



CHEMISTRY

BOOKS - DISHA CHEMISTRY (HINGLISH)

REDOX REACTIONS

Mcqs

1. The brown ring complex is formulated as $[Fe(H_2O)_5NO]SO_4$. The oxidation number of iron is

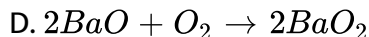
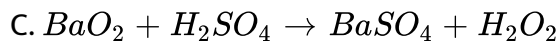
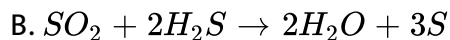
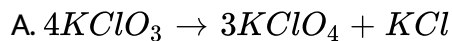
- A. 1
- B. 2
- C. 3
- D. 0

Answer: A



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2. In which of the following reactions, there is no change in valency?



Answer: C



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3. The oxidation state of chromium in the final product formed by the reaction between KI and acidified potassium dichromate solution is:

A. +3

B. +2

C. +6

D. +4

Answer: A



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4. In which of the following pairs, there is greatest difference in the oxidation number of the underlined elements?

A. N O_2 and N $_2O_4$

B. P $_2O_5$ and P $_4O_{10}$

C. O and N O
 N_2

D. S O_2 and S O_3

Answer: D



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5. A compound of Xe and F is found to have 53.5% of Xe. What is oxidation number of Xe in this compound?

A. -4

B. 0

C. $+4$

D. $+6$

Answer: D



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6. Atomic number of an element is 22. the highest O.S. exhibited by it in its comopounds is

A. 1

B. 2

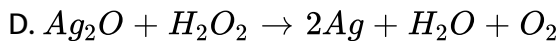
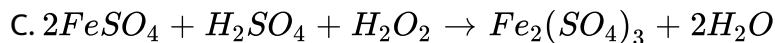
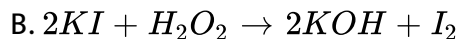
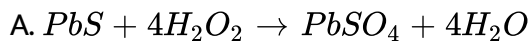
C. 3

D. 4

Answer: D

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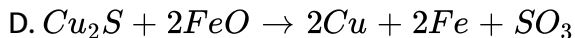
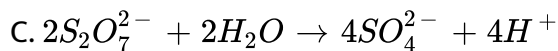
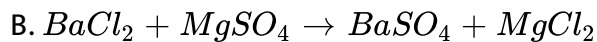
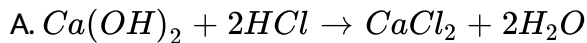
7. The reaction in which hydrogen peroxide acts as a reducing agent is



Answer: D

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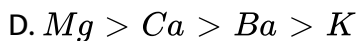
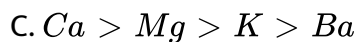
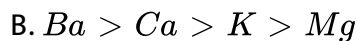
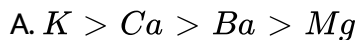
8. Of the following reactions, only one is a redox reaction. Identify it



Answer: D

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9. Arrange the following in the order of their decreasing electrode potentials. Mg, K, Ba and Ca



Answer: D

10. Which of the following statements are correct concerning redox properties?

(i) Metal M for which E° for the half life reaction $M^{n+} + ne^- \rightleftharpoons M$ is very negative will be a good reducing agent.

(ii) The oxidizing power of the halogens decreases from chloride to iodine.

(iii) The reducing power of hydrogen halides increases from hydrogen chloride to hydrogen iodide

A. (i), (ii) and (iii)

B. (i) and (ii)

C. (i) only

D. (ii) and (iii)

Answer: A

11. A negative E° means that redox couple is a (A)___ than the H^+ / H_2 couple

A positive E° means that the redox couple is a (B)_____ than H^+ / H_2 couple

A. A=stronger reducing agent

B=weaker reducing agent

B. A=stronger oxidising agent

B=weaker oxidising agent

C. A=weaker oxidising agent

B=stronger oxidising agent

D. both (a) and (c)

Answer: D



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12. If equal volume of reactants are used, then no. of moles of $KMnO_4$ (moles per litre) used in acidic medium required to completely oxidise 0.5 M $FeSO_3$?

A. 0.3

B. 0.1

C. 0.2

D. 0.4

Answer: A



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13. If rod of a metal (x) is put in a metal ion solution which is blue in colour, solution turn colourless. The metal rod and solution respectively are?

