

परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय	विषय कोड	परीक्षा का माध्यम
Chemistry	2 2 0	English
स्टीकर तीर के निशान ↓ से मिलाकर लगायें		

परीक्षार्थी द्वारा भरा जावे

माध्यमिक शिक्षा मण्डल म.प्र. भोपाल माध्यमिक शिक्षा मण्डल म.प्र. भोपाल
BOARD OF SECONDARY EDUCATION MADHYAPRADESH

क्रमांक A - 3704709

अंकों में परीक्षार्थी का रोल नम्बर

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शब्दों में

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माध्यमिक शिक्षा मण्डल म.प्र.

एक एक दो चार तीन नौ पांच छः आठ

केन्द्राध्यक्ष/सहायक केन्द्राध्यक्ष एवं पर्यवेक्षक द्वारा भरा जावे

क :- पूरक उत्तर पुस्तिकाओं की संख्या अंकों में 2 शब्दों में Two

ख :- परीक्षार्थी का कक्ष क्रमांक 05

ग :- परीक्षा का दिनांक 26 03 2018

परीक्षा का नाम एवं परीक्षा केन्द्र क्रमांक की मुद्रा

हायर सेकेण्डरी सर्टि. परीक्षा 781111

पर्यवेक्षक का नाम एवं हस्ताक्षर	केन्द्राध्यक्ष/सहायक केन्द्राध्यक्ष के हस्ताक्षर
R. Goswami	B.L. Ghore

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

प्रमाणित किया जाता है कि मूल्यांकन के समय पूरक उत्तर पुस्तिकाओं की संख्या उपरोक्तानुसार सही पाई होले क्रान्ट स्टीकर क्षतिग्रस्त नहीं पाया गया तथा अन्दर के पृष्ठों के अनुरूप मुख्य पृष्ठ पर अंकों की प्रविष्टि एवं अंकों का योग सही है।

निर्धारित मुद्रा : नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएं।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

DSP Yadav
G.G.H.S.S.S.K.C
141220009
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परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

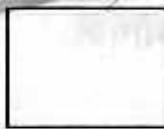
केवल परीक्षक द्वारा भरा जावे।		
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प्रश्न क्र.

Que - 1

Answer -

- (1) Schottky defect.
- (2) Ferro magnetic.
- (3) Sodium ethoxide.
- (4) Soap.
- (5) HF.

Que - 2

Answers :-

- (1) Doping.
- (2) $K = A e^{-E_a/RT}$.
- (3) H_2SO_4 solution.
- (4) Primary.
- (5) Amino Acids.

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योग पूर्व पृष्ठ

पृष्ठ 3 अंक

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Que - 3

Answers -

(1) F-centers give colour to crystal due to presence of free valencies or free ions.

(2) Argon is used in electric bulbs with nitrogen.

(3) Colloidal solution of liquid in liquid is Emulsion.

(4) Tetra ethyl Lead $(C_2H_5)_4Pb$ is used as anti-knock.

(5) Fibrinogen is responsible for clotting of blood.

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योग पूर्व पृष्ठ

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Que - 4

* Diazonium salt - $C_6H_5N_2Cl$

** Gas mask - $C_6H_5N_2Cl$ Adsorption of poisonous gases

*** Philosopher wool - ZnO

B^{iv} Astatine - Radioactive halogen

S^v $T.N.B.$ - Explosive

E

Que - 5

Ans Catalytic promoters - Catalyst is a substance which can alter the rate of reaction due to its presence. The activity of catalyst can be increased or decreased.

"The substance which can increase the activity of a catalyst are known as catalyst promoters."

