

# The Brigade School Term Assessment 1 (2020-21)

Total points **68.5/80** ?

Class : 10

Subject : Chemistry

Section 1: Objective

Total Marks : 80

Email address \*

mananmehtabatman@gmail.com

0 of 0 points

Instructions : 1. Select your name correctly 2. Select your school and section correctly 3. This paper consists of Section A (40 marks) and Section B (40 marks) 4. Attempt all questions 5. Ensure that you have completed and revised your paper before submission 6. You can attempt your paper only once

Name : \*

Manan Y Mehta ▼

Class/Section : \*

10 A ▼



School : \*

TBSG ▼

Paper\_1\_Objective 40 : Marks I. Choose the Correct Answer :( 10 X 33.5 of 40  
1= 10) points

✓ 1. The catalyst used in the Contact Process is : \* 1/1

☐ Copper

☐ Iron

☒ Vanadium pentoxide ✓

☐ Manganese dioxide

✓ 2. The number of C-H bonds in Ethane molecule are : \* 1/1

☐ Four

☐ Eight

☐ Seven

☒ Six ✓



✓ 3. The compound responsible for the brown ring in the brown ring test for identifying the nitrate ion : \*

1/1

☒ Nitroso Iron [II] sulphate



☐ Iron [III] chloride

☐ Chromium sulphate

☐ Lead [II] chloride

✓ 4. Ammonia can be obtained by adding water to : \*

1/1

☐ Ammonium chloride

☐ Ammonium nitrite

☒ Magnesium nitride



☐ Magnesium nitrate

✓ 5. Hydrogen chloride gas being highly soluble in the water is dried by : \*

1/1

☒ Conc.Sulphuric acid



☐ Quick lime

☐ Phosphorous pentoxide

☐ Anhydrous calcium chloride



✓ 6. Hydroxide of this metal is soluble in NaOH solution : \*

1/1

☐ Magnesium

☒ Lead



☐ Silver

☐ Copper

✓ 7. To increase the  $\text{pH}$  value of a neutral solution, we should add : \*

1/1

☐ An acid

☐ An acid salt

☒ An alkali



☐ A salt

✓ 8. Compound 'X' consists of only molecules. 'X' will have : \*

1/1

☐ Crystalline hard structure

☒ A low melting point & low boiling point



☐ An ionic bond

☐ A strong force of attraction between its molecules



✓ 9. Ionisation Potential increases over a period from left to right because the : \* 1/1

- ☐ Atomic radius & nuclear charge increases
- ☐ Atomic radius & nuclear charge decreases
- ☐ Atomic radius increases & nuclear charge decreases
- ☒ Atomic radius decreases & nuclear charge increases ✓

✓ 10. The formation of 1, 2 dibromoethane from ethene and bromine is an example of : \* 1/1

- ☐ Substitution reaction
- ☐ Dehydration
- ☐ Dehydrohalogenation
- ☒ Addition reaction ✓



II. Match the following conversions using Sulphuric acid, with the type of chemical property it represents in column : (5 X 1 =5 ) \*

	As an oxidising agent	As a dibasic acid	As an acid when dilute	As a least or non-volatile acid	As a dehydrating agent	Score	
Nitre → Nitric acid	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	0/1	✗
Copper [II] oxide → Copper [II] sulphate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	0/1	✗
Copper → Copper [II] sulphate	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	0/1	✗
Ethanol → Ethene	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	1/1	✓
Sodium hydroxide → Sodium bisulphate & sodium sulphate	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	1/1	✓

#### Correct answers

	As an oxidising agent	As a dibasic acid	As an acid when dilute	As a least or non-volatile acid	As a dehydrating agent
Nitre → Nitric acid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
Copper [II] oxide → Copper [II] sulphate	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
Copper → Copper [II]	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



sulphate

III. Name the following :- (5 X 1 = 5)

- ✓ 1. 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. \* 1/1

Catenation



**Feedback**

*Catenation*

- ✓ 2. The energy released when an electron is added to a neutral gaseous isolated atom to form a negatively charged ion. \* 1/1

Electron Affinity



**Feedback**

*Electron affinity*



✓ 3. The Process of formation of ions from molecules which are not in the ionic state. \* 1/1

Ionization



**Feedback**

*Ionisation*

✓ 4. A compound which when dissolved in water yields hydroxyl ions as the only negatively charged ions. \* 1/1

