

SELECT ONLY ONE IS CORRECT OPTIONS :

General Properties of d-block

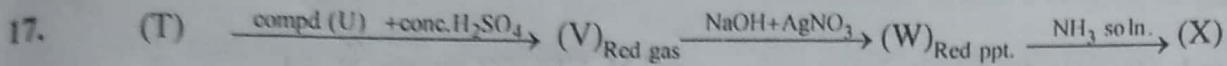
1.  $N_2(g) + 3H_2(g) \xrightleftharpoons{Fe + Mo} 2NH_3(g)$  ; Haber's process, Mo is used as  
(A) a catalyst (B) a catalytic promoter  
(C) an oxidising agent (D) as a catalytic poison
2. An ornamental of gold having 75% of gold, it is of ..... carat.  
(A) 18 (B) 16 (C) 24 (D) 20
3. Transition elements having more tendency to form complex than representative elements (s and p-block elements) due to -  
(A) availability of d-orbitals for bonding  
(B) variable oxidation states are not shown by transition elements  
(C) all electrons are paired in d-orbitals  
(D) f-orbitals are available for bonding
4. A compound of mercury used in cosmetics, in Ayurvedic and Yunani medicines and known as Vermilion is -  
(A)  $HgCl_2$  (B)  $HgS$  (C)  $Hg_2Cl_2$  (D)  $HgI$
5. Transition elements are usually characterised by variable oxidation states but Zn does not show this property because of  
(A) completion of np-orbitals (B) completion of (n-1)d orbitals  
(C) completion of ns-orbitals (D) inert pair effect
6. The d-block element which is a liquid at room temperature, having high specific heat, less reactivity than hydrogen and its chloride ( $MX_2$ ) is volatile on heating is  
(A) Cu (B) Hg (C) Ce (D) Pm
7. Coinage metals show the properties of  
(A) typical elements (B) normal elements  
(C) inner-transition elements (D) transition element
8. The transition metal used in X-rays tube is  
(A) Mo (B) Ta (C) Tc (D) Pm

SBG STUDY

25 1/2 P  
75 3 6  
100 X 24  
4

9. The higher oxidation states of transition elements are found to be in the combination with A and B, which are  
(A) F, O (B) O, N (C) O, Cl (D) F, Cl
10. The metals present in insulin and haemoglobin are respectively  
(A) Zn, Hg (B) Zn, Fe (C) Co, Fe (D) Mg, Fe
11. A metal M which is not affected by strong acids like conc.  $\text{HNO}_3$ , conc.  $\text{H}_2\text{SO}_4$  and conc. solution of alkalis like NaOH, KOH forms  $\text{MCl}_3$  which finds use for toning in photography. The metal M is  
(A) Ag (B) Hg (C) Au (D) Cu
12. Manganese steel is used for making railway tracks because  
(A) it is hard with high percentage of Mn  
(B) it is soft with high percentage of Mn  
(C) it is hard with small concentration of manganese with impurities  
(D) it is soft with small concentration of manganese with impurities
13. Transition elements in lower oxidation states act as Lewis acid because  
(A) they form complexes (B) they are oxidising agents  
(C) they donate electrons (D) they do not show catalytic properties
14. The electrons which take part in order to exhibit variable oxidation states by transition metals are  
(A) ns only (B)  $(n-1)d$  only  
(C) ns and  $(n-1)d$  only but not np (D)  $(n-1)d$  and np only but not ns
15. Solution of  $\text{MnO}_4^-$  is purple-coloured due to  
(A) d-d-transition  
(B) charge transfer from O to Mn  
(C) due to both d-d-transition and charge transfer  
(D) none of these
16. An element of 3d-transition series shows two oxidation states x and y, differ by two units then  
(A) compounds in oxidation state x are ionic if  $x > y$   
(B) compounds in oxidation state x are ionic if  $x < y$   
(C) compounds in oxidation state y are covalent if  $x < y$   
(D) compounds in oxidation state y are covalent if  $y < x$

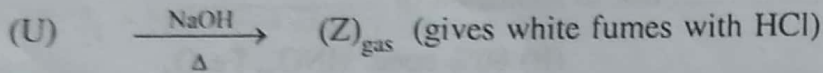
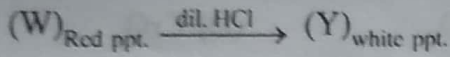
## Compounds of d-block



