



CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

ACIDS, BASES AND SALTS

Questions

1. Match from A to F: A : Acidic oxide, B: alkali, C: Amphoteric oxide, D: Basic oxide

A compound, soluble in water & the only negative ions in the soln. are hydroxide ions



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2. State what is observed when, neutral litmus soln. is added to sodium hydrogen carbonate solution



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3. The preparation of lead sulphate from lead carbonate is a two-step process.

What is the first step that is required to prepare lead sulphate from lead carbonate



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4. The preparation of lead sulphate from lead carbonate is a two-step process.

Write the equation for the reaction that will take place when this first step is carried out



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5. The preparation of lead sulphate from lead carbonate is a two step process. [Lead sulphate cannot be prepared by adding dilute sulphuric acid to lead carbonate].

Why is direct addition of dilute sulphuric acid to lead carbonate impractical method of preparing lead sulphate ?



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6. Give an example of combination reaction.



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7. Acids dissolve in water to produce positively charged ions. Draw the structure of these ions



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8. Name the other ion formed when ammonia dissolves in water Give one test that can be used to detect the presence of the ion produced .



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9. Mention the colour changes observed when the following indicators are added to acids-

(i) Alkaline phenolphthalein solution (ii) Methyl orange solution (iii) Neutral litmus solution



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10. Which of the following hydroxides is not an alkali - [Choose from the choices A, B, C & D]

(A) ammonium hydroxide (B) calcium hydroxide (C) copper hydroxide (D) sodium hydroxide



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11. Complete the blanks from the list given:

Ammonia, Ammonium, Carbonate, Carbon dioxide,

Hydrogen, Hydronium, Hydroxide, Precipitate, Salt,

Water. A solution X turns blue litmus red, so it

must contain

(i) _____ ions, another solution Y turns red litmus

blue and therefore, must contain (ii) _____ ions.

When solutions X & Y are mixed together, the

products will be a (iii) _____ and (iv) _____ If a piece

of magnesium were put into solution X, (v)

_____gas would be evolved.



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12. Match the following : Column A-1. Acid salt, 2. Normal salt- with-
Column B- A. Sodium potassium carbonate, B. Alum, C. Sodium carbonate, D. Sodium zincate, E. Sodium hydrogencarbonate



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13. Write balanced equation for formation of $PbCl_2$ from $Pb(NO_3)_2$ soln. and NaCl soln.



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14. What is the term defined: (i) A base which is soluble in water

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15. The acid which contains four hydrogen atoms-
(i) Formic (ii) Sulphuric (iii) Nitric (iv) Acetic- acid

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16. A black coloured solid which on reaction with dilute sulphuric acid forms a blue coloured solution is

- A. Carbon
- B. Manganese (IV) oxide
- C. Lead (II) oxide
- D. Copper (II) oxide

Answer:



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17. Solution A is a strong acid

Solution B is a weak alkali

Solution C is a strong alkali

Which solution contains solute molecules in addition to water molecules ?



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18. Solution A is a strong acid

Solution B is a weak alkali

Solution C is a strong alkali

Which solution will give a gelatinous white precipitate with zinc sulphate solution ? The

precipitate disappears when an excess of the solution is added.



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19. Solution A is a strong acid

Solution B is a weak alkali

Solution C is a strong alkali

Which solution could be a solution of glacial acetic acid ?



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20. Give example of a soln of a weak alkali



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21. Equation(s) for the reaction(s) to prepare lead sulphate from lead carbonate.



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22. Define the following term-Neutralization



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23. A: Nitroso Iron [II] sulphate B: Iron [III] chloride C: Chromium sulphate D: Lead [II] chloride E: Sodium chloride. Select from A, B, C, D & E. [i] A compound soluble in hot water but insoluble in cold water [ii] A compound which in the aq. Soln. state, is neutral in nature



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24. Give an equation for the conversions- [i] $ZnSO_4$ to $ZnCO_3$ [ii] $ZnCO_3$ to $Zn(NO_3)_2$



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25. Solution A is a sodium hydroxide solution
Solution B is a weak acid. Solution C is dilute
sulphuric acid. Which solution will
contain solute molecules and ions ?



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26. Give balanced equation/s for the preparation
of the following salts- (i) Copper [II] sulphate from
CuO.
(ii) Iron [III] chloride from Fe.

