Multiple Choice Questions

Chemistry: Chapter 14 Introduction to acids and alkalis
Combined Science (Chemistry Part): Chapter 14 Introduction to acids and alkalis

Section 14.1

|!|EMA041414001O|!|
Which of the following combinations about acids is INCORRECT?

	Acids	Present in
A.	Sulphuric acid	Gastric juice
B.	Citric acid	Orange juice
C.	Ethanoic acid	Vinegar
D.	Carbonic acid	Soft drinks

□

##A The acid inside our gastric juice is hydrochloric acid.##

|!|EMA041414002O|!|
Which of the following acids is commonly found in lemon?

A. Ethanoic acid
B. Ascorbic acid
C. Hydrochloric acid
D. Lactic acid

□

##B Ascorbic acid is actually vitamin C. Ethanoic acid is found in vinegar, lactic acid is found in yoghurt.##

|!|EMB041414003O|!|
Which of the following acids is/ are organic acid(s)?

(1) Carbonic acid
(2) Ethanoic acid
(3) Citric acid

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##C Carbonic acid is an inorganic acid.##

|!|EMA041414004O|!|
Which of the following acids is a mineral acid?

A. Ethanoic acid
B. Sulphuric acid
C. Citric acid
D. Oxalic acid

□

##B##

|!|EMA041414005O|!|
Which of the following are the characteristic properties of acids?

(1) They react with potassium carbonate to form carbon dioxide and water.
(2) They react with copper to form hydrogen and a salt.
(3) They produce hydrogen ions in aqueous solution.

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##B Copper and metals below it in the reactivity series do not displace hydrogen.##

Sections 14.2−14.3

|!|EMB041414006O|!|
Solid *X* can react with dilute sulphuric acid but will NOT give water as one of the products. What is *X*?

A. Zinc hydroxide
B. Magnesium oxide
C. Potassium carbonate
D. Calcium chloride

□

##D##

|!|EMA041414007O|!|
Which of the following statements about pure citric acid at room conditions is correct?

A. It is a white crystalline solid.
B. It is a colourless liquid.

C. It is a colourless gas.
D. It is a colourless solution.

##A Melting point of citric acid is 153°C.##

|!|EMA041414008O|!|
Which of the following statements about pure acids is correct?

A. All are covalent compounds.
B. All contain hydrogen ions.
C. All are liquids at room conditions.
D. All have sour smell.

##A Hydrogen ions are formed only when the pure acids are dissolved in water. Pure HCl is a gas, pure sulphuric acid is a liquid and pure citric acid is a solid at room conditions. Aqueous solutions of acids have sour taste but not smell.##

|!|EMA041414009O|!|
Which of the following is NOT a characteristic property of dilute aqueous acids?

A. It turns wet blue litmus paper red.
B. It reacts with copper to give hydrogen.
C. It conducts electricity.
D. It reacts with copper(II) carbonate to give carbon dioxide.

##B Dilute acids will not react with copper and other metals below it in the metal reactivity series to give hydrogen.##

|!|EMB041414010O|!|
Which of the following reactions will NOT produce a gas?

A. Reacting zinc with dilute sulphuric acid
B. Reacting copper(II) carbonate with dilute hydrochloric acid
C. Heating silver oxide in air
D. Reacting copper with steam

##D Copper does not react with steam. Hydrogen is produced when zinc reacts with dilute sulphuric acid. Carbon dioxide is produced when copper(II) carbonate reacts with hydrochloric acid. Silver oxide can be decomposed by heat to give silver metal and oxygen.##

|!|EMB041414011O|!|
Which of the following equations represents a reaction which is impossible to take place?

A. $Cu(OH)_2 + H_2SO_4 \rightarrow CuSO_4 + 2H_2O$
B. $CuO + 2HNO_3 \rightarrow Cu(NO_3)_2 + H_2O$
C. $Cu + 2HCl \rightarrow CuCl_2 + H_2$
D. $CuCO_3 + 2CH_3COOH \rightarrow (CH_3COO)_2Cu + H_2O + CO_2$

☐

##C Copper will not react with hydrochloric acid.##

|!|EMA041414012O|!|
Which of the following substances reacts with hydrochloric acid to give hydrogen?

