

**AIEEE 2009**

**CHEMISTRY**

1. Which of the following is extracted by the electrometallurgical method?

- a) Cu      b) Fe      c) Na      d) Ag

2. Nickel is purified by thermal decomposition of its

- a) hydride      b) chloride      c) azide      d) carbonyl

3. In the extraction of iron, slag is produced. Slag is

- a) Co      b)  $\text{FeSiO}_3$       c)  $\text{MgSiO}_3$       d)

4. The process of zone refining is used in the purification of

- a) Si      b) Al      c) Ag      d) Cu

5. The most abundant metal on the surface of the earth is

- a) Fe      b) Al      c) Ca      d) Hg

6. Cupellation process is used in the metallurgy of

- a) Cu      b) Ag      c) Zn      d) Al

7. Which of the following is not employed for refining of metal

- a) poling      b) leaching      c) electrolysis      d)  
liquation

8. Which of the following metals is obtained by leaching its ores with dilute cyanide solution?

- a) Zinc      b) Silver      c) Titanium      d) Vanadium

9. The main function of roasting is

- a) to remove the volatile matter      b) to convert the ore into oxide      c)  
both (a) and (b)      d) to make slag

10. In metallurgical processes, the flux used for removing acidic impurities is

- a) silica      b) NaCl      c) Lime Stone      d) Sodium  
Carbonate

11. Froth floatation is used for the concentration of

- a) oxide ores amalgams      b) sulphide ores      c) chloride ores      d)

12. Hybridisation of Fe in  $K_3[Fe(CN)_6]$  is

- a)  $sp^3$       b)  $dsp^3$       c)  $sp^3d^2$       d)  $d^2sp^3$

13. The type of isomerism present in nitropentaamminechromium (III)chloride is

- a) optical polymerisation      b) linkage      c) ionisation      d)

14. A square planar complex is formed by hybridisation of which atomic orbitals?

- a)  $s, px, py, dyz$       b)  $s, px, py, dx^2-y^2$       c)  $s, px, py, dz^2$       d)

15. Both geometrical and optical isomerisms are shown by

- a)  $[Co(en)_2Cl_2]^+$       b)  $[Co(NH_3)_5Cl]^{2+}$       c)  $[Co(NH_3)_4Cl_2]^+$       d)

16. In  $[Cr(C_2O_4)_3]^{3-}$ , the isomerism shown is

- a) ligand ionisation      b) optical      c) geometrical      d)

17. The coordination number of Fe(II) in oxyhaemoglobin is

- a) 6      b) 4      c) 8      d) 10

18. Which of the following is paramagnetic?

- a)  $[Fe(CN)_6]^{4-}$       b)  $[Ni(CO)_4]$       c)  $[Ni(CN)_4]^{2-}$       d)

19.  $CuSO_4$  dissolves in  $NH_3$  due to formation of

- a)  $Cu(OH)_2$       b)  $[Cu(NH_3)_4]SO_4$       c)  $[Cu(NH_3)_4(OH)_2]$

d)  $CuO$

20. Which of the following compounds is not coloured?

- a)  $Na_2[CuCl_4]$       b)  $Na_2[CdCl_4]$       c)  $K_4[Fe(CN)_6]$       d)

$K_3[Fe(CN)_6]$

21. The unpaired electrons in  $Ni(CO)_4$  are

- a) 0      b) 1      c) 3      d) 4

22. In the compound lithiumtetrahydridoaluminate, the ligand is

- a)  $A^+$       b) H      c)  $H^-$       d) none of these

23. Which complex has square planar structure?

- a)  $Ni(CO)_4$       b)  $[NiCl_4]^{2-}$       c)  $[Ni(H_2O)_6]^{2+}$       d)

$[Cu(NH_3)_4]^{2+}$

24.  $K_4[Fe(CN)_6]$  is called

- a) Potassium hexacyanoferrate(II)      Potassium hexacyanoferrate(III)  
 Potassium ferricyanide      d) Prussian blue

25. In which there is outer orbital hybridisation?

- a)  $[Zn(NH_3)_4]^{2+}$       b)  $[Co(NH_3)_6]^{3+}$       c)  $[Cr(NH_3)_6]^{3+}$       d)  $[V(NH_3)_6]^{3+}$

