CHEMISTRY

BOOKS - PATHFINDER CHEMISTRY (BENGALI ENGLISH)

MOLE AND STOICHIOMETRY-II

Question Bank

1. Determine the oxidation number of the underlined element. $K\underline{Mn}O_4$, $K_4\left[\underline{Fe}(CN)_6\right]$

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2. Determine the oxidation number of S in H_2SO_4.

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3. What is the normality of $96\,\%$ solution of H_2SO_4 od specific gravity 1.84?

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4. How many mL of $96\,\%$ h_2SO_4 solution is necessary to prepare one litre o.1 N h_2So_4?

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5. Determine the number of gram equivalents of solute in

100 mL of 5N HCl

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6. Calculate equivalent mass (E) of the following-

K-Alum (molar mass = M_1)

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7. Calculate equivalent mass (E) of the following -

H_3PO_3 (molar mass = M_2) in the reaction :

$H_3PO_3 + NaOH \rightarrow Na_2HPO_3 + H_2O$

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8. Calculate equivalent mass (E) of the following-

FeS_2 (Molar mass = M_3) in the reaction :

$FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$

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9. Calculate equivalent mass (E) of the following-

$KMnO_4$(Molar mass = M_4) as an oxidising agent in different medium

acidic

alkaline

neutral.

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10. 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:

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11. Balance $Cl_2 + OH^- \rightarrow Cl^- + ClO_3^- + H_2O$

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12. Balance the following equation by ion electron method : $Cr_2O_7^{2-} + H^+ + C_2O_4^2 \rightarrow + Cr^{3+} CO_2 + H_2O.$

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13. Balance $ClO^- + CrO_2^- + OH^- \rightarrow Cl^- + CrO_4^{2-} + H_2O$

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14. 1 g of a mixture of NaOH and Na_2CO_3 and inert impurities was first titrated with phenolphthalein and $N/10HCl$, 17.5 mL of HCl was required at the end point. After this methyl orange was added and 2.5 mL of same HCl was again required . Find out percentage of NaOH and Na_2CO_3 in the mixture.

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15. 10 g of a sample of $Ca(OH)_2$ is dissolved in 10 mL of 0.5 N HCL solution . The excess of HCl was titrated with 0.2 N NaOH. The volume of NaOH used was 10 cc. Calculate the percentage of $Ca(OH)_2$ in the sample.

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16. What is the mass of sodium bromate and molarity of the solution necessary to prepare 85.5 mL of 0.672 N solution when the half reaction is, $BrO_3^- + 6H^+ + 6e \rightarrow Br^- + 3H_2O$ (Atomic mass of Br = 80)

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17. What happens when barium azide is heated ?

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18. A solution of 0.1 M $KMnO_4$ is used for the reaction : $s_2O_3^{2-} + 2MnO_4^- + H_2O \rightarrow MnO_2 + SO_4^{2-} + OH^-$ What volume of solution in mL will be required to react with 0.158 g of $Na_2S_2O_3$?

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19. 0.804 g sample of iron was dissolved in acid , Iron was reduced to $+2$ state and it required 47.2 mL of 0.112 N $KMnO_4$ solution for titration. Calculate the percentage of iron and Fe_3O_4 in the ore.

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20. 1.325 g of anhydrous sodium carbonate is dissolved in water and the solution is made up to 250 mL. On titration 25 mL of this solution neutralises 20 mL of a solution of H_2SO_4. HOW much water should be added to 450 mL of this acid solution to make it exactly $\frac{N}{12}$?

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21. 0.1 M $KMnO_4$ solution completely reacts with 0.05M $FeSO_4$ solution under acidic conditions. The volume of $FeSO_4$ used is 100 ml. What volume of KMnO4 was used ?

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22. Give the Formula of $Dolomite$.

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23. 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:

A. $MnO_4 - 2, C_2O_4^{2-} 5, H^+ 16$

B. $MnO_4 - 16, C_2O_4^{2-} 5, H^+ 2$

C. $MnO_4 - 5, C_2O_4^{2-} 16, H^+ 2$

D. $MnO_4 - 2, C_2O_4^{2-} 16, H^+ 5$

Answer: A

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24. In an experiment, 50 ml of 0.1 M solution of a salt reacted with 25 ml of 0.1 M solution of sodium sulphite. The half equation for the oxidation of sulphite ion :

$SO_{3\,(aq)}\,H_2O \rightarrow SO^{2-}_{4\,(aq)} + 2H^{+}_{(aq)}$

If the oxidation number of the metal in the salt was 3, what would be the new oxidation number of the metal ?

A. 0

B. 1

C. 2

D. 4

Answer: C

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25. The number of moles of $K_2Cr_2O_7$ reduced by one mole of Sn^{2+} ions is

A. $1/3$

B. 3

C. $1/6$

D. 6

Answer: A

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26. In a reaction, 4 moles of electrons are transferred to one mole of HNO_3 when acted as an oxidant. The possible reduction product is

A. 1.5 moles of N_2

B. 0.5 mole of N_2O

C. 1 mole of NO_2

D. 1 mole of NH_3

Answer: B

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27. Equivalent mass of $Fe_{0.9}$ O in reaction with acidic $K_2Cr_2O_7$ is $\left(Fe^{2+} + Cr_2O_7^{2-} + 14H^+ \rightarrow 6Fe^{3+} + 2Cr^{3+} + 7H_2O\right)$

A. $7m/10$

B. $10m/7$

C. $7m/9$

D. $9m/7$

Answer: B

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28. Equivalent weight of oxalic acid salt in following reaction is (O = 16, C = 12, K = 39)

$H_2C_2O_4 + Ca(OH)_2 \rightarrow CaC_2O_4 + H_2O$

A. 90

B. 45

C. 64

D. 128

Answer: B

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29. Which of the following is not a disproportionation reaction .