Alkali



**Feedback**

*Alkali*

✗ 5. An aqueous solution of ammonia in water. \* 0/1

Ammonium Hydroxide



**Feedback**

*liquor ammonia / liquor ammonia fortis*





IV. Identify the gas evolved in each case :- (5 X 1 = 5) [ Formula is not acceptable]

✓ 1. When Methane undergoes pyrolysis. \*

1/1

Hydrogen



**Feedback**

*Hydrogen gas*

✓ 2. The gas evolved on reaction of aluminium with boiling concentrated caustic alkali solution. \*

1/1

Hydrogen



**Feedback**

*Hydrogen*

✓ 3. When dilute hydrochloric acid reacts with Iron [II] sulphide. \*

1/1

Hydrogen Sulphide



**Feedback**

*Hydrogen sulphide*



✓ 4. The gas that burns in oxygen with a green flame. \*

1/1

Ammonia



Feedback

*Ammonia*

✓ 5. When sulphur is oxidized by concentrated nitric acid. \*

1/1

Nitrogen Dioxide



Feedback

*Nitrogen dioxide*

V. Find the odd one out with reason :- (5 X 1 = 5)

.....

✓ 1.  $\text{Al}(\text{OH})_3$ ,  $\text{Pb}(\text{OH})_2$ ,  $\text{Mg}(\text{OH})_2$ ,  $\text{Zn}(\text{OH})_2$  \*

1/1

$\text{Mg}(\text{OH})_2$  - Because all others are amphoteric hydroxide.



Feedback

*$\text{Mg}(\text{OH})_2$  - rest are amphoteric.*



✓ 2.  $C_3H_8$ ,  $C_5H_{10}$ ,  $C_2H_6$ ,  $CH_4$  \*

1/1

$C_5H_{10}$  - Because all others are Alkanes.



**Feedback**

$C_5H_{10}$  - Its an alkene (unsaturated) while rest are alkanes (saturated hydrocarbons).

✗ 3.  $Na_2CO_3$ ,  $Na_2SO_3$ ,  $Na_2SO_4$ ,  $NaHSO_3$  \*

0/1

$Na_2SO_4$  - Because all others are insoluble in water.



**Feedback**

$NaHSO_3$  - Its an acid salt while rest are normal salts

✓ 4. Formic acid, Nitric acid, Acetic acid, Propanoic acid. \*

1/1

Nitric Acid - because all others are carboxylic acids.



**Feedback**

Nitric acid - Its a mineral acid while rest are organic acids.



✓ 5.  $\text{NH}_3$ ,  $\text{NH}_4\text{Cl}$ ,  $\text{CCl}_4$ ,  $\text{CH}_4$  \*

1/1

$\text{NH}_4\text{Cl}$  - Because all others have covalent bonds.



**Feedback**

*$\text{NH}_4\text{Cl}$  - Its exhibit ionic, Covalent & coordinate bond, while rest exhibit only covalent bonds.*

VI. State one relevant observation for the following :- ( 5 X 1 = 5)

.....

✗ 1. Ammonium hydroxide is first added in a small quantity and then in excess to a solution of copper sulphate. \* 0.5/1

Pale Blue precipitate of  $\text{Cu}(\text{OH})_2$  is formed in small quantity and its insoluble in excess.

.....

**Feedback**

*Forms pale blue copper hydroxide, which is soluble in excess forms deep blue / inky blue solution.*

✓ 2. Concentrated Sulphuric acid is added to sugar crystals. \*

1/1

Steam is evolved and black spongy mass of carbon is formed.

.....

**Feedback**

*Black spongy mass of carbon is formed.*



- ✓ 3. Bromine vapours are passed into a solution of ethyne in carbon tetrachloride. \*

1/1

Reddish brown liquid bromine dissolved in water turns colourless when ethyne is passed through it.

**Feedback**

*Reddish brown colour bromine disappears/ decolourises/ turns colourless.*

- ✓ 4. Copper is heated with concentrated nitric acid in a hard glass test tube. \*

1/1

Copper nitrate is formed and reddish brown nitrogen dioxide is evolved.

**Feedback**

*Dense reddish brown fumes of nitrogen dioxide is formed / solution turns bluish green.*

- ✓ 5. Action of sodium hydroxide solution on Iron [II] sulphate solution. \*

1/1

Dirty green precipitate of iron[II] hydroxide is formed.

