



## CHEMISTRY

### BOOKS - NDA PREVIOUS YEARS

### ACIDS , BASES AND SALTS OXIDATION AND REDUCTION

#### Mcq

1. In surgery metal pins are used for joining together broken bones these metal pins remain uncorroded in the body what is the material of these pins?

A. copper

B. iron

C. aluminium

D. titanium

**Answer: D**



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2. In a redox reaction  $Na_2S_2O_3$  changes to  $Na_2S_4O_6$  what is the equivalent weight of  $Na_2S_2O_3$ ?

A. same as its molecular weight

B.  $1/2 \times$  (its molecular weight)

C.  $1/2 \times$  (its molecular weight)

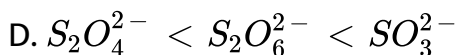
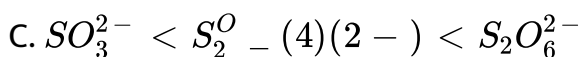
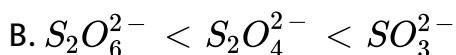
D.  $1/3 \times$  (its molecular weight )

**Answer: A**



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3. What is the correct order of oxidation states of sulphur in anions  $SO_3^{2-}$ ,  $S_2O_4^{2-}$  and  $S_2O_6^{2-}$  ?



**Answer: A**



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4. Which one of the following salts when dissolved in water makes the solution basic ?

- A. sodium chloride
- B. chopper suplhate
- C. ferric chloride
- D. sodium acetate

**Answer: D**



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**5. Which one of the following is correct ?**

Due to continous use of calcium superhosphates as feritlizer in soil the pH of soil becomes

- A. more than 7
- B. less than 7
- C. equal to 7

D. cannot be predicted

**Answer: B**



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**6. Which of the following salt are insoluble in water ?**

A. chlorides of Fe and Mn

B. Nitrates of Ag and Pb

C. carbonates of Pb and Cu

D. phosphates of Na and  $NH_4$

**Answer: C**



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7. Consider the following

The concentralt in of hydrogen ions in an aqueous solution is expressed by its

A. pH

B. pOH

C.  $pK_a$

D.  $pK_w$

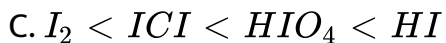
**Answer: A**



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8. which of the statements given above is/are correct regarding oxidation states of iodine ?

A.  $HIO_4 < HI < ICI < I_2$



**Answer: B**



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9. Which one of the following is the correct order of oxidation number of Iodine (I) in  $I_2$ ,  $HIHIO_4$  and  $ICl$

A. 1

B. 2

C. 3

D. 4

**Answer: C**



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10. Two elements gallium and oxygen combine to form a compound

$Ga_2O_3$  which among the following is the valency of gallium?

A. 1

B. 2

C. 3

D. 4

**Answer: c**



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11. Acid turns blue litmus red and base turns red litmus blue. A student tested a liquid with a red litmus paper which remained



red with no change this shows that the liquid

- A. it is not a base
- B. it is not an acid
- C. it is neither acidic nor basic
- D. it must be pure water

**Answer: D**

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**12.** Arrange the following bases in increasing order of their basic strength

$NH_4OH$ ,  $NaOH$ ,  $Mg(OH)_2$ ,  $Al(OH)_3$

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13. The concentration of hydrochloric acid in a given solution is  $10^{-8}$  M. What is the value of pH for this solution?

(a) 7 (b)  $> 7$  but not 14 (c)  $< 7$  (d) 14

A. salts have ordered packing arrangements called lattices

B. salts have low melting points but high boiling points

C. salts are brittle

D. salts conduct electricity when dissolved in water or even in the molten state

**Answer: B**



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14. Which one among the following is not a property of salt

A. I and II only

B. I,II and III

C. I and III only

D. II only

**Answer: B**



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**15.** Which among the following statements with regard to oxidising agent is/are correct