A. Zinc and Cu(II)

B. Zinc and Ni(II)

C. Aluminium and Cu(II)

D. Both (a) and (c)

Answer: D

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14. In the reaction between SO_2 and O_3 the equivalent weight of sulphur in product is

A. the same as its molecular weight

B. half of the molecular weight

C. one-third of the molecular weight

D. one fourth of the molecular weight

Answer: B

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15. When $KMnO_4$ reacts with acidified $FeSO_4$

A. $FeSO_4$ is oxidised and $KMnO_4$ is reduced

B. only $KMnO_4$ is oxidised

C. only $FeSO_4$ is oxidised

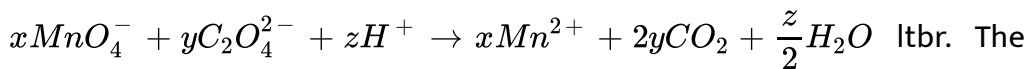
D. None of these

Answer: A



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16. Consider the following reaction:



value's of x, y and z in the reaction are, respectively:

A. 5,2 and 16

B. 2,5 and 8

C. 2,5 and 16

D. 5,2 and 8

Answer: C



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17. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from :

A. zero to +1 and zero to -5

B. zero to -1 and zero to +5

C. zero to -1 and zero to +3

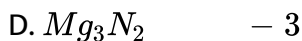
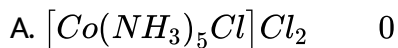
D. zero to +1 and zero to -3

Answer: B



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18. Oxidation state for nitrogen is incorrectly given for compound
oxidation state



Answer: A



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19. Standard electrode potentials of redox couples A^{2+} / A , B^{2+} / B , C^{2+} / C and D^{2+} / D are 0.3V, 0.5 V, 0.75 V and 0.9 V respectively. Which of these is best oxidising agent and reducing agent respectively-



B. B^{2+} / B and D^{2+} / D

C. D^{2+} / D and C^{2+} / C

D. C^{2+} / C and D^{2+} / D

Answer: C

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20. MnO_4^{2-} (1 mole) in neutral aqueous medium disproportionates to

A. $2/3$ mole of MnO_4^- and $1/3$ mole of MnO_2

B. $1/3$ mole of MnO_4^- and $2/3$ mole of MnO_2

C. $1/3$ mole of Mn_2O_7 and $1/3$ mole of MnO_2

D. $2/3$ mole of Mn_2O_7 and $1/3$ mole of MnO_2

Answer: A

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21. In the standardization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by iodometry, the equivalent weight of $K_2Cr_2O_7$ by iodometry, the equivalent weight of $K_2Cr_2O_7$ is

- A. (molecular weight)/2
- B. (molecular weight)/6
- C. (molecular weight)/3
- D. same as molecular weight

Answer: B

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22. The species that undergoes disproportionation in an alkaline medium are

- A. Cl_2
- B. MnO_4^{2-}

C. NO_2

D. All of these

Answer: D



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23. One mole of N_2H_4 loses 10 moles of electrons to form a new compound y. assuming that all nitrogen appear in the new compound, what is the oxidation state of nitrogen in y (there is not change in the oxidation state of hydrogen)

A. -1

B. -3

C. $+3$

D. $+5$

Answer: C



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24. Phosphorus, sulphur and chlorine undergo disproportion in the (A)_____ medium. Here A refers to

- A. acidic
- B. alkaline
- C. neutral
- D. both (a) and (b)

Answer: B

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25. In which of the following compounds oxygen has highest oxidation state and in which it has lowest oxidation state OF_2 , H_2O_2 , KO_2 , O_2F_2

- A. Highest= KO_2 , lowest= H_2O_2

B. Highest= OF_2 , lowest= H_2O_2

C. highest= OF_2 , lowest = KO_2

D. highest = KO_2 , lowest = H_2O_2

Answer: C

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26. The most powerful oxidizing agent from the following is H_3BO_3

A. HPO_3

B. H_3PO_4

C. H_2PO_4

D. H_2SO_4

Answer: D

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27. When SO_2 is passed through acidified solution of potassium dichromate, then chromium sulphate is formed the change in valence of chromium is

A. +4 to +2

B. +5 to +3

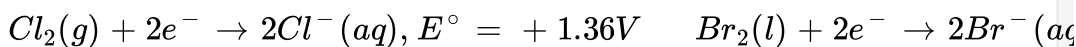
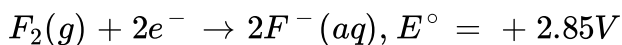
C. +6 to +3

D. +7 to +2

Answer: C

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28. Standard reduction potentials of the half reactions are given below:



The strongest oxidising and reducing agents respectively are:

A. F_2 and I^-

B. Br_2 and Cl^-

C. Cl_2 and Br^-

D. Cl_2 and I_2

Answer: A

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29. A gas X at 1 atm is bubbled through a solution containing a mixture of 1 M Y^- and 1 M Z^- at $25^\circ C$. If the reduction potential is $ZgtYgtX$ then

A. Y will oxidise X and not Z

B. Y will oxidise Z and Not X

C. Y will oxidie both X and Z

D. Y will reduce both X and Z

Answer: A

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30. The violent reaction between sodium and water is an example of

- A. reduction
- B. oxidation
- C. redox reaction
- D. neutralization reaction

Answer: C

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31. The equivalent weight of Mohr's salt.