A. $P_4 + NaOH \rightarrow NaH_2PO_2 + PH_3$

B. $BaC_2 + N_2 \rightarrow Ba(CN)_2$

C. $Hg_2l_2 \rightarrow Hgl_2 + Hg$

D. $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + CaCl_2$

Answer: B

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30. The chloride of a metal contains 71% chlorine by weight and the vapour density of it is 50. The atomic weight of the metal will be

A. 29

B. 58

C. 35.5

D. 71

Answer: A

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31. 10 mL of 0.1 N HCI was added to 20 mL of 0.1 N KOH. .The excess of KOH was neutralised by 0.05 N H_2SO_4. The amount of H_2SO_4 consumed was :

A. 10.0 mL

B. 15.0 mL

C. 20.0 mL

D. 30.0 mL

Answer: C

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32. The number of moles of $KMnO_4$ required to oxidise one mole of FeC_2O_4 in an acidic medium is

A. 0.6

B. 1.67

C. 0.2

D. 0.4

Answer: A

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33. The normality and the volume strength of the solution which made by mixing of 5.6 V & 11.2 VH_2O_2 solution.

A. 8.4 V

B. 1.5 N

C. 4.8 V

D. 1 N

Answer: A::B

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34. 0.1 M solution of KI reacts with excess of H_2SO_4 and KIO_3 solutions, according to equation $5I^- + lO_3^- + 6H^+ \rightarrow 3l_2 + 3H_2O$, which of the following statement is correct

A. 200 ml of the KI solution react with 0.004 mole KlO_3

B. 100 ml of the Kl solution reacts with 0.006 mole of H_2SO_4

C. 0.5 litre of the Kl solution produced 0.005 mole of l_2

D. Equivalent weight of KlO_3 is equal to $\left(\frac{\text{Molecular Weight}}{5}\right)$

Answer: A::B::D

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35. In which of the following compound transition metal has zero oxidation state

A. CrO_5

B. NH_2NH_2

C. $Ni(ClO_4)_2$

D. $\left[Fe(CO)_5\right]$

Answer: D

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36. It takes 0,15 mole of CIO^- to oxidize 12.6 g of chromium oxide of a specific formula to $Cr_2O_7^{2-}$. CIO^- became CL^- The formula of the oxide is (atomic weight Cr = 52, 0= 16)

A. CrP_3

B. CrO_2

C. CrO_4

D. CrO

Answer: B

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37. 1 mol of ferrous oxalate is oxidized by x mol of MnO_4^- and also 1 mol of ferrous oxalate is oxidized by y mol of MnO_4^- in acidic medium. The ratio (x/y) is :

A. $2:1$

B. $5:6$

C. $3:1$

D. $6:5$

Answer: D

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38. Which reaction does not involve neither oxidation nor reduction ?

A. $VO^{2+} \rightarrow V_2O_3$

B. $Na \rightarrow Na^+$

C. $CrO_4^{2-} \rightarrow Cr_2O_7^{2-}$

D. $Zn^{2+} \rightarrow Zn$

Answer: C

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39. Consider the following reactions :

$C_2O_4^{2-} \rightarrow CO_2$

$SO_4^{2-} \rightarrow SO_3^{2-}$

$MnO_4^{2-} \rightarrow MnO_4^{-}$

$Fe^{3+} \rightarrow Fe^{2+}$

A. (i) & (ii) shows oxidation

B. (iii) & (iv) shows reduction

C. (i) & (iii) shows oxidation

D. (iii) & (iv) shows oxidation

Answer: C

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40. Which of the following reaction represents disproportionation ?

A. $CrO_5 \rightarrow Cr^{3+} + O_2$

B. $IO_3^- + I^- + H^+ \rightarrow l_2$

C. $CrO_2Cl_2 + NaOH \rightarrow NaCrO_4 + NaCl + H_2O$

D. $Na_2S_2O_3 + H_2SO_4 \rightarrow Na_2SO_4 + SO_2 + S_8 + H_2O$

Answer: D

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41. 6x10^{-3} mole $K_2Cr_2O_7$ reacts completely with 9x10^{-3} mole X^{n+} to give XO_3^{-1} and Cr^{3+}. the value of n is :

A. 3

B. 1

C. 0

D. 4

Answer: B

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42. A certain ion X^{n+} is oxidized successively to XO_4^{2-} and then XO_4^- by a powerful oxidizing agent. If the number of moles of the oxidizing agent required in the successive steps of oxidation are in the ratio 4:1, n is :

A. 3

B. 1

C. 2

D. 4

Answer: C

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43. Write the common method of preparation of N_2O.

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44. How many moles of electrons are needed for the reduction of each mole of Cr in the reaction,

$CrO_5 + H_2\,SO_4 \rightarrow Cr_2(SO_4)_3 + H_2O + O_2$

A. 4

B. 3

C. 5

D. 7

Answer: B

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45. .What volume of H_2O_2 solution of 22,4 “vol strength" is required to liberate 2240 mL of O_2 at NTP ?

A. 300 mL

B. 200 mL

C. 100 mL

D. 500 mL

Answer: C

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46. In the reaction, $2CuSO_4 + 4KI \rightarrow Cu_2l_2 + 2K_2SO_4 + I_2$ the ratio of equivalent weight of $CuSO_4$ to its molecular weight is :

A. $1/8$

B. $1/4$

C. $1/2$

D. 1

Answer: D

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47. Hydroxylamine reduces iron (lll) according to following equation

$NH_2OH + Fe_2(SO_4)_3 \rightarrow N_2(g) + H_2O + FeSO_4 + H_2SO_4$ which statement is correct ?

A. n-factor for hydroxyl amine is 1

B. equivalent weight of $Fe_2(SO_4)_3$ is M/3

C. 6 meq of $Fe_2(SO_4)_3$ is contained in 3 millimoles of ferric sulphate

D. all of these

Answer: A

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48. In the following reaction (unbalanced) equivalent wt. of As_2S_3 is related to molecular wt. M By

$As_2S_3 + H^+NO_3^- \rightarrow NO + H_2O + AsO_4^{3-} + SO_4^{2-}$

A. $M/2$

B. $M/4$

C. $M/28$

D. $M/24$

Answer: C

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49. 60 ml 0.1 M $KMnO_4$ is treated with excess FeC_2O_4 in presence of H_2SO_4. The volume of CO_2 gas (measured at STP) obtained is :

A. 448 ml

B. 672 ml

C. 224 ml

D. 112 ml

Answer: A

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50. What happens when iron is heated in presence of O_2?

