



# CHEMISTRY

## BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

### CHEMISTRY 2012

#### Section I

1. Name the gas in the following :

The gas evolved on reaction of Aluminium with boiling concentrated caustic alkali solution.

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2. Name the gas in the following: The gas produced when excess ammonia reacts with chlorine.

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3. A gas which turns acidified potassium dichromate green.

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4. Name the gas in the following :

The gas produced when zinc reacts with concentrated nitric acid.



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5. Name - The gas produced on reaction of dilute sulphuric acid with a metallic sulphide .



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6. State one observation for the following :

Excess ammonium hydroxide solution is added to

lead nitrate solution.

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7. State one observation for the following :

Bromine vapours are passed into a solution of ethyne in carbon tetrachloride.

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8. State one observation for the following : A zinc granule is added to copper sulphate solution.

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**9.** State one observation for the following:

Zinc nitrate crystals are strongly heated.



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**10.** State one observation for each of the following:

Sodium hydroxide solution is added to ferric chloride solution at first a little and then in excess.



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11. Some word/words are missing in the following statements. You are required to rewrite the statements in the correct form using the appropriate word/words: Ethyl alcohol is dehydrated by sulphuric acid at a temperature of about  $170^{\circ}C$ .



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12. Some word/words are missing in the following statements. You are required to rewrite the statements in the correct form using the appropriate word/words:

Aqua regia contains one part by volume of nitric acid and three parts by volume of hydrochloric acid.



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**13.** Some word/words are missing in the following statement. You are required to rewrite the statement in the correct form using the appropriate word/words: Magnesium nitride reacts with water to liberate ammonia.



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14. Some word/words are missing in the following statement. You are required to rewrite the statement in the correct form using the appropriate word/words:

Cations migrate during electrolysis.



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15. Some word/words are missing in the following statement. You are required to rewrite the statement in the correct form using the appropriate word/words: Magnesium reacts with nitric acid to liberate hydrogen gas.





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**16.** An element in period-3 whose electron affinity is zero.

A. Neon

B. Sulphur

C. Sodium

D. Argon

**Answer: D**



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17. Choose the correct answer

An alkaline earth metal .

A. Potassium

B. Calcium

C. Lead

D. Copper

**Answer: B**



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18. The vapour density of carbon dioxide [C=12,O=16]

A. 12

B. 16

C. 44

D. 22

**Answer: D**



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**19. Identify the weak electrolyte from the following:**

A. Sodium chloride solution

B. Dilute hydrochloric acid

C. Dilute sulphuric acid

D. Aqueous acetic acid

**Answer: D**



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**20.** Which of the following metallic oxides cannot be reduced by normal reducing agents?

A. Magnesium oxide

B. Copper(II) oxide

C. Zinc oxide

## D. Iron(III) oxide

**Answer: A**

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**21. Match the following:**

| <b>Column A</b>                       | <b>Column B</b>                       |
|---------------------------------------|---------------------------------------|
| 1. <i>Acid salt</i>                   | A. <i>Ferrous ammonium sulphate</i>   |
| 2. <i>Double salt</i>                 | B. <i>Contains only ions</i>          |
| 3. <i>Ammonium hydroxide solution</i> | C. <i>Sodium hydrogen sulphate</i>    |
| 4. <i>Dilute hydrochloric acid</i>    | D. <i>Contains only molecules</i>     |
| 5. <i>Carbon tetrachloride</i>        | E. <i>Contains ions and molecules</i> |

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**22.** Give the structural formula for the following:

Methanoic acid



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**23.** Give the structural formula for the following:

Ethanal



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**24.** Give the structural formula for the following:

Ethyne



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**25.** Give the structural formula for the following:

Acetone



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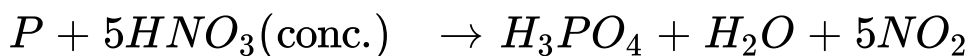
**26.** Give the structural formulae of the following:

2-methyl propane



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**27.** Concentrated nitric acid oxidises phosphorus to phosphoric acid according to the following equation:



If 9.3 g of phosphorus was used in the reaction, calculate :

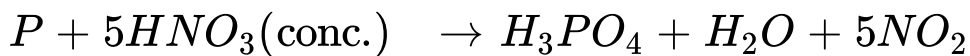
Number of moles of phosphorus taken.



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**28.** Concentrated nitric acid oxidises phosphorus to phosphoric acid according to the following equation:





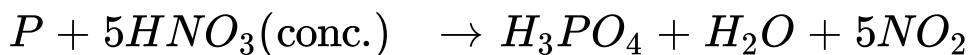
If 9.3 g of phosphorus was used in the reaction, calculate :

The mass of phosphoric acid formed.