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योग पूर्व पृष्ठ

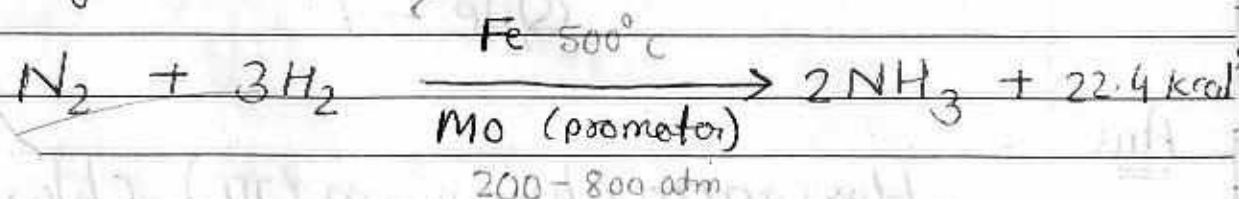
पृष्ठ 5 के अंक

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Example - In Haber's process of ammonia synthesis Fe act as catalyst and Molybdenum as catalyst promoter.

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Que - 6

Ans. Sea divers uses the mixture of Helium and Oxygen in deep sea because Helium is less soluble in blood at high pressure and doesn't cause any effect when sea divers come out.

But on contrary if Nitrogen is used with oxygen, it is highly soluble in blood at high pressure inside sea and when sea diver come out solubility of Nitrogen in blood decreases and it come out in form of bubble and causes disease Bends which is harmful for sea divers.

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पृष्ठ 6 के अंक

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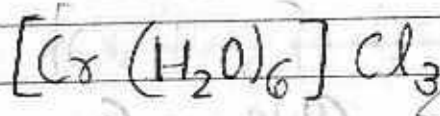
प्रश्न क्र.

Therefore Sea divers uses the mixture of $(\text{He} + \text{O}_2)$

Que - 7

Ans

Hexa aqua chromium (III) chloride

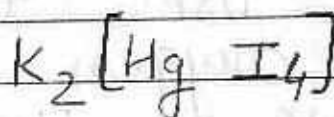


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Potassium tetraiodomercurate (II)



Que - 8

Ans

Simple name	Chemical name	Diseases
Vitamin E	Tocopherols	sterility
Vitamin K	Phylloquinone	Non-clotting of blood

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पृष्ठ 8 के अंक

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Que - 10

Ans

Osmotic pressure - "The pressure developed in a solution when it is separated from its pure solvent through a semipermeable membrane is called its osmotic pressure." It is denoted by π

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$$\pi = CRT$$

or

$$\pi V = nRT$$

where C = concentration of solution

R = Universal Gas constant

T = absolute temperature

Van't Hoff Factor - Due to ionization or dissociation the molecular mass of solution changes. According to Van't Hoff, the ratio of observed value of colligative property to normal value of colligative

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योग पूर्व पृष्ठ

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पृष्ठ 9 के अंक

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property is called van't Hoff factor.
It is denoted by 'i'.

$$i = \frac{\text{Observed colligative property}}{\text{Normal colligative property}}$$

or

$$i = \frac{\text{Normal Molecular mass}}{\text{observed molecular mass}}$$

Molal freezing depression constant -

"depression in freezing point of solution when 1 gm of solute is dissolved in 1000 gm solvent is known as Molal freezing depression constant".
It is denoted by ~~m~~ K_f .

$$\Delta T_f \propto m$$

$$\Delta T_f = K_f m$$

$$\Delta T_f = K_f$$

$$\text{if } m = 1$$

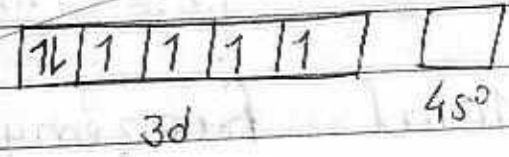
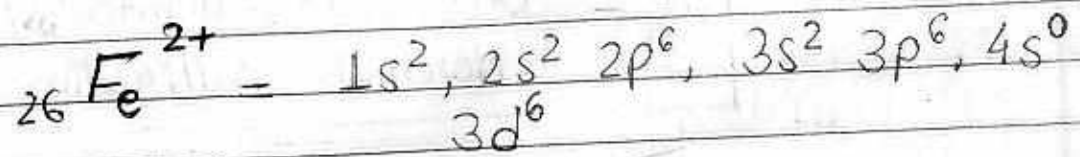
$$\left[\because \frac{W_B \times 1000}{m_B \cdot W_A} = 1 \right]$$