A. increase the oxidation number of an element in a given substance

B. decreases the oxidation numbner of an element in a given substance

C. is oxidise itself in an oxidation reduction reaction

D. loses electrons in an oxidation reduction reaction

**Answer: A**



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**16.** An oxidising agent is a substance which

A. increase the oxidation number of an element in a given substance

B. decreases the oxidation number of an element in a given substance

C. is oxidise itself in an oxidation reduction reaction and makes water acidic

D. loses electrons in an oxidation reduction reaction

**Answer: A**



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17. Neutral water with pH about 7 becomes slightly acidic when aerated this is because

- A. oxygen from air is dissolved in the water which makes the water acidic
- B. dirt which get contaminated with the water during aeration makes the water acidic
- C. ultraviolet radiation dissociates water molecules and makes water acidic
- D. During aeration carbon dioxide present in air dissolves in neutral water having pH =7 and thus the water becomes

slightly acidic due to the formation of weak carbonic acid



**Answer: D**



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**18.** In the reaction  $4Fe + 3O_2 \rightarrow 4Fe^{3+} + 6O^{2-}$

Which of the following statements is incorrect?

- A. it is a redox reaction
- B. metallic iron acts as a reducing agent
- C.  $O_2$  acts as an oxidising agent
- D. metallic iron is reduced to  $Fe^{3+}$

**Answer: D**



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**19.** Human stomach produces acid X which helps in digestion

- A. must be pure water
- B. must be an acid
- C. is not a base
- D. is neither a base nor an acid

**Answer: A**



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**20.** Bases turn red litmus blue and acids turn blue litmus red.

A student tested a liquid with a red litmus paper and it stayed red with no change this shows that the liquid

- A. must be pure water
- B. must be an acid
- C. is not a base
- D. is neither a base nor an acid

**Answer: A::B**



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**21. In oxidation**

1 Hydrogen is displaced from a substance

2 an electropositive element is added to or proportion of electropositive element increases in a substance

Select the correct answer using the code given below

A. 1 only

B. 2 only



C. both 1 and 2

D. neither 1 nor 2

**Answer: A::B**



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**22.** Which of the following statemtns regarding oxidation and reduction are correct

A. 1 and 3

B. 2 and 4

C. 2 and 3

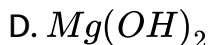
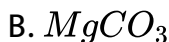
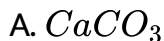
D. 1 and 4

**Answer: D**



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**23.** Sometimes indigestion is caused by the secretion of too much hydrochloric acid in the stomach to ease the pain caused a table can be taken that reacts to reduce the amount of acid present which one among the following would be inappropriate for a manufacturer to include as a major reactant in the tablet?

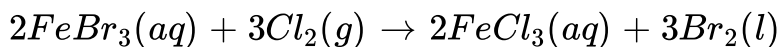


**Answer: C**



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24. The following equation is an example of a redox reaction in which  $Cl_2$  is the oxidizing agent and  $FeBr_3$  is the reducing agent:



Which one among the following statement is incorrect for this redox reaction?

- A. oxidizing agents are themselves reduced
- B. Reducing agents gains or appear to gain electrons
- C. Reducing agents oxidized
- D. oxidizing agents oxidize other substances

**Answer: B**



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25. Three elements Na, S and O combine to form a compound  $Na_2SO_3$  what is the valency of S in this compound ?

A. 2+

B. 4+

C. 6+

D. 8+

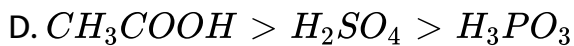
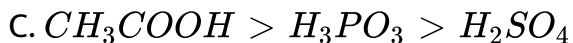
**Answer: B**



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26. Which one among the following is the correct order of strength of acids?





**Answer: A**



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**27.** In  $KMnO_4$  molecule the oxidation states of the elements potassium (K) manganese (Mn) and oxygen (O) are respectively

A. Electrolytic cell

B. storage cell

C. primary cell

D. fuel cell

**Answer: C**



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**28.** Which one among the following is an electrochemical cell that cannot be charged ?