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51. What volume of 2 N $K_2Cr_2O_7$ solution is required to oxidise 0.81 g of H_2S in acidic medium?

A. 47.8 ml

B. 23.8 ml

C. 40 ml

D. 72 ml

Answer: B

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52. 600 ml of a 0.1 (N) solution of $AgNO_3$ is added to 500 mL of 0.1 (N) KCI solution. The concentration of nitrate in the resulting solution is

A. 0.0545 (N)

B. 0.0455 (N)

C. 0.05 (N)

D. 0.1 (N)

Answer: A

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53. 1.60g of a metal were dissolved in HNO_3 to prepare its nitrate. The nitrate on strong heating gives 2g oxide. The equivalent weight of metal is

A. 16

B. 32

C. 48

D. 12

Answer: B

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54. A100 ml solution of 0.1 N HCl was titrated with 0.2 N NaOH solution. The titration was discontinued after adding 30 ml of NaOH solution. The remaining titration was completed by adding 0.25 N KOH solution. The volume of KOH required for completing the titration is

A. 70 ml

B. 32 ml

C. 35 ml

D. 16 ml

Answer: D

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55. What volume of 0.1 M $KMnO_4$ is needed to oxidize 100 mg of FeC_2O_4 in acidic solution ?

A. 4.1 mL

B. 8.2 mL

C. 10.2 mL

D. 4.6 mL

Answer: A

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56. The oxidation state of A, B and C in a compound are $+2,\ +5$ and -2 respectively. The compound is

A. $A_2(BC)_2$

B. $A_2(BC)_3$

C. $A_3(BC_4)_3$

D. $A_2(BC)_3$

Answer: C

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57. Which of the following is intermolecular redox reaction?

A. 2OCH−CHO− → −−OH−HOCH2−CH2OH

B. $2C_6H_5CHO \xrightarrow{Al(OC_2H_5)_3} C_6H_5COOH + C_6H_5CH_2OH$

C. $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$

D. $As_2S_3 + HNO_3 \rightarrow H_3AsO_4 + H_2SO_4 + NO$

Answer: B

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58. In the standardisation of $Na_2S_2O_3$ using $K_2Cr_2O_7$ equivalent wt of $K_2Cr_2O_7$ is

A. $M/2$

B. $M/6$

C. $M/3$

D. M

Answer: B

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59. Equivalent weight of As_2S_3 in $As_2S_3 + HNO_3 \rightarrow H_2SO_4 + NO_2 + H_3AsO_4 + H_2O$ is

A. $M/28$

B. $M/40$

C. $M/10$

D. $M/5$

Answer: B

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60. For the reaction : $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$. Which statement is wrong?

A. It is disproportionation reaction

B. It is intramolecular redox

C. CrO_5 acts as oxidant and reductant both

D. Cr acts as oxidant whereas O acts as reductant

Answer: A

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61. Titration of I_2 produced from 0.1045 g of primary standard KlO_3 require 30.72 mL of sodium thiosulphate as shown below : (Atomic mass of iodine = 127) $lO_3^- + 5l^- + 6H^+ \rightarrow 3l_2 + 3H_2O$

$l_2 + 2S_2O_3^{2-} \rightarrow 2l^- + S_4O_6^{2-}$ The molarity of sodium thiosulphate Ion is :

A. 0.095

B. 0.079

C. 0.084

D. 0.064

Answer: A

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62. What is wrong about $6.07\,\%$ strength H_2O_2 ?

A. Its normality is 3.57 N

B. Its molarity is 1.785 M

C. Its volume strength is 20 volume

D. Volume strength = 5.6 x molarity

Answer: D

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63. When BrO_3^- ion reacts with Br^- ion in acid medium, Br_2 is llberated. The equivalent weight of Br_2 in the reaction is

A. $\frac{5M}{3}$

B. $\frac{3M}{6}$

C. $\frac{4M}{6}$

D. $\frac{5M}{8}$

Answer: B

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64. 1 mole of equimolar mixture of $Fe_2(C_2O_4)_3$ and FeC_2O_4 requires X mole of $KMnO_4$ In acid medium for complete oxidation. The value of X is

A. 0.9

B. 0.6

C. 1.2

D. 0.8

Answer: A

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65. The oxidation number of Cr is $+6$ in :

A. K_2CrO_4

B. $K_2Cr_2O_7$

C. $KCrO_3Cl$

D. CrO_5

Answer: A::B::C::D

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66. Dichromate ion in acidic medium oxidizes stannous ion as

$$xSn^{2+} + yCr_2O_7^{2-} + zH^+ \rightarrow aSn^{4+} + bCr^{3+} + cH_2O$$

A. the value of x : y is 1 : 3

B. the value of $x + y + z$ is 18

C. a : b is 3 : 2

D. the value of $z - c$ is 7

Answer: B::C::D

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67. " 20 volume" of H_2O_2 is equal to

A. $6.06\ \%\ H_2O_2(w/v)$

B. $3.57NH_2O_2$

C. $20mlH_2O_2$

D. $3.57MH_2O_2$

Answer: A::B

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68. Draw the structure of $H_2S_2O_8$.

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69. For the following balanced redox reaction, $2MnO_4^- + 4H^+ + BR_2 \rightarrow 2Mn^{2+} + 2BrO_3^- + 2H_2O$ if the molecular wt. of $MnO_4^-\ Br_2$ be M_xM_y respectively, then

A. equivalent wt. of MnO_4^- is $\frac{M_x}{5}$

B. equivalent wt. of Br_2 is $\frac{M_y}{10}$

C. the n-factor ratio of Mn^{2+} to BrO_3^- is 1 : 1

D. none of these

Answer: A::B::C

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70. x mmol of KIO3 reacts completely with y mmol of KI to give I2 quantitatively. If z mmol of hypo(Na2S2O3) are required for complete titration against this I2 then which relation is not correct ?