A. Calcium carbonate
B. Mercury
C. Iron
D. Magnesium hydroxide

☐

##C Iron is higher than copper in the metal reactivity series and thus can react with acid. Carbon dioxide is produced in the case of calcium carbonate. Mercury will not react with the acid. Magnesium hydroxide reacts with hydrochloric acid to produce a salt and water, but no hydrogen is produced.##

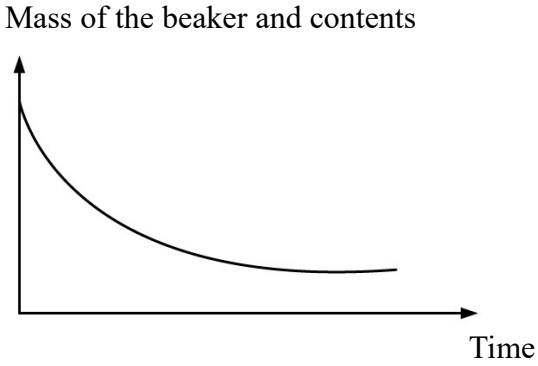
|!|EMA041414013O|!|
Under suitable conditions, hydrochloric acid reacts with each of the following substances. Which substance reacts to give a colourless solution?

A. $CuCO_3$
B. $Fe(OH)_3$
C. $MgCO_3$
D. $AgNO_3$

☐

##C The resultant solutions from A, B and C are aqueous solutions of $CuCl_2$, $FeCl_3$ and $MgCl_2$ respectively. $Cu^{2+}(aq)$ and $Fe^{3+}(aq)$ ions are blue and brown while $Mg^{2+}(aq)$ ions are colourless. D reacts to form white precipitate of silver chloride.##

|!|EMA041414014O|!|
Two solutions were mixed in a beaker. The mass of the beaker and contents was then noted at various times. The mass of the beaker and contents is plotted against time as below.



What could the two solutions be?

A. Sodium chloride solution and iron(II) sulphate solution
B. Potassium hydroxide solution and aluminium nitrate solution
C. Potassium carbonate solution and dilute hydrochloric acid
D. Dilute nitric acid and magnesium sulphate solution

□

##C The graph shows a loss in mass. Most likely, a gas was formed and escaped from the beaker. $K_2CO_3(aq) + 2HCl(aq) \rightarrow 2KCl(aq) + H_2O(l) + CO_2(g)$##

|!|EMA041414015O|!|
Which of the following is NOT a characteristic property of acids in aqueous solution?

A. They react with all metals to give hydrogen.
B. They liberate carbon dioxide from metal carbonates.
C. They have a pH value smaller than 7.
D. They turn blue litmus paper red.

□

##A They do not react with copper and metals below it in the reactivity series to give hydrogen.##

|!|EMA041414016O|!|
Which of the following salts CANNOT be prepared by reacting a metal with a dilute acid?

A. Silver chloride
B. Zinc sulphate
C. Lead(II) nitrate
D. Iron(II) sulphate

□

##A Silver is lower than copper in the reactivity series. Hence, it does not react with hydrochloric acid.##

|!|EMA041414017O|!|
Which of the following combinations of the reagents will NOT produce a gas?

A. magnesium + steam
B. zinc + solid citric acid
C. iron + orange juice
D. calcium + water

□

##B Solid citric acid does not have $H^+(aq)$ to react with zinc. Magnesium reacts with steam to give magnesium oxide and hydrogen. Iron reacts with the citric acid in orange juice to give a salt and hydrogen. Calcium reacts with water to give calcium hydroxide and hydrogen.##

|!|EMA041414018O|!|
Which of the following ionic equations correctly shows the reaction between sulphuric acid and sodium hydroxide?