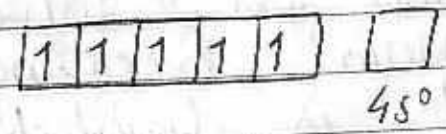
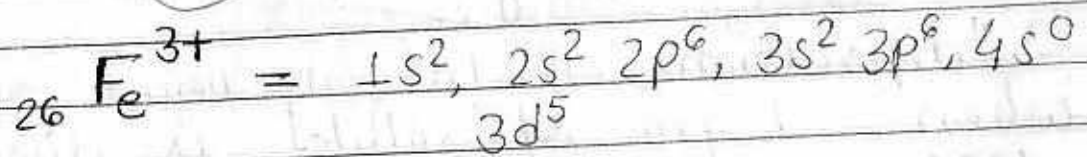
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Que - 11

Ans.



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According to electronic configuration it is seen that 4 electrons are unpaired in Fe^{2+} whereas 5 electrons are unpaired in Fe^{3+} . Paramagnetism depends upon number of unpaired electrons. So Fe^{3+} which has more unpaired electron will be more paramagnetic.



Que - 12

Ans Lanthanide Contraction - In lanthanide series, on increasing atomic number from left to right the ionic or atomic radius gradually decreases, this gradual decrease in ionic size of lanthanide elements from moving left to right is called lanthanide contraction.

Causes - According to prevailing research the following are the causes of lanthanide contraction -

As atomic number increases the charge on nucleus increases, the nucleus more strongly attracts the electrons of outer shell.

The shielding effect of 4f electrons is minimum in fact negligible so they are attracted towards nucleus.



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The d-block has 0-1 electron
so they also can't stop
nuclear force from going out.

Effects :-

- Ionic size reduces.
- Electronegativity increases from left to right.
- Properties of all lanthanides becomes similar.



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योग पृष्ठ

पृष्ठ 13 के अंक

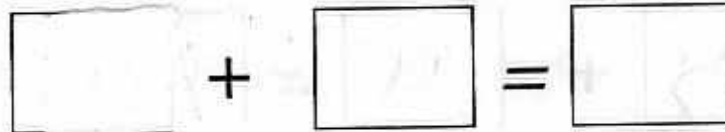
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Que - 13

Property	Molecularity	order of reaction
Defination	The total number of ions, molecules or atoms taking part in reaction is called its molecularity.	The sum of powers raised to the active mass of reactants in rate law expression is order of reaction.
Integer	Molecularity is always an integer value. It can't be zero or fraction.	Order of reaction can be zero or fractional value.
Determination	It can be determined on seeing the equation	It is determined by experiment.
Number of molecules	It is always equal to ^{number of} molecule taking part in reaction.	It is not always equal to number of molecule of reaction.
Step of reaction	It is related to specific step of reaction.	It is related to entire reaction.

