1.

When a metal is burnt, its mass is increased by 24 percent. The equivalent mass of the metal will be:

(a) 25

(b) 24

(c) 33.3

(d) 76

2.

The equivalent mass of H_3PO_4 in the following reaction is,

$H_3PO_4 + Ca(OH)_2 \rightarrow CaHPO_4 + 2H_2O$

(a) 98

(b) 49

(c) 32.66

(d) 40

3.

1.520g of the hydroxide of a metal on ignition gave 0.995 g of oxide. The equivalent mass of metal is:

(a) 1.520

(b) 0.995

(c) 19.00

(d) 9.00

4.

What will be the normality of a solution obtained by mixing 0.45 N and 0.60 N NaOH in the ratio 2:1 by volume?

(a) 0.4 N

(b) 0.5 N

(c) 1.05 N

(d) 0.15 N

5.

A metal oxide is reduced by heating it in a stream of hydrogen. It is found that after complete reduction, 3.15 g of the oxide have yielded 1.05g of the metal. We may deduce that:

(a) the atomic mass of the metal is 8

(b) the atomic mass of the metal is 4

(c) the equivalent mass of the metal is 4

(d) the equivalent mass of the metal is 8

6.

An oxide of metal has 20% oxygen, the equivalent mass of oxide is:

(a) 32

(b) 40

(c) 48

(d) 52

7.

A compound contains atoms of three elements A,B and C. If the oxidation number of A is +2, Bis +5 and that of C is -2, the possible formula of the compound is

(a) $A_2(BC_3)_2$

(b) $A_3(BC_4)_2$

(c) $A_3(B_4C)_2$

(d) ABC_2

8.

The number of peroxide linkages in CrO_5 is /are

(1) one

(2) two

(3) three

(4) none

9.

Conversion of $PbSO_4$ to Pbs is:

(a) reduction of S

(b) oxidation of S

(c) dissociation

(d) none of these

10.

Which of the following is a redox reaction?

(a) $NaCl + KNO_3 \rightarrow NaNO_3 + KCl$

(b) $CaC_2O_4 + 2HCl \rightarrow CaCl_2 + H_2C_2O_4$

(c) $Mg(OH)_2 + 2NH_4Cl \rightarrow MgCl_2 + 2NH_4OH$

(d) $Zn + 2AgCN \rightarrow 2Ag + Zn(CN)_2$

11.

Oxidation number of Fe in $K_3[Fe(CN)_6]$ is:

(a) +2

(b) +3

(c) +4

(d) +1

12.

It is found that v forms a double salt isomorphous with Mohr's salt. The oxidation number of V in this compound is:

(a) +3

(b) +2

(c) +4

(d) -4

13.

The correct order of reducing power of halide ions is:

(a) $Cl^- > Br^- > I^- > F^-$

(b) $Cl^- > I^- > Br^- > F^-$

(c) $Br^- > Cl^- > I^- > F^-$

(d) $I^- > Br^- > Cl^- > F^-$

14.

In which of the following processes nitrogen is oxidised?

(a) $NH_4^+ \rightarrow N_2$

(b) $NO_3^- \rightarrow NO$

(c) $NO_2 \rightarrow NO_2^-$

(d) $NO_3 \rightarrow NH_4^+$

15.

In which reaction is hydrogen acting as an oxidising agent?

(a) With ioding to give hydrogen iodide

(b) With lithium to give lithium hydride

(c) With nitrogen to give ammonia

(d) With sulphur to give hydrogen sulphide

16.

Fluorine is a strong oxidising agent because:

(a) it has several isotopes

(b) it is very small and has 7 electrons in valency shell

(c) its valency is one

(d) it is the first member of the halogen series

17.

The oxidation state of Ni in $Ni(CO)_4$ is:

(a) zero

(b) +4

(c) +8

(d) +2

18.

Sulphurous acid can be used as:

(a) oxidising agent

(b) reducing agent

(c) bleaching agent

(d) all of these

19.

When SO_2 is passed through acidified solution of potassium dichromate, then chromium sulphate is formed. The change in oxidation number of chromium is:

(a) +4 to+2

(b) +5 to+3

(c) +6 to+3

(d) +7 to+2

20.

In the reaction;

$2Ag + 2H_2SO_4 \rightarrow Ag_2SO_4 + 2H_2O + SO_2$,$H_2SO_4$ acts as:

(a) oxidising agent

(b) reducing agent

(c) dehydrating agent

(d) none of these

21.

Which of the following shows highest ox. no. in combined state?

(a) Os

(b) Ru

(c) Xe

(d) All of these

22.

In the preparation of chlorine from HCl; MnO_2 acts as:

(a) reducing agent

(b) oxidising agent

(c) catalytic agent

(d) dehydrating agent

23.

In the equation,

$NO_2^- + H_2O \rightarrow NO_3^- + 2H^+ + ne^-$

n stands for:

(a) H^+

(b) e^-

(c) $2e^-$

(d) $3e^-$

24.

In the reaction between acidified $K_2Cr_2O_7$ and iron (II) ions shown by the equation:

$Cr_2O_7^{2-}(aq) + 6Fe^{2+}(aq) + 14H^+(aq) \rightarrow 2Cr^{3+}(aq) + 7H_2O(l) + 6Fe^{3+}(aq)$

(a) the colour of the solution changes from green to blue

(b) the iron (II) ions are reduced

(c) the dichromate ions are reduced

(d) hydrogen ions are reduced

25.

Which metal exhibits more than one oxidation states?

(a) Na

(b) Mg

(c) Al

(d) Fe

26.

In which iron has the lowest oxidation state?