A. $2Na^+(aq) + SO_4^{2-}(aq) \rightarrow Na_2SO_4(aq)$
B. $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$
C. $2NaOH(aq) + SO_4^{2-}(aq) \rightarrow Na_2SO_4(aq) + 2OH^-(aq)$
D. $2Na^+(aq) + H_2SO_4(aq) \rightarrow Na_2SO_4(aq) + 2H^+(aq)$

□

##B##

|!|EMA041414019O|!|
Which of the following ionic equations correctly shows the reaction between magnesium and dilute sulphuric acid?

A. $Mg(s) + SO_4^{2-}(aq) \rightarrow MgSO_4(aq)$
B. $Mg(s) + H_2SO_4(aq) \rightarrow Mg^{2+}(aq) + SO_4^{2-}(aq) + H_2(g)$
C. $Mg(s) + 2H^+(aq) \rightarrow Mg^{2+}(aq) + H_2(g)$
D. $Mg^{2+}(aq) + H_2SO_4(aq) \rightarrow MgSO_4(aq) + H_2(g)$

□

##C##

Section 14.4

|!|EMA041414020O|!|
Which of the following statements about solid citric acid in methylbenzene is/ are correct?

(1) It turns dry blue litmus paper red.

(2) When anhydrous calcium carbonate is added, carbon dioxide is not evolved.
(3) It can conduct electricity.

A. (1) only
B. (2) only
C. (3) only
D. (1), (2) and (3)

□

##B Solid citric acid in methylbenzene does not ionize and hence does not behave as an acid.##

|!|EMA041414021O|!|
Which of the following substances is/ are usually present in 'fizzy drink' tablets?
(1) Citric acid
(2) Ethanoic acid
(3) Sodium hydrogencarbonate

A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

□

##C Pure ethanoic acid is a liquid, it cannot be used to make the 'fizzy drink' tablets. Furthermore, ethanoic acid has a strong irritating smell.##

|!|EMA041414022O|!|
Which of the following states of hydrogen chloride will NOT turn dry blue litmus paper red?
(1) HCl gas
(2) HCl in water
(3) HCl in methylbenzene

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##B No H^+ ion is present in HCl gas and HCl in methylbenzene because HCl does not ionize in these states. HCl ionizes in water to give H^+ ions and shows acidic properties.##

Section 14.5

|!|EMA041414023O|!|

Which of the following acids is NOT a dibasic acid?

A. Sulphuric acid
B. Ethanoic acid
C. Carbonic acid
D. Oxalic acid

□

##B Ethanoic acid is a monobasic acid which has only one ionizable hydrogen atom.##

|!|EMA041414024O|!|

What is the basicity of CH_3COOH?

A. 1
B. 2
C. 3
D. 4

□

##A There is only one ionizable hydrogen atom in CH_3COOH.##

|!|EMA041414025O|!|

Which of the following statements concerning ethanoic acid are correct?

(1) It cannot be completely neutralized by sodium hydroxide.
(2) Some colourless gas will be given out when it reacts with calcium granules.
(3) It is a monobasic acid.

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##C##

Section 14.6

|!|EMA041414026O|!|

Which of the following substances is found in window cleaners?

A. Ammonia
B. Sodium hydroxide
C. Hydrochloric acid

D. Calcium hydroxide

##A##

|!|EMA041414027O|!|
Limewater is a dilute aqueous solution of

A. calcium oxide.
B. calcium carbonate.
C. calcium hydroxide.
D. calcium chloride.

##C##

|!|EMA041414028O|!|
Which of the following household cleaners contain alkalis?

(1) Oven cleaners
(2) Window cleaners
(3) Drain cleaners

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

##D##

|!|EMA041414029O|!|
Which of the following compounds is a soluble base?

A. Lead(II) oxide
B. Iron(II) sulphate
C. Potassium hydroxide
D. Zinc oxide

##C Potassium hydroxide is soluble in water and it neutralizes an acid to form salt and water.##

|!|EMA041414030O|!|
Which of the following statements shows that calcium hydroxide is a base?

