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PRELIMINARY EXAMINATION 2021-2022
Subject: Chemistry

Std:X **Date:12/01/2022**

Duration: 60 min **MM:40**

Section A

(Attempt all questions)

Question1

Choose the correct answers to the questions from the given options. (Do not copy the question, Write the correct answer only.) **[10]**

i. Carbon to carbon triple bond is found in:

(a) 2-butyne.
(b) Acetaldehyde.
(c) Acetic acid.
(d) Ethyl alcohol.

ii. The IUPAC name of acetic acid is:

(a) Methanoic acid.
(b) Ethanoic acid.
(c) Propanoic acid.
(d) Butanoic acid.

iii. Fused alumina is reduced to aluminium by electrolytic reduction, since:

(a) Alumina is highly stable.
(b) Alumina is least stable.
(c) Alumina is not reduced by drying agents.
(d) Alumina is not reduced by reducing agents.

iv. The catalyst preferred in the conversion of Sulphur dioxide to Sulphur trioxide is:

(a) Finely divided iron.
(b) Graphite.
(c) Vanadium pentoxide.
(d) platinum

v. Substitution reactions is a characteristic property of:

(a) Alcohols.
(b) Alkanes.
(c) Alkenes.
(d) Alkyne.

vi. The gas evolved when dilute sulphuric acid reacts with iron sulphide:

(a) Sulphur dioxide.
(b) Carbon dioxide.
(c) Hydrogen sulphide.
(d) Nitrogen dioxide.

vii. The cold dilute nitric acid reacts with copper to form:

(a) Nitric oxide.
(b) Nitrous oxide.
(c) Nitrogen dioxide.
(d) Nitrogen monoxide.

viii. The Compound Z which on reacting with dilute sulphuric acid liberates a gas which has no effect on acidified potassium dichromate but turns lime water milky. The anion present in compound Z is:

(a) Sulphide.
(b) Sulphide.
(c) Carbonate.
(d) Nitrate.

ix. The products formed when ammonia is burnt in excess of oxygen:

(a) $N_2 + H_2O$.
(b) $NO_2 + H_2O$.
(c) $N_2O + H_2O$.
(d) $NO_2 + H_2$.

x. The compound with 3 carbon atoms whose functional group is a carboxylic acid:

(a) Formic acid.

(b) Acetic acid.

(c) Carbonic acid.

(d) Propanoic acid.

Section B

(Attempt **any three** questions from this section)

Question 2

A. Answer the following with respect to the extraction of aluminium from bauxite:- **[5]**

i. Name the chief ore of aluminium.
ii. Name the process used to concentrate the above mentioned ore.
iii. Why is alumina added to cryolite in the electrolytic reduction of aluminium?
iv. Give cathode and anode reactions involved in extraction of aluminium in Hall Heroult 's process.
v. Why powdered coke has to be sprinkled over the reaction mixture?

B. 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 **i to v** . Some roles may be repeated**.** **[5]**

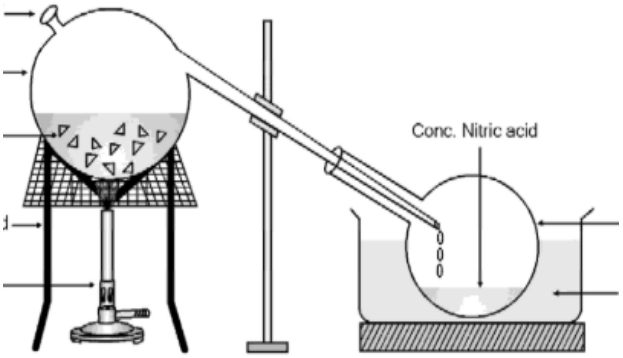
A. Dilute acid. B. Dehydrating agent.

