CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

CHEMISTRY-2015

Section I 40 Marks Attempt All Questions From This Section

1. Select from the list the gas that matches the description given in the following case :

(ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne)

This gas is used as a reducing agent in reducing copper oxide to copper.

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2. Select from the list the gas that matches the description given in each case: [ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

This gas produces reddish brown preciptate with nesslers reagent

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3. Select from the list the gas that matches the description given in each case: [ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

This gas decolourizes bromine water,

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4. Select from the list the gas that matches the description given in each case: [ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

This gas when treated with potassium permanganate changes its colour from pink to yellow

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5. Select from the list the gas that matches the description given in each case: [ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]

This gas decolourizes bromine water,

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6. Choose the most appropriate answer for each of the following:

Among the elements given below, the element with the least electronegativity is :

A. Lithium

B. Carbon

C. Boron

D. Fluorine

Answer:

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7. Identify the statement which does not describe the properties of alkenes

A. They are unsaturated hydrocarbons

B. They decolourise bromine water

C. They can undergo addition as well as substitution reactions.

D. They undergo combustion with oxygen forming carbon dioxide and water.

Answer:

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8. This is not an alloy of copper :

A. Brass

B. Bronze

C. Solder

D. Duralumin

Answer:

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9. Choose the most appropriate answer for each of the following:

Bonding in this molecule can be understood to involve coordinate bonding.

A. Carbon tetrachloride

B. Hydrogen

C. Hydrogen chloride

D. Ammonium chloride

Answer:

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10. Choose the most appropriate answer

Which of the following would weigh the least ?

A. 2 gram atoms of Nitrogen

B. 1 mole of silver

C. 22.4 litre of oxygen gas at 1 atmospheric pressure and 273 K

D. 6.02×10^{23} atoms of carbon [Atomic masses : Ag = 108, N = 14, O = 16, C = 12]

Answer:

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11. Complete the calculation. Show working for complete credit :

Calculate the mass of calcium that will contain the same number of atoms as are present in 3.2 gm of sulphur. [Atomic masses : S = 32, Ca = 40]

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12. Complete the calculation. Show working for complete credit :

If 6 litre of hydrogen and 4 litre of chlorine are mixed and exploded and if water is added to the gases formed, find the volume of the residual gas

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13. Complete the calculation. Show working for complete credit :

If the empirical formula of a compound is CH and it has a vapour density of 13, find the molecular formula of the compound.

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14. State one appropriate observation for -When crystals of copper nitrate are heated in a test tube .

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15. State one relevant observation for the following:

When the gaseous product obtained by dehydration of ethyl alcohol is passed through bromine water.

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16. State one relevant observation: When hydrogen sulphide gas is passed through lead acetate solution.

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17. State one relevant obervation - Ammonia gas is burn in a atmosphere of excess oxyen.

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18. State one relevant observation for each of the following: At the Anode when aqueous copper sulphate solution is electrolysed using copper electrodes.

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19. Identify the acid which matches the following description : The acid which is used in the preparation of a non-volatile acid.

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20. Identify the acid which matches the following description.

(i) The acid which produces sugar charcoal from sugar.

(ii) The acid on mixing with lead nitrate solution produces a white precipitate which is insoluble even on heating.

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21. Identify the acid which matches the following description.

The acid which is prepared by catalytic oxidation of ammonia.

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22. Identify the acid which matches the following description

The acid on mixing with lead nitrate solution produces a white precipitate which is insoluble even on heating

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23. Identify the acid which matches the following description

The acid on mixing with silver nitrate solution produces a white precipitate which is soluble in excess ammonium hydroxide.

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24. Give appropriate scientific reason for the statement :

Zinc oxide can be reduced to zinc by using carbon monoxide, but aluminium oxide cannot be reduced by a reducing agent.

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25. Carbon tetrachloride does not conduct electricity.

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26. Give appropriate scientific reasons for the following statements :

During electrolysis of molten lead bromide, graphite anode is preferred to other electrodes

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27. Identify the acid which matches the following description :

The elecbical conductivity of acetic acid is less in comparison to the electrical conductivity of dilute sulphuric acid at a given concentration

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28. Give appropriate scientific reasons for the following statements :

Electrolysis of molten lead bromide is considered to be a redox reaction.