(a) $Fe(CO)_5$

(b) Fe_2O

(c) $K_4Fe(CN)_6$

(d) $FeSO_4.(NH_4)_2SO_4.6H_2O$

27.

When an acidified solution of ferrous ammonium sulphate is treated with $KMnO_4$ solution, the ion which is oxidised is:

(a) Fe^{2+}

(b) SO_4^{2-}

(c) NH_4^+

(d) MnO_4^-

28.

In the reaction,

$2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$,

the oxidation state of sulphur is:

(a) decreased

(b) increased

(c) unchanged

(d) none of these

29.

During a redox change, the oxidant $K_2Cr_2O_7$ is always reduced to:

(a) Cr^{5+}

(b) Cr^{4+}

(c) Cr^{3+}

(d) Cr^{2+}

30.

Which is not a redox change?

(a) $CaCO_3 \rightarrow CaO + CO_2$

(b) $2H_2 + O_2 \rightarrow 2H_2O$

(c) $Na + H_2O \rightarrow NaOH + 1/2\ H_2$

(d) $MnCl_3 \rightarrow MnCl_2 + 1/2\ Cl_2$

31.

In the reaction;

$3Br_2 + 6CO_3^{2-} + 3H_2O \rightarrow 5Br^- + BrO_3^- + 6HCO_3^-$

which statement is correct?

(a) Br_2 is oxidised

(b) Br_2 is reduced

(c) Br_2 is neither oxidised nor reduced

(d) Br_2 is oxidised and reduced as well

32.

Amongst the following identify the species with an atom in (+6) oxidation state.

1. MnO_4^-

2. $Cr(CN)^{3-}6$

3. NiF_6^{2-}

4. CrO_2Cl_2

33.

A metallic oxide contains 20% oxygen. The equivalent weight of metal is

1. 12

2. 16

3. 32

4. 64

34.

Which one is correct about $CH_2 = CCl_2$?

(1) Both carbon are in +2 oxidation state.

(2) Both carbon are in +- oxidation state.

(3) Once carbon has +2 and other -2 oxidation state.

(4) The average oxidation number of carbon is +1.

35.

What is the equivalent weight of H_3PO_3 in the following disproportionation reaction:-

$H_3PO_3 \rightarrow H_3PO_4 + PH_3$

1. $\frac{M}{6}$

2. $\frac{M}{2}$

3. $\frac{2M}{3}$

4. $\frac{M}{3}$

36.

25.0 g of $FeSO_4.7H_2O$ was dissolved in water containing dilute H_2SO_4, and the volume was made up to 1.0 L. 25.0 mL of this solution required 20 mL of an N/10 $KMnO_4$ solution for complete oxidation. The percentage of $FeSO_4 \cdot 7H_2O$ in the acid solution is

(1) 78%

(2) 98%

(3) 89%

(4) 79%

37.

Which one of the following orders correctly represents the increasing acid strengths of the given acids?

(a) HOCl<HOClO<$HOClO_2$<$HOClO_3$

(b) HOClO<HOCl<$HOClO_3$<$HOClO_2$

(c) $HOClO_2$<$HOClO_3$<HOClO<HOCl

(d) $HOClO_3$>$HOClO_2$<HOClO<HOCl

38.

The valency of *Cr* in the complex $[Cr(H_2O)_4Cl_2]^+$ **[MP PMT 2000]**

(1) 1

(2) 3

(3) 5

(4) 6

39.

Oxidation number of cobalt in $K[Co(CO)_4]$ is **[KCET 1996]**

(1) + 1

(2) + 3

(3) – 1

(4) – 3

40.

The oxidation number of phosphorus in $Ba(H_2PO_2)_2$ is **[Kurukshetra CEE 1998; DCE 2004]**

(1) – 1

(2) + 1

(3) + 2

(4) + 3

41.

When $KMnO_4$ acts as an oxidising agent and ultimately forms $[MnO_4]^{-2}$, MnO_2, Mn_2O_3, Mn^{+2} then the number of electrons transferred in each case respectively is **[AIEEE 2002]**

(1) 4, 3, 1, 5

(2) 1, 5, 3, 7

(3) 1, 3, 4, 5

(4) 3, 5, 7, 1

42.

For the redox reaction $MnO_4^- + C_2O_4^{-2} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ the correct coefficients of the reactants for the balanced reaction are **[IIT 1988, 92; BHU 1995; CPMT 1997; RPMT 1999; DCE 2000; MP PET 2003]**

	MnO_4^-	$C_2O_4^{2-}$	H^+
(1)	2	5	16
(2)	16	5	2
(3)	5	16	2
(4)	2	16	5

43.

Which of the following is the strongest oxidising agent **[Pb. CET 2000]**

(1) BrO_3^-/Br^{2+}, $E^o = +1.50$

(2) Fe^{3+}/Fe^{2+}, $E^o = +0.76$

(3) MnO_4^-/Mn^{2+}, $E^o = +1.52$

(4) $Cr_2O_7^{2-}/Cr^{3+}$, $E^o = +1.33$

44.

Oxidation number of oxygen in potassium super oxide (KO_2) is **[UPSEAT 1999, 2002]**

(1) – 2

(2) – 1

(3) – 1/2

(4) – 1/4

45.

In a balanced equation $H_2SO_4 + x\,HI \rightarrow H_2S + y\,I_2 + z\,H_2O$, the values of *x*, *y*, *z* are **[EAMCET 2003]**

(1) *x* = 3, *y* = 5, *z* = 2

(2) *x* = 4, *y* = 8, *z* = 5

(3) *x* = 8, *y* = 4, *z* = 4

(4) *x* = 5, *y* = 3, *z* = 4

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