**Feedback**

*Dirty green ppt of Iron[II] hydroxide is formed.*

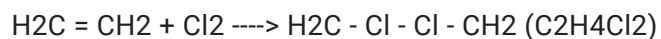
VII. Write a balanced chemical equations for each of the following reactions :- ( 5 X 1 = 5 )

.....



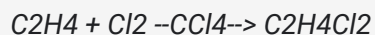
✓ 1. Chlorine gas is reacted with ethene. \*

1/1



Condition -  $\text{CCl}_4$

Feedback

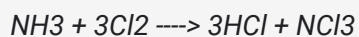


✓ 2. Reaction of ammonia with excess chlorine. \*

1/1



Feedback

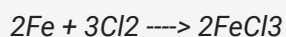


✗ 3. Preparation Iron [III] chloride from Iron. \*

0/1

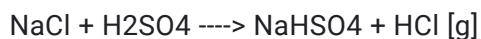


Feedback



✓ 4. The laboratory preparation hydrogen chloride gas. \*

1/1



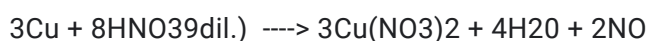
Conditions - Temperature < 200 degree C

**Feedback**

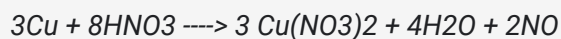


✓ 5. Action of cold and dilute nitric acid on copper. \*

1/1



**Feedback**

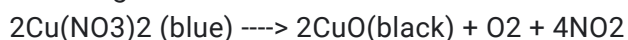


Section\_2 \_ Subjective 40 :Marks I. Answer the following questions : 35 of 40 points  
(5 X 2 = 10)

✓ 1. A blue crystalline solid 'X' on heating gave a reddish brown gas 'Y', a gas which relights a glowing splint and a residue which is black. Identify X and Y, and write the equation for the action of heat on X. \*

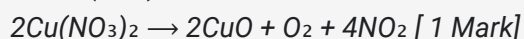
X - Copper Nitrate

Y - Nitrogen Dioxide



**Feedback**

$X = \text{Cu}(\text{NO}_3)_2$  &  $Y = \text{NO}_2$  [ 1/2 + 1/2 Mark]



✗ 2. Solution A is a strong acid, Solution B is a weak acid, Solution C is a strong alkali. Which solution, (a) Contains solute molecules in addition to water molecules. (b) Will give a gelatinous white precipitate with zinc sulphate solution and precipitate dissolves in excess of the solution. (c) Could be glacial acetic acid solution. (d) Give example of a solution of a weak alkali. \* 1.5/2

- (a) Solution C - Strong Alkali
  - (b) Solution C - Strong Alkali
  - (c) Solution B - Weak Acid
  - (d) Ammonium Hydroxide
- 

#### Feedback

*1/2 Mark each*

- (a) Solution B*
- (b) Solution C*
- (c) Solution B*
- (d) Ammonium hydroxide .*

✓ 3. How will you distinguish between Dilute sulphuric acid and Dilute hydrochloric acid using Barium chloride solution ? \* 2/2

White precipitate is formed with dil. sulphuric acid and no precipitate is formed with dil. hydrochloric acid.

---

#### Feedback

*With dil. sulphuric acid barium chloride solution gives white ppt but with dil HCl no white ppt is produced.*





- ✗ 4. Name the organic compound prepared by each of the following reactions: (a)  $C_2H_2 + H_2$  ( Ni catalyst, at high temperature)  $\rightarrow$  (b)  $C_2H_5Br + KOH$  (alcoholic soln.)  $\rightarrow$  (c) Distinguish between Ethene and Ethyne using ammoniacal  $CuCl_2$ . \* 1.5/2

- (a)  $C_2H_4$  - ethene  
(b)  $C_2H_4$  - ethene  
(c) No precipitate is seen with ethene but red precipitate is formed of copper acetylide is formed with ethyne.

#### Feedback

- (a) Ethene & Ethane [ 1/2 + 1/2 Mark]  
(b) Ethene / Ethylene [ 1/2 mark]  
(c) Ethene - no ppt, Ethyne - Red ppt of copper acetylide.[1/2 Mark]

- ✓ 5. Give reasons for the following : (a) When it is left standing in a glass bottle, concentrated nitric acid appears yellow. (b) Inert gases do not form ions. \* 2/2

(a) When it is left standing in a glass bottle, concentrated nitric acid appears yellow due to decomposition of acid which is negligible at ordinary temperatures but substantial at high temperatures. Decomposition of nitric acid results in formation of reddish brown  $NO_2$  which remains dissolved in acid thereby imparting colour to it. Thus conc.  $HNO_3$  is yellow when left standing in glass bottle.