(iii) K_2SO_4 from KOH soln

(iv) Lead [II] chloride from $PbCO_3$ [give two equations].



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27. Write chemical reaction when lead nitrate solution is added to sodium chloride solution.



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28. Name the method used for the preparation of the following salts from the list given below:

(i) Sodium nitrate

(ii) Iron(III) chloride

(iii) Lead chloride

(iv) Zinc sulphate

(v) Sodium hydrogen sulphate

List: (A) Simple displacement

(B) Neutralisation

(C) Decomposition by acid

(D) Double decomposition

(E) Direct synthesis.



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29. Match the following i.e. 1. Acid salt 2. Double salt- with the correct choice from -A & B

A: Ferrous ammonium sulphate, B: Sodium hydrogen sulphate



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30. Select the word/words from the given list required to complete the following statements.

Use one word only once and do not copy the complete statement.

[ammonia, carbonate, ammonium, carbon dioxide,

hydrogen, hydronium, hydroxide, salt, water, precipitate]

(i) A solution M turns blue litmus red, therefore, it must contain (a) ____ ions. Another solution O turns red litmus blue, hence, it must contain (b) ____ ions.

(ii) When solutions M and O are mixed, the product will be (c) _____ and (d) _____ .

(iii) If a piece of magnesium was put into solution M (e) ___ gas would evolve.



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31. Give suitable chemical terms for

A salt formed by incomplete neutralization of an acid by a base.



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32. Give suitable chemical terms for the following

:

A definite number of water molecules bound to some salts.



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33. Choosing the substances from the list given:
dil Sulphuric acid, Copper, Iron, Sodium, Copper
[II] carbonate, Sodium carbonate, Sodium
chloride, Zinc nitrate-

Write balanced equations for the reactions which
would be used in the laboratory to obtain the
following salts. [i] Sodium sulphate [ii] Zinc
carbonate [iii] Copper [II] sulphate [iv] Iron (II)
sulphate



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34. Identify : An acid which is present in vinegar



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35. Fill in the blank from the choices given: The basicity of acetic acid is ____



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36. Draw the structure of the stable positive ion formed when an acid dissolves in water



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37. State the inference drawn from the following observations :

Salt S is prepared by reacting dilute sulphuric acid with copper oxide. Identify S.



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38. Write a balanced chemical equation for the preparation of the following salt:

Copper carbonate



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39. Give a balanced chemical equation for the following conversion. $Fe \rightarrow FeCl_3$



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40. From the list of salts- $AgCl$, $MgCl_2$, $NaHSO_4$, $PbCO_3$

Choose the salt that most appropriately fits the description given below: An insoluble chloride.



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41. From - SO_2 , SiO_2 , Al_2O_3 , MgO , CO , Na_2O -

Select an oxide which dissolves in water forming an acid



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42. Fill in the blank with the choices given in brackets.

Higher the pH value of a solution, the more
(acidic/alkaline) it is



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43. Match the following salts given below

(i) $Pb(NO_3)_2$ from PbO (ii) $MgCl_2$ from Mg (iii)

$FeCl_3$ from Fe (iv) $NaNO_3$ from NaOH (v)

$ZnCO_3$ from $ZnSO_4$

With their correct method of preparation from :

A, B, C, D & E

[A] Simple displacements [B] Titration [C]

Neutralization [D] Precipitation [E] Combination



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44. Fill in the blanks from the choices given in brackets- When a metallic oxide is dissolved in

water, the solution formed has a high concentration of _____ ions [H^+ , H_3O^+ , OH^-]



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45. Write a balanced chemical equation for the preparation of each of the following salts: (i) Copper carbonate. (ii) Ammonium sulphate crystals.



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46. Give one word or a phrase for the statement:

The property by which certain hydrated salts when left exposed to the atmosphere, lose their water of crystallization & crumble into powder



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47. State one relevant observation for the following: Anhydrous calcium chloride is exposed to air for some time



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48. Fill up the blank with the correct choice given in bracket. The salt prepared by the method of direct combination is _____

(iron (II) chloride/ iron (III) chloride)



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49. Three solutions P, Q and R have pH value of 3.5, 5.2 and 12.2 respectively.

Which one of these is a :

Weak acid ?