A. Anhydrous calcium hydroxide decomposes to calcium oxide and water on

heating.

B. Anhydrous calcium hydroxide is a white solid.
C. Calcium hydroxide is slightly soluble in cold water.
D. Calcium hydroxide reacts with hydrochloric acid to form a salt and water only.

##D A base is a compound which reacts with an acid to form a salt and water only.##

Section 14.7

|!|EMA041414031O|!|

Which of the following statements about carbon dioxide is INCORRECT?

A. It is a colourless gas.
B. It turns limewater milky.
C. It relights a glowing splint.
D. It dissolves in water to give carbonic acid.

##C It is oxygen that can relight a glowing splint, not carbon dioxide. Carbon dioxide does not support combustion.##

|!|EMB041414032O|!|

Which of the following properties does dilute sulphuric acid have?

A. It turns universal indicator blue.
B. It reacts with all metal carbonates to form aqueous metal sulphates.
C. It reacts with zinc to produce hydrogen gas.
D. It liberates ammonia from ammonium salts.

##C Dilute sulphuric acid turns universal indicator red. It reacts with calcium carbonate to form insoluble calcium sulphate. An alkali, but not an acid, liberates ammonia from ammonium salt.##

|!|EMA041414033O|!|

Which of the following statements about calcium hydroxide is INCORRECT?

A. It is alkaline.
B. It is very soluble in water.
C. It is a white solid.
D. It reacts with carbon dioxide.

##B Calcium hydroxide is only slightly soluble in water.##

|!|EMA041414034O|!|
Limewater is a saturated aqueous solution of

A. calcium oxide.
B. calcium chloride.
C. calcium sulphate.
D. calcium hydroxide.

##D##

|!|EMA041414035O|!|
Carbon dioxide turns limewater milky because

A. calcium carbonate is formed.
B. calcium oxide is formed.
C. carbon dioxide is insoluble in limewater.
D. calcium hydroxide is formed.

##A Limewater contains $Ca(OH)_2$ which reacts with carbon dioxide to give the white insoluble solid of calcium carbonate.##

|!|EMA041414036O|!|
Which of the following are the characteristic properties of dilute aqueous solution of alkalis?

(1) They turn wet red litmus paper blue.
(2) They conduct electricity.
(3) They have a soapy feel.

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

##D##

|!|EMB041414037O|!|
A sample of air was shaken with an alkaline solution of a compound called pyrogallol. The remaining gases collected put off a glowing splint. Which of the following gas(es) is/ are removed by the alkaline pyrogallol?

(1) Oxygen

(2) Carbon dioxide
(3) Nitrogen

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##A The alkali absorbed carbon dioxide. As the remaining gases collected put off a glowing splint, it can be deduced that oxygen is also removed.##

|!|EMA041414038O|!|
Which of the following gases is formed when ammonium sulphate is warmed with aqueous potassium hydroxide?

A. Carbon dioxide
B. Sulphur dioxide
C. Nitrogen
D. Ammonia

□

##D The reaction involved is:
$NH_4^+(aq) + OH^-(aq) \rightarrow NH_3(g) + H_2O(l)$ ##

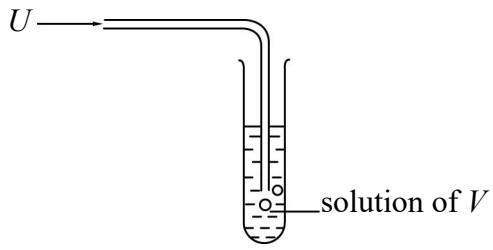
|!|EMA041414039O|!|
Which of the following compounds would react with ammonium sulphate on heating?

A. Dilute sulphuric acid
B. Concentrated hydrochloric acid
C. Sodium chloride solution
D. Sodium hydroxide solution

heating □

##D $(NH_4)_2SO_4(aq) + 2NaOH(aq) \rightarrow Na_2SO_4(aq) + 2NH_3(g) + 2H_2O(l)$##

|!|EMB041414040O|!|



Gas *U* is bubbled into a solution of *V* as shown in the above diagram. There is a reaction between *U* and the solution of *V*. Which of the following combinations about *U* and *V* is correct?