(b) Inert gas have outermost shell filled completely. They don't have to accept or loose electrons as they are stable and have stable electronic configuration. They have no urge to destabilize themselves by accepting or loosing electrons and hence do not form ions.

#### Feedback

1 Mark each

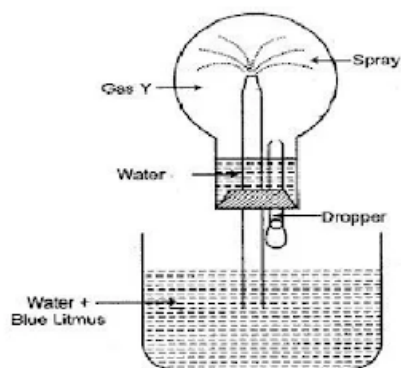
- (a) Decomposition of nitric acid forms reddish brown nitrogen dioxide which remains dissolved in the acid, imparting the colour to it.  
(b) completely filled octet, extremely stable, neither loose, nor gain electrons.



II. Answer the following questions :- ( 5 X 3= 15)

✗ 1. Study the figure given below and answer the questions that follow : 2.5/3

(a) Identify the gas 'Y'. Name another gas which can be demonstrated through this experiment. (b) What property of gas 'Y' does this experiment demonstrate. (c) State why direct absorption of HCl gas in water is not feasible ? (d) State what arrangement is used to dissolve HCl gas in water ? \*



(a) Y - Dry HCl Gas

Another Gas - Dry  $\text{NH}_3$  Gas

(b) The property is that 'Gas - Y' is highly soluble in water.

(c) Because HCl Acid is formed.

(d) Special Funnel Arrangement is used to dissolve HCl gas in water.

#### Feedback

(a) Y - HCl gas, Ammonia [ 1/2 + 1/2 Marks]

(b) High solubility of HCl gas in water. [1 Mark]

(c) As it creates back suction.[1/2 mark]

(d) Special funnel arrangement [1/2 Mark]

✗ 2. Draw the structural formula for each of the following : (a) 2, 3 - dimethyl butane (b) Diethyl ether (c) Propan -2-ol \*

2/3

PDF Manan\_Q2 - Man...

✓ 3. Arrange the following according to the instructions given in brackets : 3/3  
(a) Ethane, Methane, Ethene, Ethyne. (In the increasing order of the molecular weight) [ H = 1, C = 12 ]. (b) Li, K, Na, H (In the decreasing order of their Ionization potential) (c) F, B, N, O (In the increasing order of electron affinity) \*

(a) Methane, Ethyne, Ethene, Ethane.

(b) H, Li, Na, K

(iii) B, N, O, F

#### Feedback

1 Mark each

(a) Methane, ethyne, ethene, ethane.

(b) H, Li, Na, K

(c) B, N, O, F



- ✓ 4. The  $\text{pH}$  value of solution A is 12, B is 2 and C is 7. Which solution will , (i) 3/3  
have no effect on litmus solution? (ii) liberate  $\text{CO}_2$  when reacted with  
 $\text{Na}_2\text{CO}_3$ ? (iii) turn red litmus solution blue? \*

- (i) Solution C  
(ii) Solution B  
(iii) Solution A
- 

#### Feedback

1 Mark each

(i) solution C /  $\text{pH}$  7

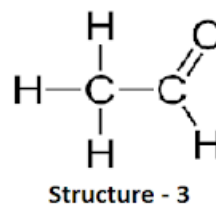
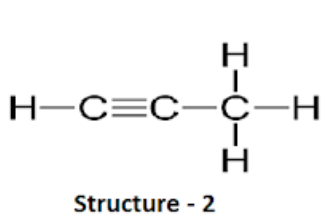
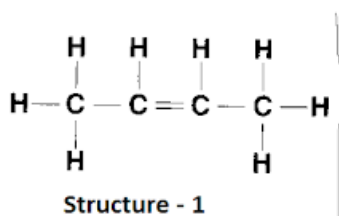
(ii) solution B /  $\text{pH}$  2