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50. Write a balanced equation for the preparation of each of the following salts:

- (i) Copper [II] sulphate from copper carbonate. (ii) Zinc carbonate from zinc sulphate



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51. Give the appropriate term defined by the statement given. The substance that releases hydronium ion as the only positive ion when dissolved in water



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52. The pH values of three solutions A, B and C are given. Solution A: pH value 12, Solution B: pH value 2, Solution C, pH value 7. Answer the following questions

Which solution will have no effect on litmus solution



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53. The pH values of three solutions A, B and C are given. Solution A: pH value 12, Solution B: pH value

2, Solution C, pH value 7. Answer the following questions

Which solution will liberate CO_2 when reacted with sodium carbonate



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54. The pH values of three solutions A, B and C are given. Solution A: pH value 12, Solution B: pH value 2, Solution C, pH value 7. Answer the following questions

Which solution will turn red litmus solution blue



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55. Choose the method of preparation of the following salts, from the methods given in the list

[List- A: Neutralization , B: Precipitation, C: Direct combination, D: Substitution]

(i) Lead chloride (ii) Iron [II] sulphate (iii) Sodium nitrate (iv) Iron [III] chloride



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Questions Fill In The Blanks

1. An acid is a compound which when dissolved in water forms hydronium ions as the only _____ ions



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2. A base is a compound which if soluble in water contains _____ ions



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3. A base reacts with an acid to form a _____ and water only.



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Questions Select The Correct Answer

1. An organic weak acid is

- A. Formic acid
- B. Sulphuric acid
- C. Nitric acid
- D. Hydrochloric acid

Answer:

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2. A complex salt is

A. Zinc sulphate

B. Sodium hydrogen sulphate

C. Iron [II] ammonium sulphate

D. Tetrammine copper [II] sulphate

Answer:

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Questions Choose The Correct Answer

1. Choose the correct answer from the options given below :

To increase the pH value of a neutral solution, we should add

- A. An acid
- B. AN acid salt
- C. An alkali
- D. A salt

Answer:



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2. Anhydrous iron (III) chloride is prepared by:

- A. Direct combination
- B. Simple displacement
- C. Decomposition
- D. Neutralization

Answer:



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Additional Questions

1. Define the following as per ionic theory with examples and ionic equations wherever relevant

(i) acid (ii) base (iii) alkali (iv) neutralization



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2. Differentiate between (i) organic and inorganic acids (ii) Hydracids and oxyacids with examples



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3. State on what basis does the strength of an acid and an alkali depend on



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4. Differentiate between (i) strong & weak acid (ii) strong & weak alkali with suitable examples and ionic equations



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5. Name the ions formed when HCl , HNO_3 , H_2SO_4 , CH_3COOH , NaOH and NH_4OH ionise in aq. Soln,



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6. State giving reasons which is a stronger acid - dil HCl or conc. H_2CO_3



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7. State why the basicity of acetic acid is one and acidity of calcium hydroxide is two



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8. Give three reasons with equations wherever required, why sulphuric acid is a dibasic acid



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9. State how acids are defined as per Arrhenius's and Lowry- Bronsted's theory



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10. Oxygen atom in water has two 'lone pair of electrons'. Explain the meaning of the term in italics. With the help of an electron dot diagram show the formation of hydronium ion and ammonium ion from a water molecule and an ammonia molecule respectively.



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11. State how you would obtain (i) Sulphuric acid from an acidic oxide (ii) KOH from a basic oxide

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12. State two chemical properties each with equations of a solution containing (i) H^+ ions (ii) OH^- ions.

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13. Give equations for the decomposition of a metallic (i) chloride (ii) nitrate with conc. H_2SO_4

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14. State in the above reactions a reason for the formation of the respective acids from conc. H_2SO_4

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15. Convert (i) $NaHCO_3$ (ii) Na_2CO_3 to unstable carbonic acid by action with dil H_2SO_4 .