A. z = 6x

B. 6y = 5z

C. x = 5y

D. $x + y = z$

Answer: C::D

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71. Which one is not correct about the reaction :

$FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$

A. Eq. weight of FeS_2 is M/11

B. Eq. wt of $SO_2 = M/5$

C. 1 mole of FeS_2 requires 7/4 mole of O_2

D. S has -2 oxidation state in FeS_2

Answer: A::B::C

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72. Write the actual formula of bleaching powder.

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73. What happens when xenon and fluorine are reacted in the ratio 2:1 respectively?

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74. Match Column-I with Column-II

Column-I		Column-II	
(A)	$NH_3 \rightarrow NO_3^-$	(P)	M/3
(B)	$FeC_2O_4 \rightarrow Fe^{3+} + 2CO_3^{2-}$	(Q)	M/6
(C)	$H_2SO_5 \rightarrow S_8$	(R)	M/8
(D)	$KMnO_4 \rightarrow Mn^{2+}$	(S)	M/5
		(T)	reducing agent

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75. Match Column-I with Column-II

Column-I		Column-II	
(A)	$KMnO_4 \xrightarrow{H^+} Mn^{+2}$	(P)	M/2
(B)	$MgC_2O_4 \rightarrow Mg^{2+} + CO_2$	(Q)	M/5
(C)	$K_2Cr_2O_7 \rightarrow Cr^{+3}$	(R)	M/6
(D)	$CrO_5 \rightarrow Cr_2O_3$	(S)	M/3
		(T)	Oxidising agent

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76. Match Column-I with Column-II

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77. A solution containing 2.68 x10^{-3} mol of a solution containing an A^{n+} ion requires 1.61x10^{-3} mol of MnO_4^{-1} for the complete oxidation of A^{n+} to AO_3^- in acidic medium. What is the value of n ?

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78. 1.575 g of oxalic acid $(COOH)_2 . xH_2O$ are dissolved in water and the volume made upto 250 mL. On titration 16.68 mL of this solution requires 25 mL of N/15 NaOH solution for complete neutralization. Calculate x.

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79. 0.63 g of dibasic acid was dissolved in water. The volume of the solution was made 100 mL. 20 mL of this acid solution required 10 mL $\frac{N}{5}$ NaOH solution. What is the normality of acid.

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80. A 3M solution of $Na_2S_2O_3$ (Relative Formula Mass = 158) has density of 1.25 g/mL. Calculated its molality.

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81. To a 25 ml H_2O_2 solution, excess of acidified solution of potassium iodide was added. The iodine liberated required 20 mL of 0.3 N sodium thiosulphate solution. Calculate the volume strength of H_2O_2 solution.

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82. In 100 ml sample of hard water, 100 ml of $\left(\frac{N}{50}\right)$ Na_2CO_3 was added and the mixture was boiled and filtered The filtrate was neutralized with 60 ml of $\left(\frac{N}{50}\right)$ HCI. Calculate the permanent hardness of water, (sp gr. of hard water = 1)

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83. A mixture of NaCI and Na_2CO_3 is given. On heating 12 g of the mixture with dil. HCI. 2.241 g of CO_2 is evolved at normal temperature. Calculate the amounts of each in the mixture

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84. Brass is an alloy of Cu-Zn. A sample of brass weighing 5.793 g, when treated with excess of dil. H_2SO_4 gives 324 mi of dry H_2 at $20^\circ C$ and 750 mm pressure. What is the percentage of Cu by mass in the alloy ?

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85. 0.324 g of copper was dissolved in HNO_3 and the copper nitrate so produced was burnt till all copper nitrate converted to 0.406 g of copper oxide. Calculate the equivalent mass of copper.

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86. 10 ml of $NaHC_2O_4$ solution is neutralized by 10 ml of 0.1 M NaOH solution. 10 ml of same $NaHC_2O_4$ solution is oxidised by 10 ml of $KMnO_4$ solution in acidic medium. Calculate the molarity of $KMnO_4$ solution.

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87. A sample of a mixture of CaCI2 and NaCI weighing 4.22 g was treated to precipitate all the Ca as $CaCO_3$, which was then heated and quantitatively converted to 0.959 g of CaO. Calculate $CaCI_2\,\%$ in the mixture.

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88. Calculate the concentration of $Na_2S_2O_{3.5}H_2O$ solution in gL^{-1} 10 ml of which just decolourised 15 ml of $\frac{N}{20}$ iodine solution.

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89. If the equivalent mass of a metal (M) is x and the formula of its oxide is M_mO_n,then show that the atomic mass of M is $\frac{2nx}{M}$

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90. The oxidation number of sulphur in S_8, S_2F_2, H_2S and H_2SO_4 respectively are:

A. $0, +1, -2$ and 6

B. $+2, 0, +2$ and 6

C. $0, +1, +2$ and 4

D. $-2, 0, +2$ and 6

Answer: A

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91. Calculate the oxidation no of the following

Cl in $CaOCl_2$ (Bleaching powder)

A. $+1$ only

B. -1 only

C. $+1$ and -1

D. none of these

Answer: C

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92. Fe shows an oxidation state of $+1$ in

A. $Fe(CO)_5$

B. $\left[Fe(H_2O)_5NO\right]SO_4$

C. $FE_4\left[Fe(CN)_6\right]_3$

D. $FeCl_4^-$

Answer: B

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93. 2 mole of N_2H_4 loses 16 mole of election is being converted to a new compound X . Assuming that all of the N-appears in the new compound. What is the oxidation state of 'N' in X?

A. -1

B. -2

C. $+2$

D. $+4$

Answer: C

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94. $N_2 + 3H_2 \rightarrow 2NH_3$ Molecular weight of NH_3 and N_2 are X, and X_2, their equivalent masses are $\_ Y1$ and Y_2. Then $(Y_1 - Y_2)$ is

A. $\left(\frac{2X_1 - X_2}{6}\right)$

B. $(x_1 - x_2)$

C. $(3x_1 - x_2)$

D. $(x_1 - 3x_2)$

Answer: A

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95. In a chemical reaction, $K_2Cr_2O_7 + xH_2SO_4 + ySO_z \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + zH_2O$ the value of x,y and z respectively

A. x = 1, y = 3, z = 1

B. x = 4, y = 1, z = 4

C. x = 3, y = 2, z = 1

D. x = 2, y =, z = 1

Answer: A

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96. 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:

A. 2, 5,16

B. 16, 3, 12

C. 15,16, 12

D. 2,16,5

Answer: A

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97. Ratio of moles of Fe (II) oxidised by equal volumes of equimolar $KMnO_4$ and $K_2Cr_2O_7$ solutions in acidic medium will be :

A. $5:3$

B. $1:1$

C. $1:2$

D. $5:6$

Answer: D

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98. CrO_7^{2-} is reduced to Cr^{3+} by Fe^{2+}. Identify the incorrect statement from the following.

