PAWAR PUBLIC SCHOOL, BHANDUP

Class	Subject	Marks	Semester	Date	Duration	No. of Printed sides
X	Chemistry	40	II	03.02. 2022	1.5 hours	5

Answers to this Paper must be written on a separate sheet.
You will **not** be allowed to write during the first **15** minutes.
This time is to be spent in reading the question paper.
The time given at the head of this paper is the time allotted for writing the answers.
The **question paper** consists of **5** printed sides.
The figures to the right of the questions indicate full marks for that question.

SECTION – I
(ATTEMPT ALL QUESTIONS FROM THIS SECTION)

Question 1 **[10]**

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

(i) The alloy used for the making light tools is _____

(a) Duralumin
(b) Alnico
(c) Magnalium
(d) All of the above

(ii) What will you observe when ethane gas is burnt in excess of air?

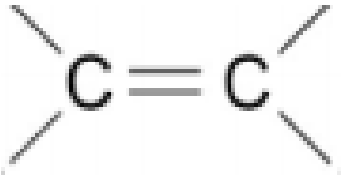
(a) Brisk effervescence is seen
(b) Water droplets are seen
(c) Heat is evolved
(d) All of the above

(iii) From the list of anions given below, which of the anions form an insoluble precipitate when their salt solution is added to barium nitrate or barium chloride solution

(I) CO_3^{-2}
(II) Cl^{-1}
(III) SO_4^{-2}
(IV) SO_3^{-2}

(a) I, II, III
(b) I, III, IV
(c) II, III, IV
(d) Can not predict

(iv) The type of bonding represented by the structure provided below is present in _____



(a) Acetylene
(b) Ethylene
(c) Ethane
(d) Both (a) and (b)

(v) Which of the following chemicals is added to alumina to lower the fusion temperature of the ore?

(a) Cryolite
(b) Fluorspar
(c) Barium fluoride
(d) Coke

(vi) Which of the following properties of carbon mainly contributes to the ability of carbon atoms to form millions of compounds?

(a) Isomerism
(b) Tetravalency
(c) Catenation
(d) All of the above

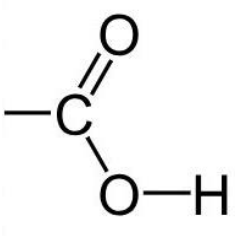
(vii) Which of the following alloy contains aluminium as the base metal with only magnesium as the added component?

(a) Duralumin
(b) Alnico
(c) Magnalium
(d) All of the above

(viii) The catalyst preferred for the oxidation of sulphur dioxide is _____.

(a) Finely divided iron
(b) Platinum
(c) Vanadium pentoxide
(d) Both (b) and (c)

(ix) The functional group represented by the structure provided below is present in _____



(a) Aldehydes
(b) Alcohols
(c) Carboxylic acids
(d) Alkenes

(x) Which of the following ions does not form a precipitate with salt solutions of lead, silver and barium?

(a) Cl^{-1} (c) CO_3^{-2}

(b) SO_4^{-2} (d) NO_3^{-1}

SECTION II
ATTEMPT ANY 3 QUESTIONS

Question 2

(a) Distinguish between the following pair of substances with respect to the chemical tests provided in the bracket : **[3]**

(i) Oxygen gas and hydrogen gas (glowing splinter)

(ii) Sulphuric acid and hydrochloric acid (lead nitrate solution)

(iii) Ethane and ethene (bromine solution)

(b) Draw isomers of compound with the molecular formula C_4H_8 and state their IUPAC name **[4]**

(c) Give reason for the following statements : **[3]**

(i) While preparing nitric acid, it is important to use all glass apparatus.

(ii) Inverted funnel arrangement is used for dissolving hydrogen chloride in water.

(iii) Even though copper is not an active metal, it can react with dilute nitric acid.

Question 3

Write balanced chemical reactions and state your observation for the following reactions : **[10]**

(i) Action of dilute sulphuric acid on Copper (II) oxide.

(ii) Few drops of concentrated sulphuric acid are poured over blue vitriol crystals.

(iii) Action of dilute hydrochloric acid on zinc sulphide.

(iv) Reduction of copper (II) oxide by Ammonia

(v) Lead nitrate is heated strongly in a dry test tube.

Question 4

(a) Some properties of sulphuric acid are listed below. Choose the property A, B, C or D which is responsible for the reactions (i) to (iv) : **[4]**

A : Typical acid **B : Non – volatile acid**

C : Dibasic acid **D : Dehydrating agent**

(Write only the relevant alphabet for each equation)

(i) $NaOH_{(insufficient)} + H_2SO_4 \rightarrow NaHSO_4 + H_2O$

(ii) $K_2SO_3 + H_2SO_4 \rightarrow K_2SO_4 + H_2O + SO_2$

(iii) $NaCl + H_2SO_{4\,(conc)} \xrightarrow{\Delta} NaHSO_4 + HCl$

(iv) $C_6H_{12}O_6 + n\,H_2SO_{4\,(conc)} \rightarrow 6C + 6\,H_2O + n\,H_2SO_4$

(b) Identify the anion present in each salt by stating its formula on the basis of the descriptions given below : **[3]**

(i) Salt óPô when treated with dilute acid produces an effervescence of a gas which when passed through acidified potassium dichromate solution, turns its orange colour to clear green.

(ii) Salt óQô which when treated with barium nitrate solution, produces a white ppt which does not dissolve on heating or on addition of acid.

(iii) Salt óRô when treated with a few drops of silver nitrate solution, forms a curdy white precipitate. This precipitate dissolves in excess ammonium hydroxide solution.

(c) Write the three balanced chemical equations for the preparation of nitric acid by Ostwalds process. **[3]**

Question 5

(a) Write balanced chemical equation for the following reactions : **[5]**

(i) Preparation of ammonia by Haberôs process.

(ii) Combustion of ethane in excess air.

(iii) Laboratory preparation of nitric acid from nitre.

(iv) Ammonia gas is passed over a glass rod dipped in concentrated hydrochloric acid.

(v) Chlorination of methane (first step only).

(b) Answer the following questions with respect to the extraction of aluminium from alumina by Hall – Heroults process : **[5]**

(i) State the name of the two chemicals added to fused alumina.

(ii) Write balanced chemical equation for the reaction occurring at negative electrode.

(iii) Why are numerous anodes used during the process?

(iv) A layer of coke is sprinkled over the surface of fused alumina. Provide one suitable reason for the same.

Question 6

(a) Draw the structure and state the IUPAC name of the following compounds : **[6]**

(i) Neopentane

(ii) Acetaldehyde

(iii) Acetylene

(b) Write balanced chemical equation and state your observation when ammonia reacts with **[4]**

(i) chlorine in limited amount

(ii) chlorine in excess