State the reason why ammonia is evolved when an ammonium salt and alkali are heated

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16. Define pH value. What would you say about the pH of a solution in which (i) H^+ aq. ions = OH^- ions (ii) evolves CO_2 when heated with Na_2CO_3 (iii) OH^- ions $>$ H^+ aq ions

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17. State whether litmus is a common acid-base indicator or a universal indicator



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18. State the colour change in a neutral litmus in presence of (i) acidic (ii) alkaline medium



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19. State the colour change in a universal indicator e.g. pH paper on (i) slightly acidic soil (ii) slightly alkaline soil (iii) dairy milk (iv) human blood tested for medical diagnosis



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20. Define (i) salt (ii) normal (iii) acid salt- with relevant examples and equations.



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21. State (i) the formation (ii) the components of -
a basic salt

State which of following salts is an -acid, normal
or basic salt

(i) bleaching powder (ii) potassium mercuric
iodide (iii) sodium sulphite (iv) sodium hydrogen
sulphite (v) sodium silver cyanide (vi) basic lead
nitrate (vii) potassium zincate (viii) alum (ix)
calcium bicarbonate (x) basic copper chloride (xi)
trisodium phosphate.



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22. Name three (i) sulphates (ii) Chloride insoluble in water and- two (i) oxides (ii) carbonates soluble in water



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23. State the method only, generally used for the preparation of the following salts

(i) $Zn(NO_3)_2$ (ii) NH_4Cl (iii) $ZnSO_4$ (iv) ZnS (v)

$CaCO_3$ (vi) $FeCl_3$ (vii) $PbCl_2$ (viii) $Pb(NO_3)_2$



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24. Give balanced equations for the preparation of the following salts-

(i) $CuSO_4$ (ii) $NaHSO_4$ (iii) Na_2SO_4 (iv) $FeSO_4$

(v) $BaSO_4$ (vi) $PbSO_4$ - using dil H_2SO_4



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25. Give balanced equations for the preparation of the following salts-

(i) $NaHSO_4$ (ii) $CuSO_4$ - using conc. H_2SO_4



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26. Starting from insoluble ZnO how would you obtain insoluble $ZnCO_3$ by precipitation



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27. Give balanced equations for the action of a dilute acid on (i) zinc carbonate (ii) potassium bicarbonate for the preparation of the respective salt



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28. Give balanced equations for the decomposition of (i) calcium bicarbonate by dil HCl (ii) calcium carbonate by dil. HNO_3 (iii) sodium sulphite by dil H_2SO_4 (iv) zinc sulphide by dil H_2SO_4



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29. State what will be the effect of each of the following solution on blue litmus-

(i) K_2CO_3 soln (ii) KCl soln (iii) NH_4NO_3 soln



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30. An example of an acid derived from a mineral is _____ [citric acid/nitric acid/acetic acid]



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31. An example of a base which is not a alkali is _____ [caustic soda/zinc hydroxide/liquor ammonia/caustic potash]



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32. An example of a strong acid is dilute _____
[acetic acid/sulphuric acid/tritaric acid/carbonic
acid]



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33. An example of a weak alkali is _____
[potassium hydroxide/calcium hydroxide/sodium
hydroxide] solution



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34. An acid having basicity 1 is _____ [carbonic acid/acetic acid/sulphurous acid]

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35. An acid obtained by dissolving sulphur trioxide in water is _____ [sulphurous acid/sulphuric acid/oleum]

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36. A volatile acid obtained when nitre reacts with non-volatile concentrated sulphuric acid on heating is _____ [hydrochloric acid/sulphuric acid/nitric acid]



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37. A base obtained when lead nitrate undergoes thermal decomposition is _____ [trilead tetroxide/lead [IV] oxide/ lead [II] oxide]



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38. An acid obtained when concentrated nitric acid is heated with sulphur is _____ [sulphurous acid/sulphuric acid/nitrous acid]



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39. The more volatile acid obtained when the less volatile acid reacts with sodium carbonate is _____ [sulphuric acid/carbonic acid/nitric acid]



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40. The insoluble base obtained when sodium hydroxide reacts with iron [III] chloride is _____
[iron [II] hydroxide/iron [III] hydroxide/iron [II] oxide]



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41. A solution whose pH is above 7 is _____
[vinegar/milk/liquor ammonia]



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42. The salt formed when sulphuric acid reacts with excess caustic soda solution is _____ [sodium bisulphite/sodium sulphate/sodium sulphite/sodium bisulphate]



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43. An example of an acid salt is _____

[CH_3COONa / $NaNO_3$ / Na_2HPO_4 / $NaKCO_3$]