A. 6 moles of Fe^{2+} are oxidised to Fe^{3+} ions.

B. The solution becomes yellow.

C. The solution becomes green.

D. It is a redox reaction.

Answer: B

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99. $6x10^{-3}$ mole $K_2Cr_2O_7$ reacts completely with $9x10^{-3}$ mole X^{n+} to give XO_3^{-1} and Cr^{3+}. the value of n is :

A. 1

B. 2

C. 3

D. None of these

Answer: A

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100. In a reaction, 4 moles of electrons are transferred to one mole of HNO_3 when acted as an oxidant. The possible reduction product is

A. 1 mol of NH_3

B. 1 mol of NO_2

C. $\frac{1}{2}$ mol of N_2

D. $\frac{1}{2}$ mol of N_2O

Answer: D

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101. W_1 g of an element combines with oxygen forming W_2 g of its oxide.

The equivalent weight of the element is :

A. $\left[\frac{W_1}{W_2}\right] \times 8$

B. $\left[\frac{W_1}{W_1 - W_2}\right] \times 8$

C. $\left[\frac{W_2 - W_1}{W_1}\right] \times 8$

D. $\left[\frac{W_1}{W_1 - W_2}\right] \times 8$

Answer: B

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102. Equivalent weight of H_3PO_2 when it disproportionate into PH_3 and H_3PO_3 is :

A. M

B. $M/2$

C. $M/4$

D. $3M/4$

Answer: D

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103. When BrO_3^- ion reacts with Br^- in acid medium, Br_2 is liberated. The equivalnt weight of Br_2 in this reaction is : [M = molecular wt of bromine]

A. $5\frac{M}{8}$

B. $5\frac{M}{3}$

C. $3\frac{M}{5}$

D. $4\frac{M}{6}$

Answer: C

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104. A metal oxide has the formula A_2O_3 It can be reduced by hydrogen to give free metal and water 0.1596 g of this metal oxide required 6 mg of hydrogen for complete reduction. What is the atomic weight of metal ?

A. 15.58

B. 155.8

C. 5.58

D. 55.8

Answer: D

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105. 0.3 g of an oxalate salt was dissolved in 100 ml solution. The solution required 90 ml of $\frac{N}{20} KMnO_4$ for complete oxidation. The $\%$ of oxalate ion in salt is

A. $33\ \%$

B. $66\ \%$

C. $70\ \%$

D. $40\ \%$

Answer: B

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106. When potassium permanganate is titrated against ferrous ammonium sulphate in acidic medium, the equivalent weight of potassium permanganate is :

A. $\frac{\text{molecular weight}}{3}$

B. $\frac{\text{molecular weight}}{5}$

C. $\frac{\text{molecular weight}}{2}$

D. $\frac{\text{molecular weight}}{10}$

Answer: B

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107. The volume of 0.2M solution of MnO_4^- which will react with 50.0 ml of 0.1 M solution of $C_2O_4^{2-}$ in acidic medium is

$$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 10CO_2 + 2Mn^{2+} + 8H_2O$$

A. 1 ml

B. 5 ml

C. 100 ml

D. 10 ml

Answer: D

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108. in an attempt to establish the formula of an oxide of nitrogen , a known volume of the pure gas was mixed with hydrogen and passed over a catalyst at a suitable temperature. 100% conversion of the oxide to ammonia and water was shown to have taken place. NxHy gives xNH3 + YH20 2400 cm3 of the nitrogen oxide measured at rtp produced 7.20g of water.The ammonia produced was neutralised by 200 cm3 of 1 mol per dm3. What was the oxidation number of the nitrogen in the nitrogen oxide ?

A. $+1$

B. $+2$

C. $+3$

D. $+4$

Answer: D

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109. 3.92 g of a sample of Mohr's salt (ferrous ammonium sulphate, Mol. wt.-392) reacts completely with 50 ml of $\frac{N}{10} KMnO_4$ solution in an acidic medium. The percentage purity of the sample is

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110. 2.75 g $Na_2CO_3 . xH_2O$ is dissolved in water and diluted upto 250 ml. 10 ml of this solution is completely neutralised with 15 ml (N/19.5) HCI. The value of x is

A. 12

B. 2

C. 10

D. 9

Answer: C

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111. V ml solution of Fe^{2+} can be oxidised by 60 ml of $KMnO_4$ in acidic medium. What will be the volume of $K_2Cr_2O_7$ required to oxidise V ml of the same Fe^{2+} solution in an acidic medium ? Consider the molarity of $KMnO_4$ and $K_2Cr_2O_7$ to be the same.

A. 50 ml

B. 60 ml

C. 72 ml

D. 25 ml

Answer: A

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112. 2 ml of 5 M H_3PO_4 is mixed with 3 ml of 2 M $Ca(OH)_2$. What will be the strength of the resulting solution ?

A. 7 N

B. 3.5 N

C. 3.6 N

D. 7.2 N

Answer: C

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113. Equal volumes of 1 M each of $KMnO_4$ and $K_2Cr_2O_7$ are used to oxidize Fe(II) solution in acidic medium. The amount of Fe oxidized will be

A. more with $KMnO_4$

B. more with $K_2Cr_2O_7$

C. equal with both oxidizing agents

D. cannot be determined

Answer: B

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114. Which one is not correct about the change given below?