imparts violet

colour in the

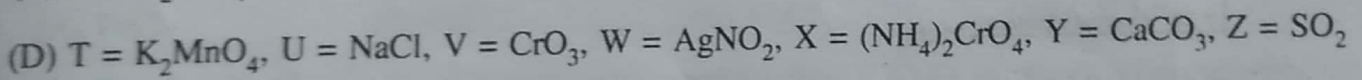
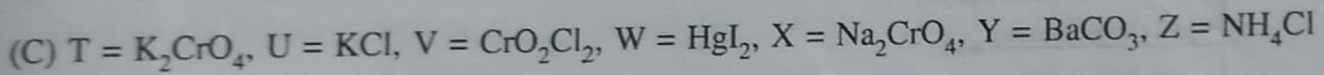
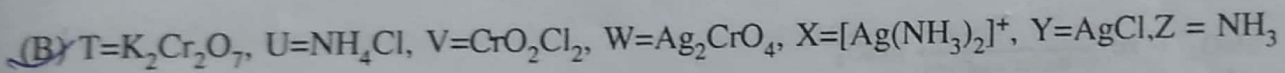
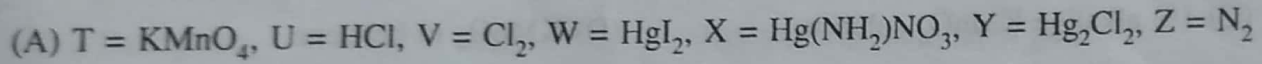
flame test



sublimes on

heating

Identify (T) to (Z).



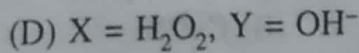
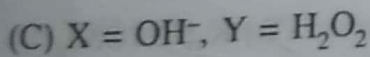
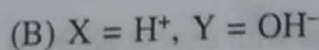
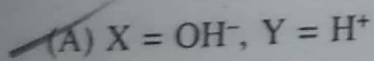
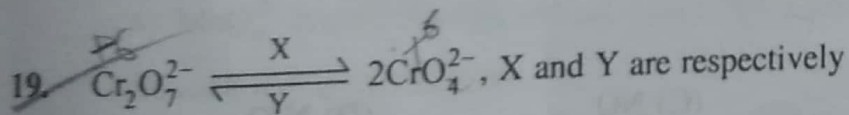
18. The number of moles of acidified  $\text{KMnO}_4$  required to convert one mole of sulphite ion into sulphate ion is

(A)  $2/5$

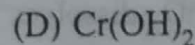
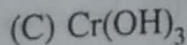
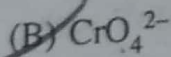
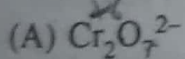
(B)  $3/5$

(C)  $4/5$

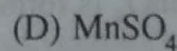
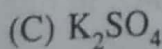
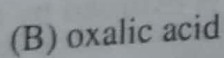
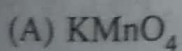
(D) 1



20.  $\text{CrO}_3$  dissolves in aqueous NaOH to give

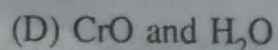
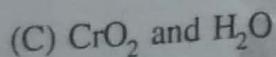
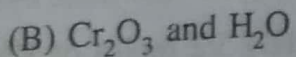
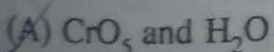


21. During estimation of oxalic acid Vs  $\text{KMnO}_4$ , self indicator is

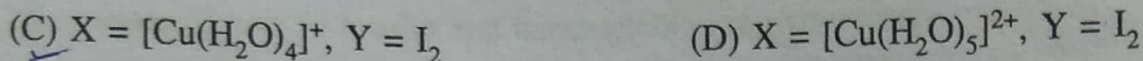
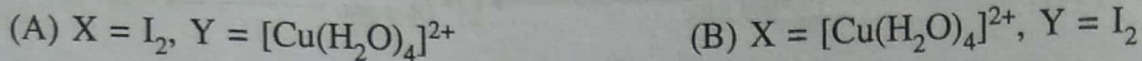


22. Acidified chromic acid +  $\text{H}_2\text{O}_2 \xrightarrow{\text{Org. solvent}}$  X + Y, X and Y are

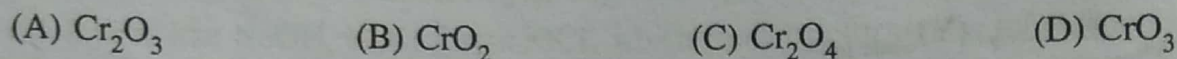
(blue colour)



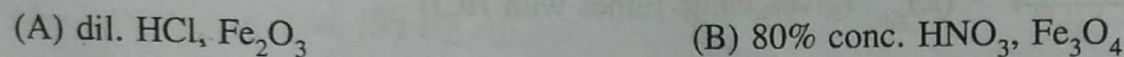
23.  $\text{Y} \xleftarrow{\text{KI}} \text{CuSO}_4 \xrightarrow{\text{dil H}_2\text{SO}_4} \text{X (Blue colour)}$ , X and Y are  
(diatomic covalent molecule)