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44. An example of a soluble salt is _____

[$AgCl$ / $PbSO_4$ / $CaSO_4$ / $CaCl_2$]



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45. An example of an insoluble salt is _____

[Na_2CO_3 / K_2CO_3 / $MgCO_3$ / $(NH_4)_2CO_3$]



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46. A salt prepared by neutralization in which
titration is involved is _____

$[MgCl_2 / CaCl_2 / NH_4Cl / CuCl_2]$



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47. An insoluble salt prepared by direct combination or synthesis is _____

$[FeCl_3 / FeSO_4 / FeS / Fe(NO_3)_2]$



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48. A salt prepared by precipitation i.e., by double decomposition of two salt solution is _____

$[Na_2SO_4 / PbSO_4 / ZnSO_4 / CuSO_4]$



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49. A salt prepared by simple displacement i.e. action of dilute acid on a metal is _____

[$PbCl_2$ / $CuCl_2$ / $AlCl_3$ / $HgCl$]



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50. Decomposition of calcium hydrogen carbonate with _____ results in formation of calcium chloride. [$dil. HNO_3$ / $dil. HCl$ /

$dil. H_2SO_4$]



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51. Action of dilute acid on a metallic sulphide results in evolution of _____ [$SO_2 / H_2S / CO_2$] gas.



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52. A salt which on hydrolysis produces a neutral solution is _____ [sodium chloride/ammonium chloride/ sodium carbonate]



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Unit Test Paper 3 A Acids Bases Salts

1. Name the following :

A basic solution which does not contain a metallic element.



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2. Name the following

A normal salt of sodium formed from acetic acid



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3. Name the following

A base which reacts with an acid to give a salt which on hydrolysis gives a slightly acidic solution



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4. Name the following

An ion which combines with a polar covalent molecule to form an ammonium ion



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5. Name the following

A soluble salt formed by direct combination between a light metal & a greenish yellow gas



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6. Identify which of the following terms matches with the appropriate descriptions 1 to 5

A: Hydracid (B) Monobasic acid (C) Less volatile acid (D) Weak acid (E) Tribasic acid (F) Dibasic acid (G) More volatile acid

1. An acid having basicity 1 and having only one replacement hydrogen ion per molecular of the

acid.

2. An acid which dissociates to give a low concentration of H^+ ions

3. An acid containing hydrogen and a non-metallic element other than oxygen.

4. The type of acid which generally displaces another acid when the acid is heated with a salt

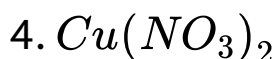
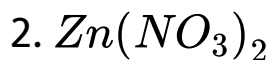
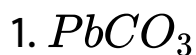
5. The type of acid which reacts with a base to give an acid salt and a normal salt



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7. State which of the following methods is generally used for preparing the salts 1 to 5 given below

(A) Neutralisation -insoluble base & dil. Acid (B) Neutralisation -alkali & dil. Acid (C) Simple displacement -active metal & dil. Acid (D) Direct combination (E) Precipitation [double decomposition]





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8. Give balanced equations for the preparation of the following salts:

Sodium chloride

Sodium carbonate



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9. The diagram represents the preparation of sodium sulphate salt from dil. H_2SO_4 acid & sodium hydroxide.



1. Name the apparatus 'A'
2. Name the substance 'X' placed in 'A' & the substance 'Y' placed in B.
3. State the reason for conducting the titration using the apparatus 'A' & 'B'.
4. State which solution is transferred to the evaporating dish and evaporated to point of crystallisation for obtaining the salt.
5. State why titration is not conducted for the preparation of copper [II] sulphate crystals by neutralisation.



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10. Give reasons for the following

Concentrated sulphuric acid is a weaker acid compared to dilute sulphuric acid.



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11. Give reasons for the following

An aqueous solution of the salt ammonium chloride is acidic in nature while an aqueous solution of sodium chloride is neutral.



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12. Give reasons for the following

In the preparation of an insoluble salt from another insoluble salt by precipitation [double decomposition], dilute nitric acid and not dilute sulphuric acid is generally used.



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13. Give reasons for the following

Acetic acid does not form an acid salt but forms a normal salt



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14. Give reasons for the following

Sulphurous acid forms two types of salts on reaction with an alkali.



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