$K_4[Fe(CN)_6] \rightarrow Fe^{3+} + CO_2 + NO_3^-$

A. Fe is oxidised Fe^{2+} to Fe^{3+}

B. Carbon is oxidised from C^{2+} to C^{4+}

C. N is oxidised from N^{3-} to N^{5+}

D. Carbon is not oxidised

Answer:

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115. 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:

A. $MnO_4^- = 2, C_2O_4^{2-} = 5, H^+ = 16$

B. $MnO_4^- = 16, C_2O_4^{2-} = 5, H^+ = 2$

C. $MnO_4^- = 5, C_2O_4^{2-} = 16, H^+ = 2$

D. $MnO_4^- = 2, C_2O_4^{2-} = 16, H^+ = 5$

Answer:

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116. How many moles of $KMnO_4$ are needed to oxidise a mixture of 1 mole each of $FeSO_4, FeC_2O_4$ and $Fe_2(C_2O_4)_3$ completely in acid medium :

A. 5

B. 2

C. 4

D. 6

Answer:

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117. If a g is the mass of $NaHC_2O_4$ required to neutralize 100mL of 0.2M NaOH and b g that required to reduce 100mL of 0.02M $KMnO_4$ in acidic medium then:

A. a = b

B. 2a = b

C. a = 2b

D. b = 4a

Answer:

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118. The number of moles of $KMnO_4$ that will be needed to react with one mole of sulfite ions in acidic solutions

A. $2/5$

B. $3/5$

C. $4/5$

D. 1

Answer:

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119. The weight of 1 g-equivalent of V_2O_5 used in the reaction $Zn + V_2O_5 \rightarrow ZnO + V$ is : (at wt of V = A)

A. $\frac{A}{5}$

B. $\frac{A+80}{5}$

C. $\frac{2A+80}{5}$

D. $\frac{2A+80}{10}$

Answer:

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120. Dichromate ion in acidic medium oxidizes stannous ion as

$$xSn^{2+} + yCr_2O_7^{2-} + zH^+ \rightarrow aSn^{4+} + bCr^{3+} + cH_2O$$

A. the value of x:y is 1 :3

B. the value of $x + y + z$ is18

C. a : b is 3 :2

D. the value of z - c is 7

Answer:

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121. The equation for a reaction is shown below : $2MnO_4^- + 5H_2O_2 + 6H^+ \rightarrow 2Mn^{2+} + 8H_2O + 5O_2$ Which of the following statements about this reaction are correct ?

A. Hydrogen ions are oxidised to water.

B. Hydrogen peroxide is oxidised to oxygen.

C. The oxidation number of manganese changes by 6.

D. Hydrogen peroxide is reduced to water.

Answer:

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122. $Cr_2O_7^{2-}$ is reduced to Cr^{3+} by Fe^{+2}. Identify the incorrect statement from the following

A. 6 moles of Fe^{+2} are oxidised to Fe^{3+} ions

B. The solution becomes yellow

C. The solution becomes green

D. 3 moles of Fe^{+2} get oxidised to Fe^{3+}

Answer:

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123. A solution of $KMnO_4$ to be used in acidic medium is prepared by dissolving $1,58gL^{-1}$. The solution is

A. $\frac{M}{100}$

B. $\frac{N}{20}$

C. $\frac{M}{50}$

D. $\frac{N}{50}$

Answer:

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124. In the titration of $K_2Cr_2O_7$ and $FeSO_4$ following data is obtained V_1 of $1.0M_1K_2Cr_2O_7$ requires V_2ml of $1.0M_2FeSO_4$ Which of the following relation is / are true for the above titration

A. $6M_1V_1 = M_2V_2$

B. $M_1V_1 = 6M_2V_2$

C. $N_1V_1 = N_2V_2$

D. $M_1V_1 = M_2V_2$

Answer:

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125. When a equimolar mixture of Cu_2S and CuS is titrated with $Ba(MnO_4)_2$ in acidic medium, the final product contains Cu^{2+} $S0_2$ and Mn^{2+}. If the mol. wt. of Cu_2S, CuS and $Ba(MnO_4)_2$ are M_1M_2 and M_3 respectively then:

A. eq. wt of Cu_2S is $\frac{M_1}{8}$

B. eq. wt od CuS is $\frac{M_2}{6}$

C. eq. wt. of $Ba(MnO_4)_2$ is $\frac{M_3}{5}$

D. Cu_2S nad CuS both have same equivalents in mixture

Answer:

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126. If 1 mole of H_3PO_4 is reacted with 1 mole of $X(OH)_2$ as: $H_3PO_4 + X(OH)2 \rightarrow XHPO_4 + 2H_2O$ then

A. The equivalent weight of base is $\frac{\text{molwt}}{2}$

B. The eq. wt. of H_3PO_4 is $\frac{98}{3}$

C. The resulting solution is required 1 mofe NaOH for complete neutralization

D. Minimum 1 mole of $X(OH)_2$ more required for complete neutralization of $XHPO_4$

Answer:

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127. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : Copper forms complexes $[CuCl_4]^{2-}$ but not $[\mathrm{Cul\_4}]^{2-}$

Statement - II : $[\mathrm{Cul\_4}]^{2-}$ is not stable because Cu^{2+} is oxidant and l^- is reductant.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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128. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

2. Statement - I : Oxidation number of metals in metal carbonyls is zero.

Statement - II : The oxidation number of CO has been taken to be zero.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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129. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I: In the reaction, $3As_2S_3 + 28HNO_3 + 4H_2O \rightarrow 6H_3AsO_4 + 9H_2SO_4 + 28NO$ electrons transferred are 84.

Statement - II :As is oxidised from $+3$ to $+5$ and sulphur from -2 to $+6$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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130. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : The equivalent weight of NaCN in its conversion to NaOCN by $KMnO_4$ is M/2

Statement - II: The reaction is : $C^{2+} \rightarrow C^{4+} + ze$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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131. What happens when xenon and fluorine are reacted in the ratio 1:5 respectively?

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132. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : BrO_3^- shows two reactions as:

$SeO_3^{2-} + BrO_3^- + H^+ \rightarrow SeO_4^{2-} + Br_2 + H_2O$

$AsO_2^{2-} + BrO_3^- + H^+ \rightarrow Br^- + AsO_4^- + H_2O$

Statement - II: The ratio of equivalent weights of BrO_3^- in (i) and (ii) reactions is 5/6

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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133. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : One equivalent of MnO2 reacts with 2 equivalent of HCI in

the reaction:

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

Statement - II : One equivalent of MnO_2 reacts with one equivalent of HCl.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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134. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two

Statements.