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29. Give balanced chemical equations for the following conversions A, B and C :

$$Fe \xrightarrow{A} FeCl_3 \xrightarrow{B} FeCO_3 \xrightarrow{C} Fe(NO_3)_2$$

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30. Differentiate between the terms strong electrolyte and weak electrolyte. (stating any two differences)

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31. Answer the question :

Explain the bonding in methane molecule using electron dot structure.

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32. Answer the question :

The metals of Group 2 from top to bottom are Be, Mg, Ca, Sr, and Ba.

(1) Which one of these elements will form ions most readily and why ?

(2) State the common feature in the electronic configuration of all these elements.

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Section Ii 40 Marks Attempt Any Four Questions From This Section

1. Arrange the following as per the instructions given in the brackets:

Cs, Na, Li, K, Rb (increasing order of metallic character).

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2. Arrange the following as per the instructions given in the brackets :

Mg, Cl, Na, S, Si (decreasing order of atomic size).

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3. Arrange the following as per the instructions given in the brackets :

Na, K, Cl, S, Si (increasing order of ionization energy).

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4. Arrange the following as per instructions given in the brackets:

Cl, F, Br, I (increasing order of electron affinity)

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5. Choose the most appropriate answer from the following list of oxides which fit the description. Each answer may be used only once :

$[SO_2, SiO_2, Al_2O_3, MgO, CO, Na_2O]$

A basic oxide.

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6. Choose the most appropriate answer from the following list of oxides which fit the description. Each answer may be used only once :

$[SO_2, SiO_2, Al_2O_3, MgO, CO, Na_2O]$

An oxide which dissolves in water forming an acid.

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7. Choose the most appropriate answer from the following list of oxides which fit the description. Each answer may be used only once :

$[SO_2, SiO_2, Al_2O_3, MgO, CO, Na_2O]$

An amphoteric oxide.

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8. Choose the most appropriate answer from the following list of oxides which fit the description. Each answer may be used only once :

$[SO_2, SiO_2, Al_2O_3, MgO, CO, Na_2O]$

A covalent oxide of a metalloid.

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9. Element X is a metal with a valency 2, Y is a non metal with a valency 3.

Write an equation to show how Y forms an ion.

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10. A metal 'X' has valency 2 & a non - metal 'Y' has a valency 3. If 'Y' is a diatornic gas ,write an equation for the direct combination of X&Y to form a compound.

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11. Give the balanced chemical equations for the Ethanoic acid to ethylethanoate.

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12. Give the balanced chemical equations for the Calcium carbide to ethyne.

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13. Give the balanced chemical equations for the Sodium ethanoate to methane.

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14. Using their structural formulae identify the functional group by circling them :

(i) Dimethyl ether. (ii) Propanone.

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15. Using their structural formulae identify the functional group by circling them :

(i) Dimethyl ether. (ii) Propanone.

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16. Name of the following

Process by which ethane is obtained from ethene.

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17. Name the following:

A hydrocarbon which contributes towards the greenhouse effect.

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18. Name of the following

Distinctive reaction that takes place when ethanol is treated with acetic acid.

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19. Name of the following

The property of elements by virtue of which atoms of the element can link to each other in the form of a long chain or ring structure

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20. Name

Reaction when an alkyl halide is treated with alcoholic

potassium hydroxide.

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21. Identify the anion present in each of the following compounds :

A salt M on treatment with concentrated sulphuric acid produces a gas which fumes in moist air and gives dense fumes with ammonia.

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22. Identify the anion present in each of the following compounds :

A salt D on treatment with dilute sulphuric acid produces a

gas which turns lime water milky but has no effect on acidified potassium dichromate solution.

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23. Identify the anion present in each of the following compounds :

When barium chloride solution is added to salt solution E a white precipitate insoluble in dilute hydrochloric acid is obtained

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24. The following table shows the tests a student performed on four different aqueous solutions which are X, Y, Z and W. Based on the observations provided, identify the cation

present :

Chemical test	Observation	Conclusion
To solution X, ammonium hydroxide is added in minimum quantity first and then in excess.	A dirty white precipitate is formed which dissolves in excess to form a clear solution.	(i)
To solution Y, ammonium hydroxide is added in minimum quantity first and then in excess.	A pale blue precipitate is formed which dissolves in excess to form a clear inky blue solution.	(ii)
To solution W, a small quantity of sodium hydroxide solution is added and then in excess.	A white precipitate is formed which remains insoluble.	(iii)
To a salt Z, calcium hydroxide solution is added and then heated.	A pungent smelling gas turning moist red litmus paper blue is obtained.	(iv)

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25. Give balanced chemical eqauations for - i] Lab preparation of ammonia using an ammonium salt.