	U	*V*
A.	Hydrogen	Sodium iodide
B.	Oxygen	Sodium hydroxide
C.	Chlorine	Potassium sulphate
D.	Sulphur dioxide	Sodium hydroxide

□

##D $SO_2(g) + 2NaOH(aq) \rightarrow Na_2SO_3(aq) + H_2O(l)$##

|!|EMA041414041O|!|
Copper(II) oxide is a base. Calcium hydroxide is an alkali. Which of the following statements is correct for calcium hydroxide but not for copper(II) oxide?

A. It contains oxygen.
B. It is slightly soluble in water.
C. It forms salts with acids.
D. It reacts with nitrogen.

□

##B Copper(II) oxide is insoluble in water while calcium hydroxide is slightly soluble in water.##

|!|EMA041414042O|!|
Which of the following is NOT a property of ammonia?

A. It is very soluble in water.
B. It has an irritating smell.
C. It is heavier than air.
D. It is colourless.

□

##C Ammonia is lighter than air.##

|!|EMA041414043O|!|
Which of the following statements about an ammonia solution is/ are correct?
(1) It has a pH value greater than 7.
(2) Hydroxide ion concentration is higher than hydrogen ion concentration.
(3) It reacts with sodium hydroxide to give ammonia gas.
A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

##A##

|!|EMA041414044O|!|
Which of the following statements about a 2 M sodium hydroxide solution is/ are correct?
(1) It is acidic.
(2) It conducts electricity.
(3) It contains 2 M hydroxide ions.
A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

##D##

Section 14.8
|!|EMA041414045O|!|
Which of the following substances can react with limewater to give a white precipitate?
(1) Carbon dioxide gas
(2) Zinc nitrate solution
(3) Iron(II) nitrate solution
A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

##A##

|!|EMA041414046O|!|
It is found from experiments that the same copper(II) hydroxide precipitate is formed from copper(II) ions, no matter sodium hydroxide, potassium hydroxide or ammonia solution is used. It can be concluded that

A. all alkalis have the same chemical properties.
B. aqueous solutions of different alkalis contain an ion in common − the OH^-(aq) ion.
C. most metal hydroxides are insoluble in water.
D. the most stable copper(II) compound is copper(II) hydroxide.

□

##B##

|!|EMB041414047O|!|
Which of the following oxides dissolves in water to form an acidic solution?

A. CaO
B. SO_2
C. SiO_2
D. Al_2O_3

□

##B Sulphur dioxide dissolves in water to form sulphurous acid. SiO_2 and Al_2O_3 are insoluble in water. CaO dissolves in water to give an alkaline solution.##

|!|EMA041414048O|!|
Which of the following chemicals is/ are alkaline?

(1) Sodium hydroxide
(2) Magnesium hydroxide
(3) Ammonia

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##D Magnesium hydroxide is slightly soluble in water and thus produces some OH^-(aq) ion. Sodium hydroxide dissociates in water to give OH^-(aq) ions. Ammonia reacts with water to give OH^-(aq) ions.##

|!|EMA041414049O|!|
Which of the following substances will NOT react with sodium hydroxide solution?

A. Ammonium sulphate
B. Iron(III) nitrate
C. Nitric acid
D. Copper

□

##D Sodium hydroxide reacts with ammonium sulphate to give ammonia gas on warming. Iron(III) nitrate reacts with sodium hydroxide to give iron(III) hydroxide precipitate. Nitric acid neutralizes sodium hydroxide to give a salt and water.##

|!|EMA041414050O|!|
Which of the following statements about all alkalis is/ are INCORRECT?

(1) They must contain metal ions.
(2) They produce hydroxide ions when dissolved in water.
(3) Their aqueous solutions turn red litmus blue.