(iii) solution A /  $\text{pH}$  12



✓ 5. Give the IUPAC name of the following : \*

3/3



- (1) 2 - butene  
(2) 1 - propyne  
(3) 1 - ethanal

#### Feedback

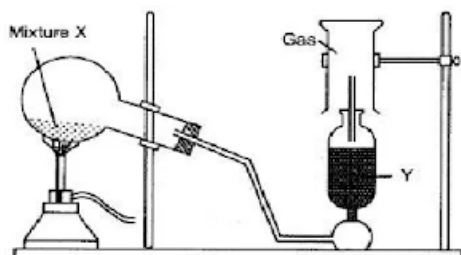
- 1). *Structure - 2- butene*  
2). *Structure - Propyne*  
3). *Structure - Ethanal*

III. Answer the following :- ( 3 X 5 = 15)

.....



- ✓ 1. The diagram below shows the set up for the laboratory preparation of a pungent alkaline gas. (a) Name the gas collected in the jar. (b) Give a balanced equation for the above preparation. (c) State how the above gas is collected. (d) Name the drying agent used. (e) State how you will find out that the jar is full of the pungent gas. \*



- (a) Ammonia Gas  
(b)  $2\text{NH}_4\text{Cl} + \text{Ca}(\text{OH})_2 \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O} + 2\text{NH}_3$   
(c) Dry Ammonia Gas is collected through downward displacement of air.  
(d) Quicklime -  $\text{CaO}$   
(e) A glass rod dipped in conc.  $\text{HCl}$  is brought near mouth of the jar. If the jar is full, dense white fumes of ammonium chloride is formed.

### Feedback

1 Mark each

(a) Ammonia

(b)  $2\text{NH}_4\text{Cl} + \text{Ca}(\text{OH})_2 \rightarrow \text{CaCl}_2 + 2\text{H}_2\text{O} + 2\text{NH}_3$

(c) Downward displacement of air

(d) Quick lime/  $\text{CaO}$

(e) Bring a moist red litmus paper to the inverted jar mouth, turns blue. OR Bring a glass rod dipped in  $\text{HCl}$  acid to the inverted jar mouth, produces dense white fumes.



- ✗ 2. The following questions refer to the periodic table: (i) Name the second last element of the period 3. (ii) How many elements are there in the second period? (iii) Name the element which has zero electron affinity. (iv) Name the element which has the highest ionisation potential. (v) Name the element which may be placed in group 1 but is not a metal. \*

3/5

- (i) Chlorine  
(ii) 8 elements  
(iii) Helium  
(iv) Hydrogen
- 

#### Feedback

1 Mark each

- (i) Chlorine  
(ii) 8  
(iii) Inert gases [He/ Ne/ Ar/ Kr/Xe]  
(iv) Helium  
(v) Hydrogen



✗ 3. (a) Related to  $C_nH_{2n-2}$  and  $C_nH_{2n+2}$ , Give the (i) IUPAC name of the homologous series (ii) IUPAC name of the first member of the series (iii) Characteristic bond type (b) Give balanced equation for conversion of Alkane to carboxylic acid \*

4.5/5

(a)

(i)  $C_nH_{2n-2}$  is Alkyne and  $C_nH_{2n+2}$  is Alkane

(ii)  $C_nH_{2n-2}$  is Ethyne and  $C_nH_{2n+2}$  is Methane

(iii)  $C_nH_{2n-2}$  is triple bond and  $C_nH_{2n+2}$  is single bond

(b)  $CH_4 \rightarrow CH_3OH \rightarrow HCHO \rightarrow HCOOH$

Conditions:-

High Pressure

Low Temperature

$K_2Cr_2O_7$  - oxidizing agent

#### Feedback

(a) 1/2 mark each

(i) alkynes, alkanes

(ii) ethyne, methane

(iii) triple, single

(b)  $CH_4 \rightarrow CH_3OH \rightarrow HCHO \rightarrow HCOOH$  or

$C_2H_6 \rightarrow C_2H_5OH \rightarrow CH_3CHO \rightarrow CH_3COOH$

Condition : Oxidation in presence of potassium dichromate acidified with dil sulphuric acid. [ 2 Mark]

This content is neither created nor endorsed by Google. - [Terms of Service](#) - [Privacy Policy](#)

Google Forms