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**29.** Concentrated nitric acid oxidises phosphorus to phosphoric acid according to the following equation:



If 9.3 g of phosphorus was used in the reaction, calculate :

The volume of nitrogen dioxide produced at S.T.P.

[H = 1, N = 14, P = 31, O = 16]



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**30.** Give reasons for the following:

Iron is rendered passive with fuming nitric acid.



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**31.** Give reasons for the following:

An aqueous solution of sodium chloride conducts electricity.



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**32.** Give reasons for the following:

Ionization potential of the element increases across a period.

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**33.** Give reasons for the following:

Alkali metals are good reducing agents.

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**34.** Give reason for the following:

Hydrogen chloride gas cannot be dried over quick lime.



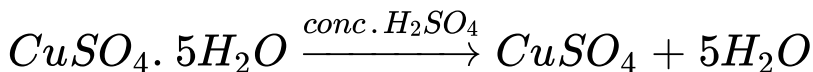
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## Section II

1. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C,

or D which is responsible for the reaction.



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

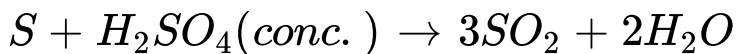
**Answer: B**



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2. A, B, C and D illustrate the properties of sulphuric acid whether dilute or concentrated. Choose the role played by sulphuric acid as A, B, C, or D which is responsible for the reactions. Some role(s) may be

repeated.



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

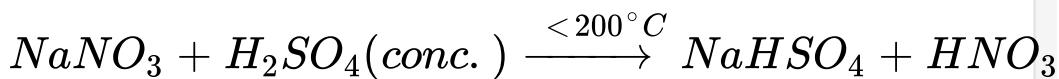
**Answer: D**



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3. A, B, C and D illustrate the properties of sulphuric acid whether dilute or concentrated. Choose the role

played by sulphuric acid as A, B, C, or D which is responsible for the reactions. Some role(s) may be repeated.



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

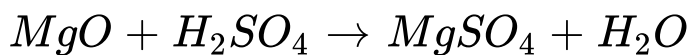
**Answer: C**



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4. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C, or D which is responsible for the reactions.



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

**Answer: A**



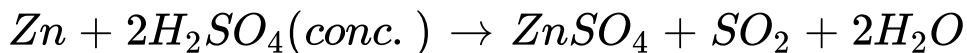
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5. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C,

or D which is responsible for the reactions.



A. Dilute acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

**Answer: D**



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6. Give balanced equation for the following reaction

:

Dilute nitric acid and Copper carbonate.



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7. Give a balanced equation for the reaction : Conc hydrochloric acid & potassium permanganate soln.



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8. Give balanced equation for the following reaction

: Ammonia and Oxygen in the presence of a catalyst.



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9. Write balanced chemical equations for the following:

Silver nitrate solution is added to sodium chloride solution.



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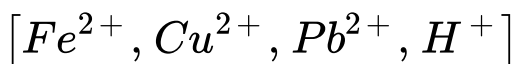
10. Give balanced equation for the following reaction : Zinc sulphide and Dilute sulphuric acid.



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11. Select the correct answer from the list given in brackets :

An aqueous electrolyte consists of the ions mentioned in the list, the ion which could be discharged most readily during electrolysis.



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12. Select the correct answer from the list given in brackets :

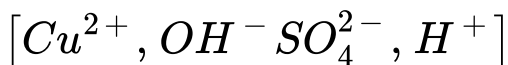
The metallic electrode which does not take part in an electrolytic reaction. (Cu, Ag, Pt, Ni).



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**13.** Select the correct answer from the list given in brackets :

The ion which is discharged at the anode during the electrolysis of copper sulphate solutions using copper electrodes as anode and cathode.



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**14.** Select the correct answer from the list given in brackets :

When dilute sodium chloride is electrolysed using graphite electrodes, the cation is discharged at the cathode most readily.  $[Na^+, OH^-, H^+, Cl^-]$ .

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15. Select the correct answer from the list given in brackets :

During silver plating of an article using potassium argentocyanide as an electrolyte, the anode material should be (Cu, Ag, Pt, Fe).

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16. Match the properties and uses of alloys in list I with the appropriate answer from list II.

| List I  | List II            |
|---|--------------------|
| (i) The alloy contains Cu and Zn is hard, silvery and is used in decorative articles. | A. Duralumin       |
| (ii) It is stronger than aluminium light and is used in making light tools.           | B. Brass           |
| (iii) It is lustrous, hard, corrosion resistant and used in surgical instruments.     | C. Bronze          |
| (iv) Tin lowers the melting point of the alloy and is used for soldering purpose      | D. Stainless steel |
| (v) The alloy is for hard, brittle, takes up polish and is used making statues.       | E. Solder          |



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17. Identify the anion present in the following compound: Compound X on heating with copper turnings and concentrated sulphuric acid liberates a reddish brown gas.