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योग पूर्व पृष्ठ

पृष्ठ 14 के अंक

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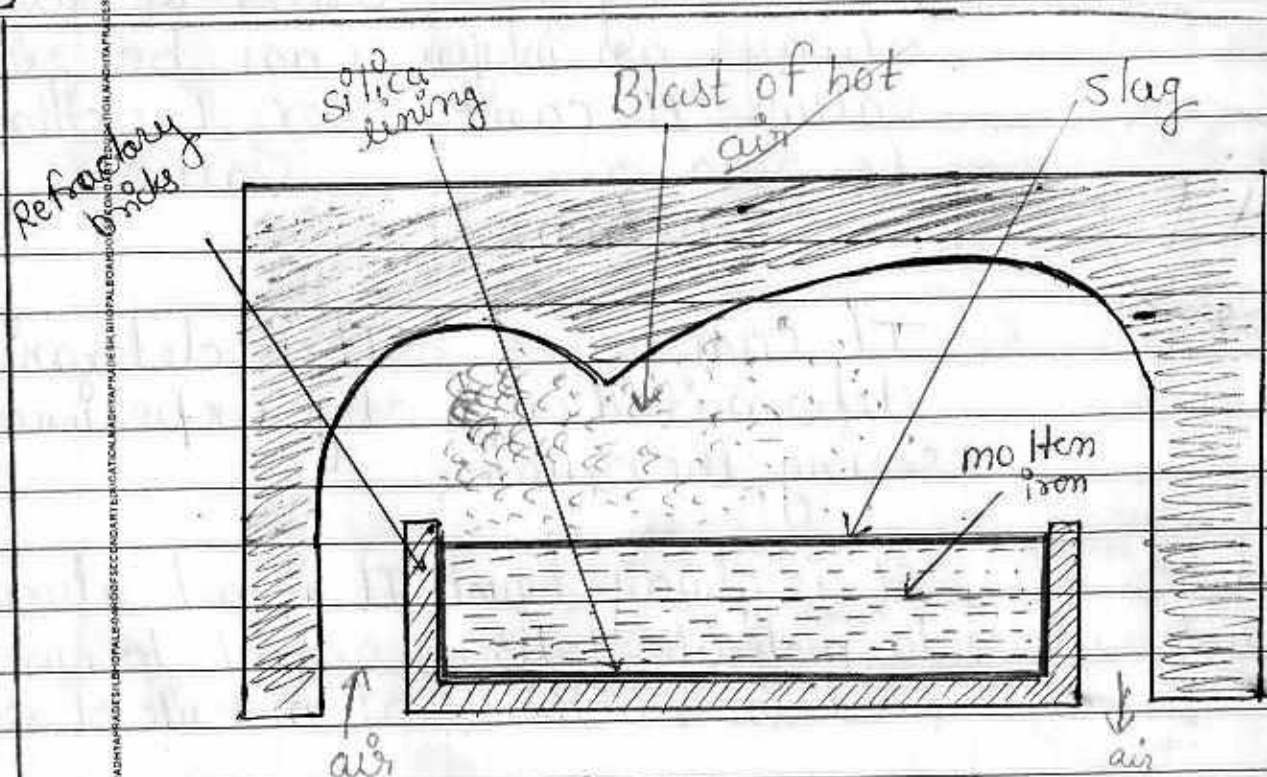
Que - 14

Ans

Siemen's Martin open hearth furnace -

This is the modern process for manufacture of steel. In the process the large & shallow furnace with open base is taken. It has an internal lining of silica for basic impurities or Magnesium

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Open Hearth Furnance



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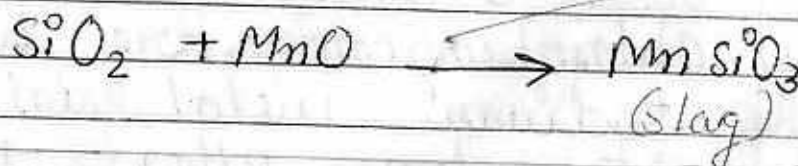
पृष्ठ 15 के अंक

कुल अंक



hydromide for acidic impurities. The blast of Hot air is passed from the bottom. The water gas $[CO + H_2]$ heat the furnace and the temperature of furnace becomes $1800^\circ C$.

The furnace will was filled with iron ore and due to heating it is converted into wrought iron (60-70%), scrap iron (20-30%) and molten haemetite. On adding the amount of Carbon desired steel is obtained. All the impurities present in ore gets oxidized. slag floats on surface which can be removed.