26. Which of the following ligands is a bidentate?

- a) EDTA      b) Ethylenediamine      c) Acetate  
 Pyridine      d)

27. Across the lanthanide series, the basicity of the lanthanide hydroxides

- a) increases      b) decreases      c) first increases and then  
 decreases      d) first decreases and then increases

28. In Nessler's reagent, the ion present is

- a)  $HgI_2^-$       b)  $HgI_4^{2-}$       c)  $Hg^+$       d)  $Hg^{2+}$

29. Oxidation state of osmium in  $OsO_4$  is

- a) +4      b) +6      c) +7      d) +8

30. A white solid halide of mercury forms a black mixture with  $NH_4OH$ . The halide is

- a)  $HgCl_2$       b)  $HgI_2$       c)  $Hg_2I_2$       d)  $Hg_2Cl_2$

31. Mercury sticks to the surface of the glass when it comes in contact with

- a)  $Hg_2O$       b)  $HNO_3$       c)  $O_3$       d) grease

32. The starting material for the manufacture of  $KMnO_4$  is

- a) pyrolusite      b) manganite      c) magnetite      d) Haematite

33. Zn does not show variable valency because of

- a) complete 'd' subshell      b) inert pair effect      c)  $4s^2$  subshell  
 d) none of them

34. Which one of the following ions has the lowest density?

- a) copper      b) nickel      c) scandium      d) zinc

35. Transition metals

- a) exhibit diamagnetism      b) undergo inert pair effect      c) do not  
 form alloys      d) show variable oxidation states

36. The products of reaction of copper with dilute nitric acid are

- a)  $Cu(NO_3)_2 + H_2$       b)  $Cu(NO_3)_2 + H_2O + NO$       c)  $Cu(NO_3)_2 + H_2O + NO_2$       d)  $CuNO_3 + H_2$

37. German silver does not contain

- a) Cu      b) Zn      c) Ni      d) Mn

38. Which one of the following metal ions is colourless?

- a)  $V^{2+}$       b)  $Cr^{3+}$       c)  $Zn^{2+}$       d)  $Ti^{3+}$

39. Which of the following ions will finally give a black precipitate with  $Ag^+$  ion

- a)  $SO_3^{2-}$       b)  $Br^-$       c)  $CrO_4^{2-}$       d)  $S_2O_3^{2-}$

40. Sodium thiosulphate is used in photography because of its

- a) oxidising behaviour      b) reducing behaviour      c) complexing behaviour      d) photochemical behaviour

41. Of the following which has the highest magnetic moment?

- a)  $V^{3+}$       b)  $Mn^{2+}$       c)  $Fe^{2+}$       d)  $Cu^{2+}$

42.  $XeF_4$  on partial hydrolysis produces

- a)  $XeF_2$       b)  $XeOF_2$       c)  $XeOF_4$       d)  $XeO_3$

43. The coloured discharge tubes for advertisement mainly contain

- a) xenon      b) helium      c) neon      d) argon

44. In the clathrates of xenon with water, the nature of bonding between xenon and water is

- a) covalent      b) hydrogen bonding      c) co-ordinate  
d) dipole induced dipole interaction

45.  $XeF_2$  molecule is

- a) linear      b) trigonal planar      c) pyramidal      d) square planar

46. Which of the following Fluorides of Xenon is impossible

- a)  $XeF_2$       b)  $XeF_3$       c)  $XeF_4$       d)  $XeF_6$

47. Which is the weakest acid

- a) HF      b) HCl      c) HBr      d) HI

48. The bleaching action of Chlorine is due to

- a) reduction      b) hydrogenation      c) chlorination      d) oxidation

49. Bleaching powder is obtained by the action of Chlorine gas and

- a) Dilute solution of  $Ca(OH)_2$       b) Concentrated solution of  $Ca(OH)_2$   
c) Dry CaO      d) Dry slaked lime

50. Which of the following does not form its oxyacids?

a)

Fluorine  
Iodine

b)

Chlorine

c)

Bromine

d)