Statement - I : The equivalence point refers the condition where equivalents of one species react with same number of equivalent of other species.

Statement -II : The end point of titration is exactly equal to equivalence point.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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135. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In acidic medium, equivalent weight of $K_2Cr_2O_7$ is 49

Statement - II : $\left(Cr^{6+}\right)_2 + 6e \rightarrow 2Cr^{3+}$, Thus, $E - \frac{M}{6}$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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136. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

10. Statement -I : The redox titrations in which liberated I_2 is used as oxidant are called as iodometric titration.

Statement - II : Addition of KI of $CuSO_4$ liberates I_2 which is estimated against hypo solution.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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137. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : The oxidation state of S in $H_2S_2O_8$ is 6.

Statement - II : Max. oxidation state of S is 6 because the max. oxidation state of an element is it's no. of valence electron.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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138. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In the balanced redox reaction,

$xAs_2S_3 + yNO_3^- + 4H_2O \rightarrow aAsO_4^{3-} + bNO + cSO_4^{2-} 8H^+$ the n-factor of As_2S_3 and NO^- is 28 and 3 respectively.

Statement - II: Molar ratio is reciprocal of n-factor's ratio sox: yis3 : 28.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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139. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : MnO_2 can act as an oxidizing agent as well as reducing agent.

Statement - II : Oxidation state of Mn lies between highest and lowest oxidation state.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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140. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Equivalent volume of H_2 is 11.2 Lat1 atm and 273 K.

Statement - II: 1/2 mole H_2 has produced when 1 mole of H^+ (aq) accepted 1 mole of e^-

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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141. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : $\left[Fe(CN)_6\right]^{4-} \rightarrow Fe^{3+} + CO_2 + NO_3^-$ the equivalent weight of reactant is 3.74.

Statement - II: Equivalent weight of reactant $= \frac{\text{Mol.wt}}{61}$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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142. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In the titrations of Na_2CO_3 with HCI using methyl orange indicator, the volume required at the equivalence point is twice that of acid required using phenolphthalein indicator.

Statement - II: Two moles of HCI are required for complete neutralization of one mole of Na_2CO_3.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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143. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

17. Statement-I: in the roasting of FeS_2, ore is converted into ferric oxide and SO_2 gas.The equivalent mass of FeS_2 is equal to molecular weight/11

Statement - II: The n-factor for reducing agent is total net change in oxidation number per formula unit.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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144. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : For the reaction, $Na_2CO_3 + HCI \rightarrow NaCI + NaHCO_3$, the suitable indicator is phenolphthalein.

Statement - II: Phenolphthalein provide it's colour in acidic medium.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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145. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : H_3PO_3 is a dibasic acid and its salt Na_3PO_3 does not exist

Statement - II : Being dibasic nature, only two H are replaceable.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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146. On heating a litre of $\frac{N}{2}HCI$ solution, 2-750 g of HCI is lost and the volume of solution becomes 750 ml. The normality of resulting solution will be.

A. 0.57

B. 0.75

C. 0.057

D. 5.7

Answer: A

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147. The volume of 0 -1M $Ca(OH)_2$ required to neutralize 10 ml of 0 -1N HCI will be

A. 10ml

B. 20 ml

C. 5 ml

D. 40 ml

Answer: C

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148. n-factor of Ba$(MnO_4)_2$ in acidic medium is :

A. 2

B. 6

C. 10

D. None of these

Answer: C

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149. In the reaction, $xVO + yFe_2O_3 \rightarrow FeO + V_2O_5$. What is the value of x and y respectively ?

A. 1, 1

B. 2, 3

C. 3, 2

D. None of these

Answer: B

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150. Match Column-I with Column-II

Column-I		Column-II	
(A)	$FeC_2O_4 \rightarrow Fe^{3+} + CO_2$	(P)	$\frac{M}{8}$
(B)	$Cu_2S \rightarrow Cu^{2+} + SO_2$	(Q)	$\frac{M}{11}$
(C)	$FeS_2 \rightarrow Fe^{3+} + SO_2$	(R)	$\frac{M}{3}$
(D)	$Fe(NO_3)_3 \rightarrow Fe^{2+} + NO$	(S)	$\frac{M}{10}$
		(T)	Intramolecularredox reaction

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151. Match Column-I with Column-II

	Column-I		Column-II
(A)	Iodimetric	(P)	$AgNO_3$ *vs.* KCl
(B)	Iodometric	(Q)	N_2H_4 *vs.* I_2
(C)	Redox	(R)	$CuSO_4$ *vs.* KI
(D)	Acid-Base	(S)	$H_2C_2O_4$ *vs.* $KMnO_4$
(E)	Precipitation	(T)	$H_2C_2O_4$ *vs.* NaOH

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152. Match Column-I with Column-II

	Column-I		Column-II
(A)	$O_2^- \rightarrow O_2 + O_2^{2-}$	(P)	Redox reaction
(B)	$CrO_4^{2-} + H^+ \rightarrow$	(Q)	One of the products has trigonal planar structure
(C)	$MnO_4^- + NO_2^- + H^+ \rightarrow$	(R)	Dimeric bridged tetra-hedral metal ion
(D)	$NO_3^- + H_2SO_4 + Fe^{2+} \rightarrow$	(S)	Disproportionation

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153. 1.9 gm of CH_3Br_y has the same number of atoms as in 0.6 gm of H_2O. The value of y is :

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154. 2.0g of polybasic organic acid(Molecular wt. = 600) required 100 mL of a $\frac{M}{6}$ NaOH solution for complete neutralisation. Find the basicity of acid.

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155. A mixture contains 1.0 mole each of NaOH, Na2CO3 and NaHCO3. When half of mixture is titrated with HCI.it required x mole of HCI in presence of phenolphthalein. In another experiment, half of mixture

required y mole of same HCI in presence of methyl orange. Find the value of(x + y)

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156. What happens when xenon and fluorine are reacted in the ratio 1:20 respectively?