- A. Electrolytic cell
- B. storage cell
- C. primary cell
- D. fuel cell

**Answer: A**



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**29.** The pH of fresh milk is 6 when it turns sour the pH

A. becomes  $< 6$

B. remains the same i.e 6

C. becomes  $> 6$

D. becomes neutral i.e 7

**Answer: A**



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**30.** The following questions consist of two statements one labelled as the assertion (A) and the other as Reason (R ) you are to examine these two statement carefully and select the answer to these items using the codes given below

Assertion (A) Most coloured flowers when exposed to chlorine get bleached

Reason (R) : HCl produced by the action of chlorine on water oxidises coloured matter to colourless compound

- A. Both A and R are individually true and R is the correct explanation of A
- B. Both A and R are individually true but R is NOT the correct explanation of A
- C. A is true but R is false
- D. A is false but R is true

**Answer: C**



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**31. Statement I: Metal ions are lewis acids**

**Statement II: Metal ions are electron pair acceptors**



- A. Both the statements are individually true and statement II is correct explanation of statement I
- B. Both the statements are individually true but statement II is not correct explanation of statement I
- C. Statement I is true but statement II is true
- D. Statement I is false but statement II is true

**Answer: A**



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**32.** Statement I :After cutting an apple or a banana the colour of the cut surface becomes brown

Statement II : Polyphenolic compounds present in fruits get oxidized in air and show colour

- A. Both the statements are individually true and statement II is the correct explanation of statement I
- B. Both the statements are individually true but statement II is not correct explanation of statement I
- C. statement I is true but statement II is false
- D. statement I is false but statement II is true

**Answer: A**



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**33.** The pH of the solution obtained by dissolving pure sodium chloride water is

- A. Both the statements are individually true and statement II is the correct explanation of statement I

- B. Both the statements are individually true but statemnts II is not correct exp[anation of statemnt I
- C. statement I is true but statement II is false
- D. statement I is flse but statement IIU is true

**Answer: C**



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**34.** Turmeric (Haldi) rapidly becomes colourless on addition of

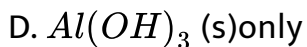
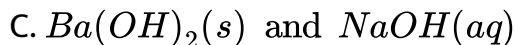
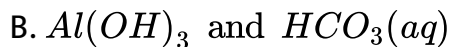
- A. baking soda
- B. vinegar
- C. lemon juice
- D. alcohol

**Answer: D**



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**35.** Which of the following is / are ap[hoteric ?

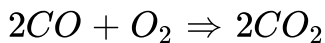


**Answer: C**



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36. Note the following balanced chemical equation



Which one of the following statement is significant in relation to the above chemical equation ?

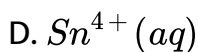
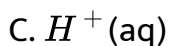
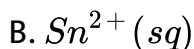
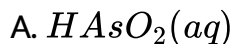
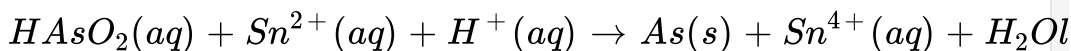
- A. one can add to a vessel only 2 mol of  $CO$  for each mol of  $O_2$  added
- B. no matter how much of these two reagents are added to a vessel 1 mol of  $O_2$  is consumed
- C. when they react  $CO$  reacts with  $O_2$  in 2:1 mol ratio
- D. when 2 mol of  $CO$  and 1 mol of  $O_2$  are placed in a vessel they will react to give 1 mol of  $CO_2$

**Answer: A**



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37. What is the oxidizing agent in the following equation ?



Answer: A



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38. The burning sensation of bee sting can be stopped by rubbing the affected area with soap. This is because

A. a bee sting is acidic and soap an alkali neutralizes it

- B. a bee sting is alkaline and soap this is because
- C. soap cleans the affected area and removes the sting
- D. soap acts as anesthetic and dulls the sensation

**Answer: B**



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**39.** Which of the following element combination will form ionic compounds ?