$FeSO_4(NH_4)SO_4 \cdot 6H_2O$ is equal to

- A. its molecular weight
- B. its atomic weight

C. half-its molecular weight

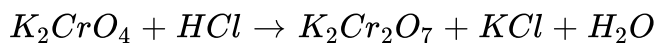
D. one-third its molecular weight

Answer: A



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32. The set of numerical coefficients that balances the equation



A. 1,1,2,2,1

B. 2,2,1,1,1

C. 2,1,1,2,1

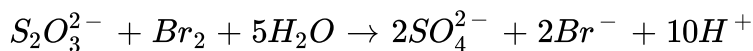
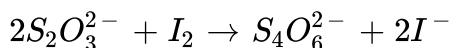
D. 2,2,1,2,1

Answer: D



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33. This sulphate reacts differently with iodine and bromine in the reactions given below:



Which of the following statements justifies the above dual behaviour of thiosulphate?

- A. Bromine is a stronger oxidant than iodine
- B. Bromine is a weaker oxidant than iodine.
- C. Thiosulphate undergoes oxidation by bromine and reduction by iodine in these reactions.
- D. Bromine undergoes oxidation and iodine undergoes oxidation and iodine undergoes reduction in these reaction.

Answer: A



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34. The chemical that undergoes self oxidation and self reduction in the same reaction is

- A. benzyl alcohol
- B. acetone
- C. formaldehyde
- D. acetic acid

Answer: C



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35. The oxidation number of an element in a compound is evaluated on the basis of certain rules. Which of the following rules is not correct in this respect?

- A. The oxidation number of hydrogen is always +1.

- B. The algebraic sum of all the oxidation numbers in a compound is zero.
- C. An element in the free or the uncombined state bears oxidation number zero.
- D. In all its compounds, the oxidation number of fluorine is -1.

Answer: A



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36. Zn gives H_2 gas with H_2SO_4 and HCl but not with HNO_3 because-

- A. Zn acts as an oxidising agent when it reacts with HNO_3
- B. HNO_3 is weaker acid than H_2SO_4 and HCl
- C. In electrochemical series. Zn is above hydrogen
- D. NO_3^- is reduced in preference to hydronium ion

Answer: D



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37. Which of the following elements does not show disproportionation tendency?

A. Cl

B. Br

C. F

D. I

Answer: C



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38. The oxidation number of sulphur in S_8 , S_2F_2 , H_2S respectively, are

A. 0, +1 and -2

B. +2 and +1 and -2

C. 0, + 1 and + 2

D. - 2, + 1 and - 2

Answer: A

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39. Stronger is oxidising agent, more is:

A. standard reduction potential of that species

B. the tendency to get it self oxidised

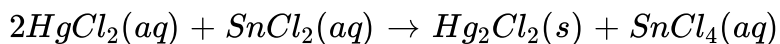
C. the tendency to lose electrons by that species

D. standard oxidation potential of that species

Answer: A

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40. Which of the following statement(s) is/are correct for the given reaction?



- (i) Mercuric chloride is reduced to Hg_2Cl_2
- (ii) Stannous chloride is oxidised to stannic chloride
- (iii) $HgCl_2$ is oxidised to Hg_2Cl_2
- (iv) It is an example of redox reaction.

A. (i) ,(ii) and (iv)

B. (i) and (ii)

C. (iii) and (iv)

D. (iii) only

Answer: A



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41. The standard reduction potentials for Cu^{2+} / Cu , Zn^{2+} / Zn , Li^+ / Li , Ag^+ / Ag and H^+ / H_2 are $+0.34V$, $-0.762V$, $-3.05V$, $+0.80V$ and $0.00V$ respectively.

Choose the strongest reducing agent among the following

A. Zn

B. H_2

C. Ag

D. Li

Answer: D



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42. In the disproportionation reaction

$3HClO_3 \rightarrow HClO_4 + Cl_2 + 2O_2 + H_2O$, the equivalent mass of oxidizing agent is (molar mass of $HClO_3=84.45$)

A. 16.89

B. 32.22

C. 84.45

D. 28.15

Answer: A

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43. Which of the following behaves as both oxidising and reducing agents?

A. H_2SO_4

B. SO_2

C. H_2O

D. HNO_3

Answer: B

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44. Which of the following statement(s) is /are correct?

(i) Oxidation state of carbon in C_3H_4 is $-\left(\frac{4}{3}\right)$

(ii) Electrons are never shared in fraction.

A. (i) and (ii)

B. only (i)

C. only (ii)

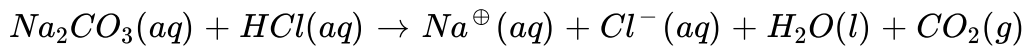
D. Neither (i) nor (ii)

Answer: A

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45. In the reaction shown below, oxidation state of the carbon in reactant and product are (i) and (ii) respectively ? Is the given reaction a redox

reaction?



A. (i) 6, (ii) 4, yes

B. (i) 6, (ii) 6, no

C. (i) 4, (ii) 4, No

D. 4, (ii) 4, yes

Answer: C



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