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157. A 2.76g impure sample of copper ore is dissolved and Cu^{2+} is titrated with KI solution. l_2 liberated required 40 mLof $0.1MNa_2S_2O_3$ solution for titration. What is the $\%$ impurity present in the ore ?

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158. The volume of 0.2M solution of MnO_4^- which will react with 50.0 ml of 0.1 M solution of $C_2O_4^{2-}$ in acidic medium is

$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 10CO_2 + 2Mn^{2+} + 8H_2O$

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159. Titration of 0.2121g of pure $Na_2C_O\_4\left(134gmol^{-1}\right)$ require 43.31 ml of $KMnO_4$ solution. What is the molarity of $KMnO_4$ solution ?

$2MnO_4^{-+}5C_2O_4^{--+}16H^+ \rightarrow 2Mn^+ + + 10CO_2 + 8H_2O$

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160. 1.44g pure FeC_2O_4 was dissolved in dil. H_2SO_4 and solution diluted to 100 ml. Calculate volume of 0.01 M $KMnO_4$ required to oxidise FeC_2O_4 solution completely.

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161. 0.592 g of calcium oxalate was dissolved in dilute acid and the solution was made up to 250 mL. 25 mL of this solution required 8.375 mL

of 0.1 N $KMnO_4$ solution for complete oxidation. Calculate the percentage of calcium oxalate in calcium oxalate sample.

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162. 10 mL of a blood sample (contains calcium oxalate) is dissolved in acid, It required 20 mL of 0.001 M $KMnO_4$ (Which oxidases oxalate to carbon dioxide). What is the amount of $Ca^+ +$ ion in 10 mL blood ?

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163. What is molality of equimolar mixture of water and ethanol ?

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164. 0.56 g of limestone was treated with oxalic acid to give CaC_2O_4. The precipitate decolorized 45 ml of 0.2 N $KMnO_4$ in acid medium. Calculate $\%$ of CaO in limestone.

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165. A, B and C have oxidation number of +6, -2 and -1 respectively. What will be the possible molecular formula when these atoms combine together ?

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166. 5.7 g of bleaching powder was suspended in 500 ml of water. 25 ml of this suspension on treatment with KI and HC1 liberated iodine which reacted with 24.35 ml of $N/10 Na_2S_2O_3$. Calculate $\%$ of available Cl_2 in bleaching powder.

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167. A solution of 0.1 M $KMnO_4$ is used for the reaction : $s_2O_3^{2-} + 2MnO_4^{-} + H_2O \rightarrow MnO_2 + SO_4^{2-} + OH^-$ What volume of

solution in mL will be required to react with 0.158 g of $Na_2S_2O_3$?

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168. In aqueous alkaline solution, two electron reduction of HO_2^- gives

A. HO^-

B. H_2O

C. O_2

D. O_2^-

Answer: A

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169. Assuming complete ionization, same moles of which of the following compounds will require the least amount of acidified $KMnO_4$ for complete oxidation

A. $FeSO_4$

B. $FeSO_3$

C. FeC_2O_4

D. $Fe(NO_2)_2$

Answer: A

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170. The equation which is balanced and represents the correct product(s) is :

A. $Li_2O + 2KCI \rightarrow 2LiCI + K_2O$

B. [CoCl(NH_3)_5]^(+) +5H^(+) rarrCo^(2+)+5NH_4^(+)+Cl^-` Cl_

C.

$$\left[Mg(H_2O)_6\right]^{2+} + (EDTA)^{4-} \xrightarrow{excessNaOH} \left[Mg(?(edta)\right]^{2+} + 6H_2O$$

D. $CuSO_4 + 4KCN \rightarrow K_2\left[Cu(CN)_4\right] + K_2SO_4$

Answer: B

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171. If Cl_2 is passed through hot aqueous NaOH, the products formed have Cl in different oxidation states. These are indicated as

A. -1 and +1

B. -1 and +5

C. +1 and +5,

D. -1 and +3

Answer: B

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172. The equivalent weight of $K_2Cr_2O_7$ in acidic medium is expressed in terms.of its molecular weight M.as—

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

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

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

D. $\frac{M}{7}$

Answer: C

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173. 5 moles of $Ba(OH)_2$ are treated with excess of CO_2 How much $BaCO_3$will be formed ?

A. 39.4 g

B. 197 g

C. 580 g

D. 985 g

Answer: C

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174. The equivalent weight of potassium permangante in alkaline solution is equal to

A. $\frac{1}{5}$ th of the molar mass of $KMnO_4$

B. $\frac{1}{6}$ th of the molar mass of $KMnQ_4$

C. $\frac{1}{3}$ rd of the molar mass of $KMnO_4$

D. $\frac{1}{10}$ th of the molar mass of $KMnO_4$

Answer: C

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175. The mass of potassium dichromate crystals required to oxidise 750 cm^3 of 0.6 M Mohr's salt solution is (Given, molar mass : Potassium dichromate = 294, Mohr's salt=392)

A. 0.49 g

B. 0.45 g

C. 22.05 g

D. 2.2 g

Answer: C

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176. An aqueous solution containing 6.5 g of NaCl of 90% purity was subjected to electrolysis. After the complete electrolysis, the solution was evaporated to get solid NaOH. The volume of 1 M acetic acid required to neutralise NaOH obtained above is

A. 1000 cm^3

B. 2000 cm^3

C. 100 cm^3

D. 200 cm^3

Answer: C

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177. Excess of carbon dioxide is passed through 50 mL of 0.5 M calcium hydroxide solution. After the completion of the reaction, the solution was evaporated to dryness. The solid calcium carbonate was completely neutralised with 0.1 N hydrochloric acid. The volume of hydrochloric acid required is (Atomic mass of calcium = 40)

A. 300 cm^3

B. 200 cm^3

C. 500 cm^3

D. 400 cm^3

Answer: C

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178. Consider the following list of reagents : Acidified $K_2Cr_2O_7$, alkaline $KMnO_4, CuSO_4, H_2O_2, Cl_2. O3, FeCI_3, HNO_3$ and $Na_2S_2O_3$. The total number of reagents that can oxidise aqueous iodide to iodine is

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