(ii) Reaction of ammonia with excess chlorine .iii] Reaction of ammonia with sulphuric acid.

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26. Give the chemical equations for the following:

Reaction of ammonia with excess of chlorine.

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27. Give balanced chemical equation for

Reaction of ammonia with sulphuric acid.

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28. Consider the reaction and based on the reaction answer the questions that follow :

$$(NH_4)_2Cr_2O_7 \xrightarrow{\text{Heat}} N_{2(g)} + 4H_2O(g) + Cr_2O_3$$

Calculate:

The quantity in moles of $(NH_4)_2Cr_2O_7$ if 63 gm of $(NH_4)_2Cr_2O_7$ is heated.

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29. Consider the reaction and based on the reaction answer the questions that follow :

$$(NH_4)_2Cr_2O_7 \xrightarrow{\text{Heat}} N_{2(g)} + 4H_2O(g) + Cr_2O_3$$

Calculate:

The quantity in moles of nitrogen formed when 63g of $(NH_4)_2Cr_2O_7$ is given

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30. Consider the reaction and based on the reaction answer the questions that follow :

$(NH_4)_2Cr_2O_7 \xrightarrow{\text{Heat}} N_{2(g)} + 4H_2O(g) + Cr_2O_3$

Calculate:

The volume in litres or dm of N_2 evolved at S.T.P when 63g of $(NH_4)_2Cr_2O_7$ is taken.

(M.M of ($NH_4)_2Cr_2O_7$ is 252)

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31. Consider the reaction and based on the reaction answer the questions that follow :

$(NH_4)_2Cr_2O_7 \xrightarrow{\text{Heat}} N_{2(g)} + 4H_2O(g) + Cr_2O_3$

Calculate:

The mass in gram of Cr_2O_3 formed at the same time.

[Atomic masses : H = 1, Cr = 52, N = 14]

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32. For each of the substance listed below, describe the role played in the extraction of aluminium. (1) Cryolite (2) Sodium hydroxide (3) Graphite.

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33. Explain why :

In the electrolysis of alumina using the Hall Heroult's Process, the electrolyte is covered with powdered coke.

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34. Give a balanced chemical equations for the action of sulphuric acid on each of the following:

(A) Potassium hydrogen carbonate

(B) Sulphur

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35. In the contact process for the manufacture of sulphuric acid give the equations for the conversion of sulphur trioxide to sulphuric acid.

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36. Copy and complete the following table.

Name of the process	Catalyst	Temperature	Equation for the reaction
Haber's Process			

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37. Write the equation taking place at the anode in mercury cell

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38. Dilute nitric acid is generally considered a typical acid but not so in its reaction with metals. Explain ?

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39. Concentrated nitric acid appears yellow when it is left standing in a glass bottle. Explain ?

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40. All glass apparatus is used in the laboratory preparation of nitric acid. Explain ?

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41. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

Write the equation for its preparation mentioning the condition required.

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42. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

Name the drying agent used and justify your choice.

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43. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

State a safety precaution you would take during the preparation of hydrochloric acid.

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44. An element L consists of molecules.

What type of bonding is present in the particles that make up L?

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45. An element L consists of molecules.

When L is heated with iron metal, it forms a compound FeL. What chemical term would you use to describe the change undergone by L?

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46. From the list of the following salts choose the salt that most appropriately fits the description given

:

$[AgCl, MgCl_2, NaHSO_4, PbCO_3, ZnCO_3, KNO_3, Ca(NO_3)_2]$

A deliquescent salt.

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47. From the list of the following salts choose the salt, that most appropriately fits the description given in the following :

$[AgCl, MgCl_2, NaHSO_4, PbCO_3, ZnCO_3, KNO_3, Ca(NO_3)_2]$

An insoluble chloride.

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48. From the list of the following salts choose the salt, that most appropriately fits the description given in the following :

$[AgCl, MgCl_2, NaHSO_4, PbCO_3, ZnCO_3, KNO_3, Ca(NO_3)_2]$

On heating, this salt gives ·a yellow residue when hot and white when cold.

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49. From the list of the following salts choose the salt, that most appropriately fits the description given in the following :

$[AgCl, MgCl_2, NaHSO_4, PbCO_3, ZnCO_3, KNO_3, Ca(NO_3)_2]$

On heating this salt, a brown coloured gas is evolved.

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