C.Non- volatile acid. D. Oxidising agent.

i. Conc. sulphuric acid reacts with blue vitriol to form copper sulphate anhydrous and water.
ii. Hot conc sulphuric acid reacts with sulphur to form sulphur dioxide and water.
iii. Conc sulphuric acid reacts with sodium nitrate at a temperature less than 200^0C to form sodium hydrogen sulphate and hydrochloric acid.
iv. Magnesium oxide reacts with sulphuric acid to form magnesium sulphate and water.
v. Zinc reacts with sulphuric acid to form zinc sulphate, sulphur dioxide and water.

Question 3

a) Answer the following with respect to the diagram given below:- **[4]**



i. Why hydrochloric acid cannot be used in the above reaction?
ii. Give balanced chemical equation for the reaction.
iii. How will you test the acid formed?
iv. Why the acid obtained is yellow in colour?

b) Differentiate between the following:- **[6]**

i. Ethane and Ethyne.(any two points)
ii. Hydrochloric acid and sulphuric acid.(chemical tests)
iii. Lead nitrate and copper nitrate.(chemical tests)

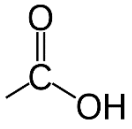
Question 4

a) State your observations for each of the following:- **[4]**

i. Action of dil sulphuric acid on copper oxide.
ii. Action of bromine water on ethene gas.
iii. Excess chlorine gas reacts with ammonia gas.
iv. Catalytic oxidation of ammonia.

b) Answer the following questions:- **[4]**

i. Why methane does not undergo addition reactions but ethene does?

ii. Give one word or phrase for the following: Hydrocarbons containing a  group.

iii. Name the reduced product when ammonia gas is heated with Copper oxide.

iv. Choose the correct option. If the molecular formula of an organic compound is $C_{10}H_{18}$ it is ____. (alkane/ alkene/ alkyne)

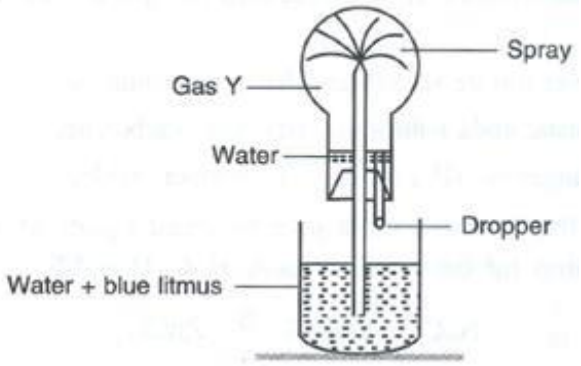
c) Give the structural formula for the chain isomers of pentene. **[2]**

Question 5

a) Give balanced equations for the following conversions:- **[2]**

i. Chloroform to carbon tetrachloride.

ii. Ethyne to ethene.



b) Answer the questions with respect to the above diagram:- **[4]**

i. Identify the gas Y?

ii. What property of gas Y does this experiment demonstrate?

iii. Name another gas which has the same property and can be demonstrated through this experiment.

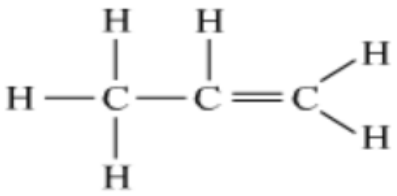
iv. Why the dropper is used in this experiment?

C) Do as directed:- **[4]**

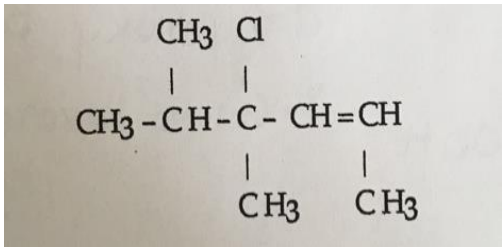
Give the IUPAC names of the following organic compounds

and encircle their functional groups:-

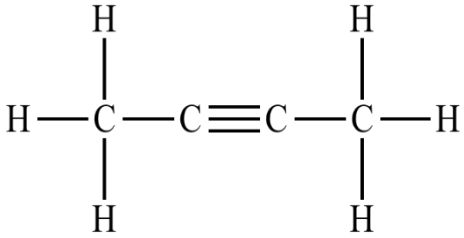
i.



ii.



iii.



iv.