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**18.** Identify the anion present in the following compound : When a solution of compound Y is treated with silver nitrate solution a white precipitate is obtained which is soluble in excess of ammonium hydroxide solution.



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**19.** Identify the anion present in the following compounds : Compound Z which on reacting with dilute sulphuric acid liberates a gas which turns lime water milky, but the gas has no effect on acidified potassium dichromate solution.



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20. Identify the anion present in the following compound :

Compound L on reacting with Barium chloride solution gives a white precipitate insoluble in dilute hydrochloric acid or dilute nitric acid.

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21. State one chemical test between each of the following pairs :

Sodium carbonate and Sodium sulphite



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22. State one chemical test between each of the following pairs :

Ferrous nitrate and Lead nitrate



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23. State one chemical test between each of the following pairs :

Manganese dioxide and Copper (II) oxide



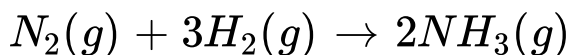
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**24.** Draw an electron dot diagram to show the structure of hydronium ion. State the type of bonding present in it.



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**25.** 67.2 litre of hydrogen combines with 44.8 litres of nitrogen to form ammonia under specific conditions as :



Calculate the volume of ammonia produced. What is the other substance, if any, that remains in the resultant mixture ?



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26. The mass of  $5.6 \text{ dm}^3$  of a certain gas at S.T.P. is 12.0 g. Calculate the relative molecular mass of the gas.



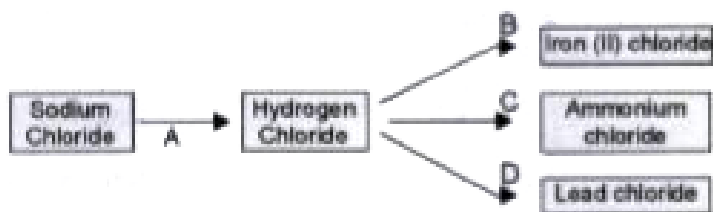
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27. Find the total percentage of magnesium in magnesium nitrate crystals  $[Mg(NO_3)_2 \cdot 6H_2O]$   
[Mg=24, N=14, O=16, H=1]



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**28.** Refer to the flow chart diagram below and give balanced equations with conditions, if any, for the following conversions A to D.



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**29.** Name the following metals :

A metal present in cryolite other than sodium.

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**30.** Name the following metals :

A metal which is unaffected by dilute or concentrated acids.



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**31.** Name the following metal :

A metal present in period 3 group 1 of the periodic table.



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**32.** The following questions are relevant to the extraction of Aluminium :

State the reason for addition of caustic alkali to bauxite ore during purification of bauxite.

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**33.** The following questions are relevant to the extraction of Aluminium:

Give a balanced chemical equation for the above reaction

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**34.** The following questions are relevant to the extraction of Aluminium:

Along with cryolite and alumina , another substance is added to the electrolyte mixture Name the substance and give one reason for the addition .



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**35.** The following questions are based on the preparation of ammonia gas in the laboratory :

Explain why ammonium nitrate is not used in the preparation of ammonia.



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**36.** The following questions are based on the preparation of ammonia gas in the laboratory :

Name the compound normally used as a drying agent during the process.



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**37.** The following questions are based on the preparation of ammonia gas in the laboratory :

How is ammonia gas collected?



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**38.** The following questions are based on the preparation of ammonia gas in the laboratory :

Explain why it is not collected over water.

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**39.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An unsaturated hydrocarbon used for welding.

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**40.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An organic compound whose functional group is carboxyl.



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**41.** From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

A hydrocarbon which on catalytic hydrogenation gives a saturated hydrocarbon.



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42. From the organic compounds given below, choose one compound in case which relates to the description

[Ethyne, ethanol, acetic acid, ethene]

An organic compound used as a thermometric liquid.



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**43.** Why is pure acetic acid known as glacial acetic acid?



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**44.** Give a chemical equation for the reaction between ethyl alcohol and acetic acid.



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**45.** There are three elements E, F, G with atomic numbers 19, 8 and 17 respectively.

Classify the elements as metals and non-metals.

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**46.** There are three elements E, F, G with atomic numbers 19, 8 and 17 respectively.

Give the molecular formula of the compound formed between E and G and state the type of chemical bond in this compound.

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