- A. 2 only
- B. 3 only
- C. 2 and 3 only
- D. 1, 2 and 3

**Answer: B**



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**40.** Match list I with List II and select the correct answer using the code given below the lists :

List I , List II

A sodium hydroxide , 1 strong acid

Bcalcium oxide 2. Alkali

CAcetic acid , 3. Weak acid

DHydrochloric acid , 4. Base

A. 2 3 4 1

B. 2 4 3 1

C. 1 4 3 2

D. 1 3 4 2

**Answer: B**



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41. The cleaning action of soap and detergent in water is due to the formation of

A. micelle

B. salt

C. base

D. acid

**Answer: A**



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42. Boric acid is an acid because its molecule

A. accepts  $\text{OH}^-$  from water releasing proton

B. combines with proton form water molecules

C. contains replaceable  $H^+$  ion

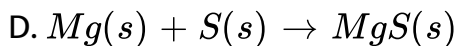
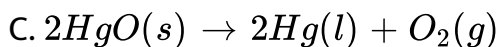
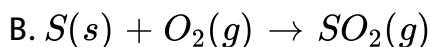
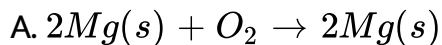
D. gives up a proton

**Answer: B**



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**43.** Which one of the following is a reduction reaction



**Answer: C**



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**44.** Suppose you have four test tubes labelled as 'A' , 'B' , 'C' and 'D' , 'A' contains plain water 'B' contains solution of an alkali 'C' contains solution of and 'D' contains solution of sodium chloride which one of these solutin will turn phenoplthalein solution pink ?

A. solution A

B. solution B

C. solution C

D. solution D

**Answer: B**



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45. Which one of the following elements will not react with dilute HCl to produce  $H_2$

A. Hg

B. Al

C. Mg

D. Fe

**Answer: A**



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46. Which one of the following is a cause of acid rains ?

A. ozone

B. ammonia

C. sulphur dioxide

D. carbon monoxide

**Answer: A**



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**47.** The desirable range of pH for drinking water is

A. 6.5 to 8.5

B. 5.0 to 6.5

C. 6.5 to 7.0

D. 7.0 to 8.5

**Answer: A::C**



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48. Which of the following properties is true for tooth paste ?

A. it is acidic

B. it is neutral

C. it is basic

D. it is made up of calcium phosphate the material of tooth enamel

**Answer: C**



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49. Which one of the following gives the highest amount of hydrogen ions ( $H^+$ )?

A. sodium hydroxide solution

B. milk of magnesia

C. lemon juice

D. gastric juice

**Answer: D**



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**50.** Which one of the following reaction will give NO (nitric oxide) gas as one of the products?



**Answer: A**



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51. Which one of the following is a tribasic acid?

A. hydrochloric acid

B. nitric acid

C. sulphuric acid

D. phosphoric acid

**Answer: D**



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52. The solution of which one of the following will have pH less than 7?



A. NaOH

B. KCl

C.  $FeCl_3$

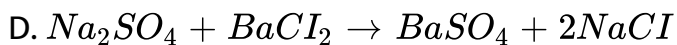
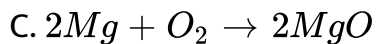
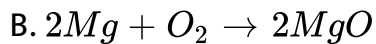
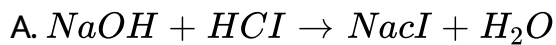
D. NaCl

**Answer: C**



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**53.** Which one of the following an oxidation reduction reaction ?

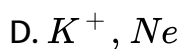
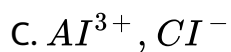
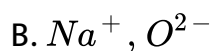
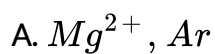


**Answer: C**



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**54.** In which of the following pairs are the ions isoelectronic ?

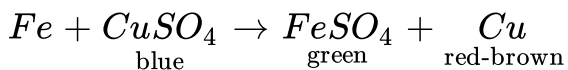


**Answer: B**



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55. Which one of the following statement is NOT correct fro the given reaction ?



- A. iron is the reducing agent
- B. the solution turn gree in colour after the reaction
- C. copper is more reactive metal than iron
- D. the reaction is an example of redox reaction

**Answer: C**



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