# G.N. NATIONAL PUBLIC SCHOOL

## Gorakhnath Road ,Gorakhpur

## Assignment Sheet - 2 : d- and f- Block Elements

**1.** When pyrolusite is fused with KOH, the colour of the product is
*a.* red *b.* pink
*c.* black *d.* green

**2.** Which of the following is wrong?
*a.* $K_2Cr_2O_7 \longrightarrow$ Orange
*b.* $CuSO_4 \cdot 5H_2O \longrightarrow$ Blue
*c.* $MnSO_4 \longrightarrow$ Yellow
*d.* $Cr_2(SO_4)_3 \longrightarrow$ Purple

**3.** In which of the following compounds, Mn has highest oxidation state?
*a.* $K_2MnO_4$ *b.* $MnO_2$
*c.* $KMnO_4$ *d.* $Mn_3O_4$

**4.** $KMnO_4$ is used
*a.* in analytical chemistry
*b.* as a favourite oxidant in preparative organic chemistry
*c.* in bleaching of wool, cotton and silk
*d.* All of the above

**5.** On addition of small amount of $KMnO_4$ to conc. $H_2SO_4$, a green oily compound is obtained which is highly explosive in nature. Identify the compound from the following.
*a.* $Mn_2O_7$ *b.* $MnO_2$
*c.* $MnSO_4$ *d.* $Mn_2O_3$

**6.** There are 14 elements in actinoid series. Which of the following elements does not belong to this series?
*a.* U *b.* Np
*c.* Tm *d.* Fm

**7.** In context of the lanthanoids, which of the following statements is not correct?
*a.* There is a gradual decrease in the radii of the members with increasing atomic number in the series
*b.* All the members exhibit + 3 oxidation state
*c.* Because of similar properties, the separation of lanthanoids is not easy
*d.* Availability of 4*f* electrons results in the formation of compounds in + 4 state for all the members of the series

**8.** Knowing that the chemistry of lanthanoids (Ln) is dominated by its +3 oxidation state, which of the following statements is incorrect?
*a.* Because of the large size of the Ln (III) ions, the bonding in its compounds is predominantly ionic in character
*b.* The ionic sizes of Ln (III) decrease in general with increasing atomic number
*c.* Ln (III) compounds are generally colourless
*d.* Ln (III) hydroxides are mainly basic in character

**9.** The basicity of lanthanoid hydroxides across the anthanoid series
*a.* decreases
*b.* increases
*c.* first decreases and then increases
*d.* first increases and then decreases

**10.** Among the following lanthanoid ions, the paramagnetic ion is
*a.* $Yb^{2+}$ *b.* $Eu^{2+}$
*c.* $Lu^{3+}$ *d.* $Ce^{4+}$

**11.** The actinoids include the ...*A*... elements from ...*B*... to ...*C*... Here, *A*, *B* and *C* refer to
*a.* *A* - fourteen, *B* - Th , *C* - Lr
*b.* *A* - twelve, *B* - Lr , *C* - Th
*c.* *A* - thirteen, *B* - Lr , *C* - Th
*d.* *A* - fourteen, *B* - Th, *C* - Lr

**12.** Larger number of oxidation states are exhibited by the actinoids then those by the lanthanoids, the main reason being
*a.* 4*f* orbitals are more diffused than the 5*f* orbitals
*b.* lesser energy difference between 5*f* and 6*d* than between 4*f* and 5*d* orbitals
*c.* more energy difference between 5 *f* and 6*d* than between 4*f* and 5*d* orbitals
*d.* more reactive nature of the actinoids than the lanthanoids

**13.** The *f*-block consists of ..... series.
*a.* two *b.* three
*c.* four *d.* five

**14.** Actinoids possess
*a.* variable valency
*b.* 12 elements
*c.* all synthetic elements
*d.* only short-lived isotopes

**15.** The lanthanoid contraction is related to
*a.* atomic radii
*b.* atomic as well as ionic radii, $M^{3+}$
*c.* valence electrons
*d.* oxidation states

**16.** Lanthanoids and actinoids differ from each other because
*a.* of the presence of partially filled outermost shells
*b.* actinoids are radioactive in nature
*c.* they show common oxidation state of + 3
*d.* both are known as inner-transition elements

**17.** The one which is not the characteristic property of transition element, is
*a.* diamagnetic behaviour *b.* formation of complexes
*c.* catalytic activity *d.* variable oxidation states

**18.** Dichromate ions in alkaline medium exist as
*a.* $CrO_4^{2-}$ *b.* $CrO_3$
*c.* $Cr^{3+}$ *d.* $Cr^{4-}$

**19.** The correct formula for diamine silver chloride is
*a.* $[Ag(NH_3)_2]Cl$
*b.* $[Ag(NH_2)_3]Cl$
*c.* $AgCl.NH_3$
*d.* $[Ag(NH_4)_2]Cl$

**20.** Which of the following oxides is used as a white pigment?
*a.* ZnO *b.* FeO *c.* NiO *d.* CuO

**21.** Mercury is a liquid metal because

*a.* it has a completely filled *d*-orbital that causes *d*-*d* overlapping

*b.* it has completely filled *d*-orbital that prevents *d*-*d* overlapping

*c.* it has a completely filled *s*-orbital

*d.* it has a small atomic size

**22.** When a solution of potassium chromate is treated with an excess of dilute nitric acid,

*a.* $Cr^{3+}$ and $Cr_2O_7^{2-}$ are formed

*b.* $Cr_2O_7^{2-}$ and $H_2O$ are formed

*c.* $CrO_4^{2-}$ is reduced to $Cr^{3+}$

*d.* $CrO_4^{2-}$ is oxidised to $Cr_2O_7^{2-}$

**23.** In the extraction of Ag, Zn is removed from (Zn-Ag) alloy through

*a.* cupellation *b.* fractional crystallisation

*c.* distillation *d.* electrolytic refining

**24.** Green vitriol is

*a.* ferrous sulphate *b.* tin oxide

*c.* zinc oxide *d.* ferrous carbonate

**25.** Pyrolusite is a/an

*a.* oxide ore *b.* sulphide ore

*c.* carbide ore *d.* Not an ore

**26.** When potassium ferrocyanide crystals are heated with conc. $H_2SO_4$, the gas evolved is

*a.* $SO_2$ *b.* $NH_3$ *c.* $CO_2$ *d.* CO

**27.** van-Arkel method is based on

*a.* cupellation method *b.* furnace refining method

*c.* poling method *d.* None of the above

**28.** Oil paintings turn blackish after some time. The salt formed is

*a.* SnS *b.* CuS *c.* PbS *d.* CdS

**29.** The extraction of which of the following metals involves bessemerisation?

*a.* Fe *b.* Ag *c.* Al *d.* Cu

**30.** A metal *X* on heating in nitrogen gas gives *Y*. *Y* on treatment with water gives a colourless gas which when passed through $CuSO_4$ solution gives a blue colour. *Y* is

*a.* $Mg(NO_3)_2$ *b.* $Mg_3N_2$ *c.* $NH_3$ *d.* MgO