

**Class: 12**  
**Subject: chemistry**  
**Topic: D & F block elements**  
**No. of Questions: 25**

- 1) The atomic numbers belonging to the third transition series are
  - a. 55 and 70 to 78
  - b. 56 and 71 to 79
  - c. 57 and 72 to 80
  - d. 58 and 73 to 81
  
- 2) The number of unpaired electrons in  $[\text{Co}(\text{NH}_3)_6]^{2+}$  is
  - a. 1
  - b. 2
  - c. 3
  - d. 5
  
- 3) Which of the following elements of the first transition series do(es) not exhibit variable oxidation state?
  - a. Zn only
  - b. Sc only
  - c. Sc and Zn
  - d. Sc, Zn and Ti
  
- 4) The oxidation states of Mn in  $\text{K}_2\text{MnO}_4$  and  $\text{KMnO}_4$ , respectively, are
  - a. +6 and +7
  - b. +6 and +6
  - c. +7 and +7
  - d. +7 and +6
  
- 5) The equivalent mass of  $\text{KMnO}_4$  in acidic medium is calculated by dividing its molar mass by
  - a. three
  - b. four
  - c. five
  - d. six

- 6) The calculated value of magnetic moment of  $24\text{Cr}^{3+}$  is
- 1.73 Bohr magneton
  - 2.83 Bohr magneton
  - 3.87 Bohr magneton
  - 4.90 Bohr magneton
- 7) Which of the following ions is diamagnetic in nature?
- $22\text{Ti}^{3+}$
  - $25\text{Mn}^{2+}$
  - $29\text{Cu}^{2+}$
  - $30\text{Zn}^{2+}$
- 8) If a transition-metal compound absorbs blue to blue-green radiations from the visible region, its colour would be
- yellow
  - orange to red
  - purple to violet
  - blue-green
- 9) Which of the following statements is not correct?
- The oxides of transition metals in their low oxidation state are generally basic.
  - The oxides of transition metals in their intermediate and high oxidation states are generally amphoteric and acidic, respectively.
  - Mixed iron oxides are found in the mineral magnetite.
  - Silver oxide is soluble in ammonium hydroxide forming the complex  $\text{Ag}(\text{NH}_3)\text{OH}$ .
- 10) Which of the following methods cannot be used to prepare anhydrous zinc chloride?
- Heating the crystals of  $\text{ZnCl}_2 \cdot 2\text{H}_2\text{O}$
  - Passing dry chlorine over heated zinc
  - Passing dry hydrogen chloride over heated zinc
  - Distilling metallic zinc with mercury(II) chloride
- 11) Which of the following hydroxides has the maximum basic character?
- $\text{La}(\text{OH})_3$
  - $\text{Pm}(\text{OH})_3$
  - $\text{Dy}(\text{OH})_3$
  - $\text{Lu}(\text{OH})_3$

12) Which of the following represents magnetite ore?

- a.  $\text{Fe}_2\text{O}_3$
- b.  $\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$
- c.  $\text{Fe}_3\text{O}_4$
- d.  $\text{FeO}$

13) Which of the following represents siderite ore?

- a.  $\text{Fe}_2\text{O}_3$
- b.  $\text{Fe}_3\text{O}_4$
- c.  $\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$
- d.  $\text{FeCO}_3$

14) Concentrated nitric acid reacts with

- a. copper only
- b. copper and silver only
- c. all the three coinage metals Cu, Ag and Au
- d. none of the three coinage metals

15) Alkalis react with

- a. copper only
- b. copper and silver only
- c. all the three coinage metals
- d. none of the three coinage metals

16) Which metal is commonly used to displace Ag from  $\text{Ag}(\text{CN})_2^-$ ?

- a. Copper
  - b. Gold
  - c. Iron
  - d. Zinc
- D

17) The black image on an exposed and developed photographic film is composed of

- a. Ag
- b. AgBr
- c.  $\text{Ag}(\text{S}_2\text{O}_3)_2^{3-}$
- d.  $\text{CuCl}_4^{2-}$

18) Which of the following is not an ore of zinc?

- a. Sphalerite
- b. Cassiterite
- c. Calamine
- d. Zineite

- 19) Which of the following statements is not correct?
- Zinc chloride is used as a flux in soldering.
  - Zinc chloride mixed with zinc oxide is used in dental filling.
  - Zinc chloride is used in dry cells.
  - None of these
- 20) Ammonium dichromate is used in some fireworks. The green-coloured powder blown in the air is
- $\text{CrO}_3$
  - $\text{Cr}_2\text{O}_3$
  - Cr
  - $\text{CrO}(\text{O})_3$
- 21) *The chemical reactivity of lanthanides resemble to which other elements of the periodic table?*
- 22) *Enthalpies of atomization of transition elements are higher than those of alkali and alkaline earth metals. Explain.*
- 23) Explain the following:**
- Chromium is a typical metal while mercury is a liquid metal.*
  - Zinc readily liberates  $\text{H}_2$  from cold dil.  $\text{H}_2\text{SO}_4$  but not from cold conc.  $\text{H}_2\text{SO}_4$ .*
- 24) It is well known that alkali and alkaline earth metals displace hydrogen from dilute acids. But most of the transition elements do not behave so. Explain.**
- 25).  $\text{Cu}^+$  ion has  $3d^{10}4s^0$  configuration and colourless but  $\text{Cu}_2\text{O}$  is red and  $\text{Cu}_2\text{S}$  is black. Explain.**