{3+} < La^{3+}$  (d)  $Lu^{3+} < Eu^{3+} < La^{3+} < Y^{3-}$   
(Atomic No.  $Y = 39$ ,  $La = 57$ ,  $Eu = 63$ ,  $Lu = 71$ )
39. Which of the following elements is alloyed with copper to form brass  
(a) Lead (b) Silver (c) Zinc (d) Antimony
40. Which one of the following statements is correct  
(a) Manganese salts give violet borax bead test in the reducing flame  
(b) From a mixed precipitate of  $AgCl$  and  $AgI$  ammonia solution dissolves only  $AgCl$   
(c) Ferric ions give a deep green precipitate on adding potassium ferrocyanide solution  
(d) On boiling a solution having  $K^+$ ,  $Ca^{2+}$  and  $HCO_3^-$  ions we get a precipitate of  $K_2Ca(CO_3)_2$
41. A group of acidic oxide is  
(a)  $CrO_3$ ,  $Mn_2O_7$  (b)  $ZnO$ ,  $Al_2O_3$  (c)  $CaO$ ,  $ZnO$  (d)  $Na_2O$ ,  $Al_2O_3$
42. General configuration of outermost and penultimate shell is  $(n-1)s^2(n-1)p^6(n-1)d^xns^2$ . If  $n = 4$  and  $x = 5$  then no. of proton in the nucleus will be  
(a)  $> 25$  (b)  $< 24$  (c) 25 (d) 30
43. Cryolite helps in  
(a) Lowering the melting point (b) Increasing the melting point  
(c) Increasing the electrical conductivity (d) Decreasing the electrical conductivity

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44. Super alloys are usually  
(a) Iron based (b) Nickel based (c) Cobalt based (d) Based on all of the above
45. Collin's reagent is  
(a)  $MNO_2 / HCl$  (b)  $MNO_4 / C_5H_5N$  (c)  $K_2Cr_2O_7 / H_2SO_4$  (d)  $Cr_2O_3 / 2C_5H_5N$
46. Most common oxidation states of Cs (cesium) are  
(a) + 2, + 3 (b) + 2, + 4 (c) + 3, + 4 (d) + 3, + 5
47. An elements is in  $M^{3+}$  form. Its electronic configuration is  $[Ar]3d^1$  the ion is  
(a)  $Ti^{3+}$  (b)  $Ti^{4+}$  (c)  $Ca^{2+}$  (d)  $Sc^+$
48. In Goldschmidt aluminothermic process, thermite contains  
(a) 3 parts of  $Al_2O_3$  and 4 parts of  $Al$  (b) 3 parts of  $Fe_2O_3$  and 2 parts of  $Al$   
(c) 3 parts of  $Fe_2O_3$  and 1 part of  $Al$  (d) 1 part of  $Fe_2O_3$  and 1 part of  $Al$
49. Which of the following lead oxides is 'Sindhur'  
(a)  $PbO$  (b)  $PbO_2$  (c)  $Pb_2O_3$  (d)  $Pb_3O_4$
50. Red lead is an example of a/an .... oxide  
(a) Basic (b) Super (c) Mixed (d) Amphoteric