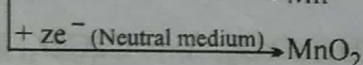
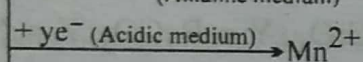
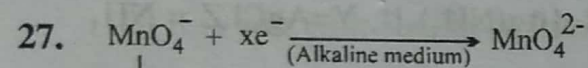
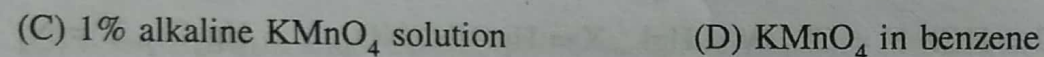
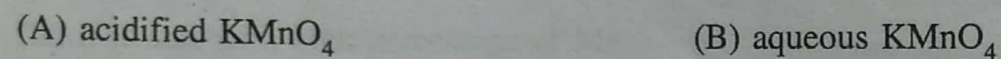
24.  $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$  (Ammonium dichromate) is used in fire works. The green coloured powder blown in air is



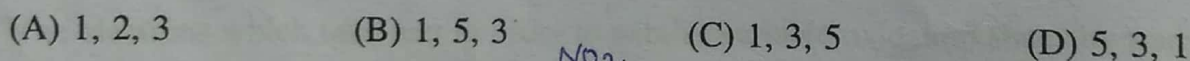
25. Iron becomes passive by ..... due to formation of .....



26. Bayer's reagent used to detect olifinic double bond is



x, y and z are respectively



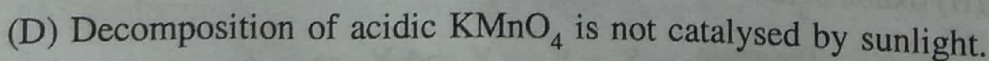
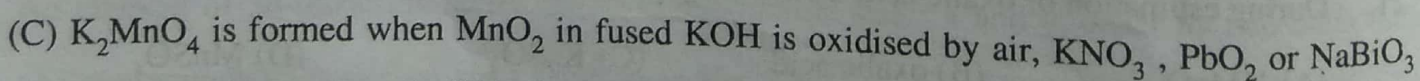
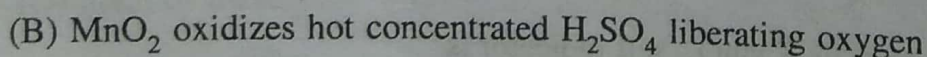
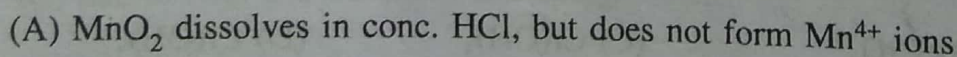
28.  $\text{Cu} + \text{conc. HNO}_3 \xrightarrow{\text{(hot)}} \text{Cu}(\text{NO}_3)_2 + \text{X (oxide of nitrogen)}$ ; then X is



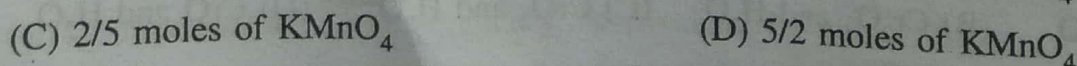
29.  $\text{CuSO}_4$  solution reacts with excess  $\text{KCN}$  to give



30. Pick out the incorrect statement:

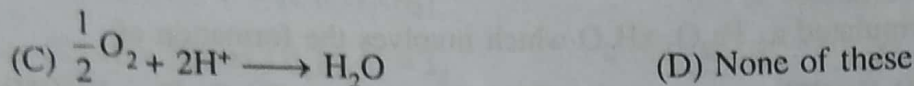
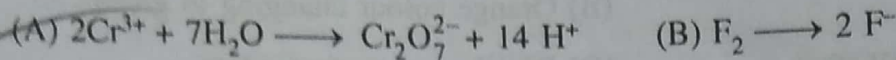


31. 1 mole of  $\text{Fe}^{2+}$  ions are oxidised to  $\text{Fe}^{3+}$  ions with the help of (in acidic medium)