A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

□

##A Ammonia solution is an alkali that does not contain metal ions.##

|!|EMA041414051O|!|
Which of the following ions when treated with excess aqueous ammonia, gives a clear solution without any precipitates?

A. $Fe^{2+}(aq)$
B. $Al^{3+}(aq)$
C. $Cu^{2+}(aq)$
D. $Pb^{2+}(aq)$

□

##C On adding aqueous ammonia, all of the four ions listed above form precipitates. But only copper(II) hydroxide redissolves in excess aqueous ammonia.##

|!|EMB041414052O|!|
Which of the following oxides reacts with water to form an alkaline solution?

A. Aluminium oxide
B. Calcium oxide

C. Lead(II) oxide
D. Iron(III) oxide

##B $CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$
The other 3 oxides are insoluble in water and have no reaction with water.##

|!|EMB041414053O|!|
A solution containing one mole of sodium hydroxide is added to a solution containing one mole of iron(II) sulphate. The equation for this reaction is as follows:
$FeSO_4(aq) + 2NaOH(aq) \rightarrow Fe(OH)_2(s) + Na_2SO_4(aq)$
What is the number of moles of iron(II) hydroxide precipitated?

A. 1
B. 2
C. $\frac{1}{2}$
D. $\frac{1}{3}$

##C The mole ratio of reactants $FeSO_4$: NaOH = 1:2, so iron(II) sulphate is in excess. The mole ratio of NaOH of NaOH : $Fe(OH)_2$ = 2:1. Hence, 1 mole of NaOH gives $\frac{1}{2}$ mole of iron(II) hydroxide.

|!|EMA041414054O|!|
Which of the following combinations is INCORRECT?

	Metal hydroxides	**Colour**
A.	Copper(II) hydroxide	Pale blue
B.	Iron(II) hydroxide	Yellow
C.	Magnesium hydroxide	White
D.	Lead(II) hydroxide	White

##B Iron(II) hydroxide is dirty green in colour.##

|!|EMA041414055O|!|
Which of the following aqueous solutions will give a coloured precipitate when mixed with ammonia solution?

A. Magnesium nitrate

B. Iron(III) sulphate
C. Sodium hydroxide
D. Zinc chloride

□

##B Ammonia solution reacts with iron(III) sulphate to give yellow/ reddish brown iron(III) hydroxide precipitate.##

|!|EMA041414056O|!|
Ammonia gas CANNOT turn dry red litmus paper blue because
A. it is an acid.
B. it is neutral.
C. it contains no OH^- ion.
D. it contains no H^+ ion.

□

##C Without water, ammonia cannot form $OH^-(aq)$ ions and shows no alkaline property.##

|!|EMB041414057O|!|
Which of the following salts would form an acidic solution when dissolved in water?
(1) Ammonium nitrate
(2) Iron(III) chloride
(3) Potassium iodide
A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##A When ammonium nitrate dissolves in water, it reacts with water as follows: $NH_4^+(aq) + H_2O(l) \rightleftharpoons NH_3(aq) + H_3O^+(aq)$
When iron(III) chloride dissolves in water, it dissociates to iron(III) ions and chloride ions, while the water molecules ionize to $H^+(aq)$ and $OH^-(aq)$ ions. The $Fe^{3+}(aq)$ ions will partially combine with the $OH^-(aq)$ ions to form $Fe(OH)_3(s)$. This precipitation can be regarded as removing $OH^-(aq)$ from the iron(III) chloride solution, leaving relatively more $H^+(aq)$ ions than $OH^-(aq)$ ions in the solution. This makes the solution acidic.##

Section 14.9
|!|EMA041414058O|!|

Which of the following concentrated acids is/ are corrosive?

(1) Nitric acid
(2) Ethanoic acid
(3) Sulphuric acid

A. (1) and (2) only
B. (1) and (3) only
C. (2) and (3) only
D. (1), (2) and (3)

□

##B##

|!|EMA041414059O|!|

Which of the following concentrated acids is/ are usually stored in brown bottle?

(1) Hydrochloric acid
(2) Nitric acid
(3) Sulphuric acid

A. (1) only
B. (2) only
C. (1) and (3) only
D. (2) and (3) only

□

##B Light can speed up the decomposition of HNO_3. Brown bottle can help to cut off the light which speeds up the decomposition.##

Each question below consists of two separate statements. Decide whether each of the two statements is true or false; if both are true, then decide whether or not the second statement is a *correct* explanation of the first statement. Then select one option from A to D according to the following table:

A. Both statements are true and the 2nd statement is a correct explanation of the 1st statement.
B. Both statements are true and the 2nd statement is NOT a correct explanation of the 1st statement.
C. The 1st statement is false but the 2nd statement is true.
D. Both statements are false.

Sections 14.1−14.3

|!|EMA041414060O|!|

Carbonic acid is an organic acid. It contains carbon.

☐

##C Carbonic acid is an inorganic acid although it contains carbon.##

Section 14.4

|!|EMA041414061O|!|

Pure sulphuric acid can conduct electricity.

Pure sulphuric acid contains hydrogen ions.

☐

##D Pure sulphuric acid is a covalent molecular compound which contains no ion.##

|!|EMA041414062O|!|

HCl in methylbenzene can turn dry blue litmus paper red.

H^+ ions are present when HCl is dissolved in methylbenzene.

☐

##D##

Section 14.5

|!|EMA041414063O|!|

'Fizzy drink' tablets effervesce when they are added to methylbenzene.

Hydrogen ions are formed when the tablets are dissolved in methylbenzene.

☐

##D The solid acid in the tablets cannot ionize in methylbenzene to give hydrogen ions, thus there is no reaction with the sodium hydrogencarbonate which is usually present in the tablets.##

|!|EMB041414064O|!|

The basicity of an acid with formula CH_3CH_2COOH is 6.

There are 6 hydrogen atoms per molecule that can form $6H^+$ ions when dissolved in water.

☐

##D There is only one ionizable hydrogen atom in the molecule, so the basicity is 1.##

Section 14.6

|!|EMA041414065O|!|

Sodium carbonate is a base.

It reacts with acid to form salt and water only.

☐

##D Sodium carbonate reacts with acid to form not only salt and water, but also carbon dioxide.##

|!|EMA041414066O|!|

Aqueous ammonia is an alkali.	It is a soluble base.

☐

##A##

Section 14.7

|!|EMA041414067O|!|

Carbon dioxide can turn limewater milky.	Calcium carbonate is an insoluble white solid.

☐

##A Calcium carbonate is formed when carbon dioxide is bubbled into limewater.##

|!|EMA041414068O|!|

Carbon dioxide can turn sodium hydroxide solution milky.	Sodium hydroxide reacts with carbon dioxide to form insoluble sodium carbonate.

☐

##D Carbon dioxide cannot turn sodium hydroxide milky because sodium carbonate formed is soluble in water.##

|!|EMA041414069O|!|

Magnesium hydroxide can turn dry red litmus paper blue.	Magnesium hydroxide is a soluble base.

☐

##D Magnesium hydroxide is insoluble in water and forms no hydroxide ion to turn dry red litmus paper blue.##

Section 14.8

|!|EMA041414070O|!|

Ammonia solution is alkaline.	Ammonia reacts with water to give hydroxide ions (OH^- (aq)).

☐

##A##

|!|EMA041414071O|!|

Ammonia solution turns red litmus paper blue.	Ammonia reacts with water to give hydroxide ions.

☐

##A##

Section 14.9

|!|EMA041414072O|!|

Concentrated nitric acid is stored in brown bottle.	Concentrated nitric acid is a strong oxidizing agent.

☐

##B##

|!|EMA041414073O|!|

Concentrated sulphuric acid is highly corrosive.	Concentrated sulphuric acid is a very strong dehydrating agent.

☐

##A##

|!|EMA041414074O|!|

Concentrated alkalis have to be handled with great care.	They are highly corrosive.

☐

##A##