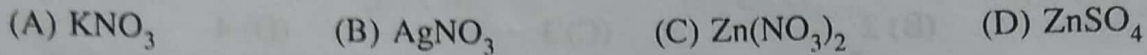


32. To an acidified dichromate solution, a pinch of  $\text{Na}_2\text{O}_2$  is added and shaken. What is observed:  
 (A) blue colour (B) Orange colour changing to green  
 (C) Copious evolution of oxygen (D) Bluish - green precipitate
33. The rusting of iron is formulated as  $\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$  which involves the formation of  
 (A)  $\text{Fe}_2\text{O}_3$  (B)  $\text{Fe}(\text{OH})_3$  (C)  $\text{Fe}(\text{OH})_2$  (D)  $\text{Fe}_2\text{O}_3 + \text{Fe}(\text{OH})_3$
34. Solid  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  having covalent, ionic as well as co-ordinate bonds. Copper atom/ion forms ..... co-ordinate bonds with water.  
 (A) 1 (B) 2 (C) 3 (D) 4
35.  $\text{KMnO}_4 + \text{HCl} \longrightarrow \text{H}_2\text{O} + \text{X}(\text{g})$ , X is a  
 (acidified)  
 (A) red liquid (B) violet gas  
 (C) greenish yellow gas (D) yellow-brown gas
36. Purple of cassius is:  
 (A) Pure gold (B) Colloidal solution of gold  
 (C) Gold (I) hydroxide (D) Gold (III) chloride
37. Amongst the following species, maximum covalent character is exhibited by  
 (A)  $\text{FeCl}_2$  (B)  $\text{ZnCl}_2$  (C)  $\text{HgCl}_2$  (D)  $\text{CdCl}_2$
38. Number of moles of  $\text{SnCl}_2$  required for the reduction of 1 mole of  $\text{K}_2\text{Cr}_2\text{O}_7$  into  $\text{Cr}_2\text{O}_3$  is (in acidic medium)  
 (A) 3 (B) 2 (C) 1 (D) 1/3
39. Pick out the incorrect statement:  
 (A)  $\text{MnO}_4^{2-}$  is quite strongly oxidizing and stable only in very strong alkalies. In dilute alkali, neutral solutions, it disproportionates.  
 (B) In acidic solutions,  $\text{MnO}_4^-$  is reduced to  $\text{Mn}^{2+}$  and thus,  $\text{KMnO}_4$  is widely used as oxidising agent  
 (C)  $\text{KMnO}_4$  does not acts as oxidising agent in alkaline medium  
 (D)  $\text{KMnO}_4$  is manufactured by the fusion of pyrolusite ore with  $\text{KOH}$  in presence of air or  $\text{KNO}_3$ , followed by electrolytic oxidation in strongly alkaline solution.
40. The aqueous solution of  $\text{CuCrO}_4$  is green because it contains  
 (A) green  $\text{Cu}^{2+}$  ions (B) green  $\text{CrO}_4^{2-}$  ions  
 (C) blue  $\text{Cu}^{2+}$  ions and green  $\text{CrO}_4^{2-}$  ions (D) blue  $\text{Cu}^{2+}$  ions and yellow  $\text{CrO}_4^{2-}$  ions
41. In nitroprusside ion, the iron exists as  $\text{Fe}^{2+}$  and  $\text{NO}$  as  $\text{NO}^+$  rather than  $\text{Fe}^{3+}$  and  $\text{NO}$  respectively. These forms of ions are established with the help of  
 (A) magnetic moment in solid state (B) thermal decomposition method  
 (C) by reaction with  $\text{KCN}$  (D) by action with  $\text{K}_2\text{SO}_4$

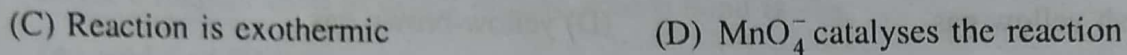
42. Which of the following reaction is possible at anode?



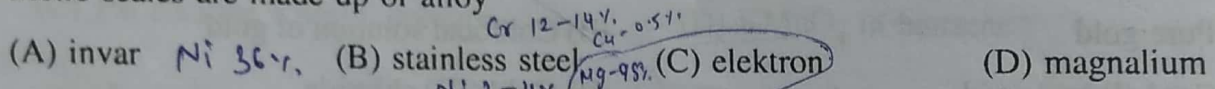
43. Colourless solutions of the following four salts are placed separately in four different test tubes and a strip of copper is dipped in each one of these. Which solution will turn blue?



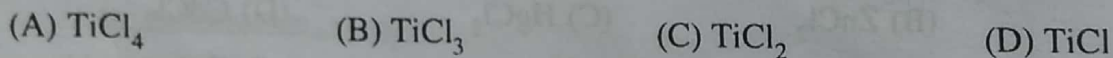
44. When acidified  $\text{KMnO}_4$  is added to hot oxalic acid solution, the decolourization is slow in the beginning, but becomes very rapid after some time. This is because:



45. Metre scales are made-up of alloy



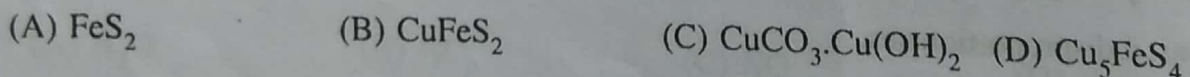
46. The Ziegler-Natta catalyst used for polymerisation of ethene and styrene is  $\text{TiCl}_4 + (\text{C}_2\text{H}_5)_3\text{Al}$ , the catalysing species (active species) involved in the polymerisation is



47. 'Bordeaux mixture' is used as a fungicide. It is a mixture of



48. Peacock ore is:



Leaver

inore  
Race