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योग पूर्व पृष्ठ

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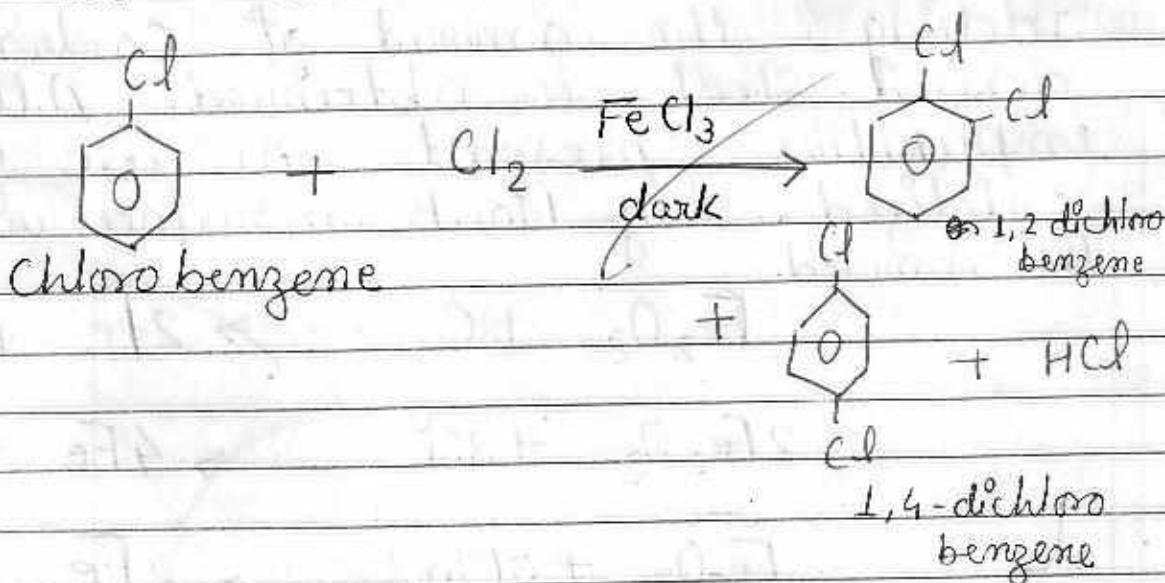
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Que - 15

Ans.

Reaction with Chlorine in the presence of $FeCl_3$ in dark.

when chlorine reacts with chlorobenzene in presence of $FeCl_3$ in dark then ortho and para dichloro benzene is obtained.



Fittig reaction - When two molecules of chlorobenzene are heated with sodium metal in presence of dry ether then diphenyl

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योग पूर्व पृष्ठ

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पृष्ठ 17 व ;

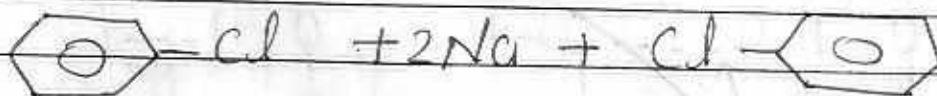
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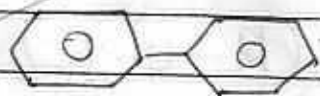
is formed. This reaction is called Fittig reaction.



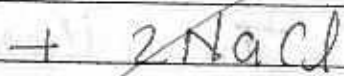
chloro benzene



dry ether



Diphenyl



sodium chloride

Que - 16

Reasons :-

(1) Boiling point of alcohol are higher than ether

In Alcohols ($-\text{ROH}$) the oxygen atom is more electronegative than Hydrogen atom so hydrogen bond is formed between alcohols. For breaking this bond high temperature is required therefore



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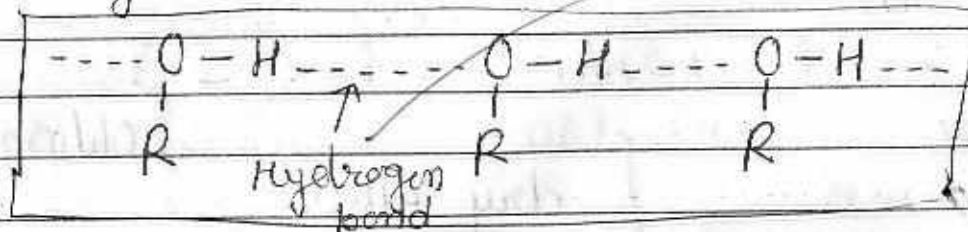
पृष्ठ 18 के अंक

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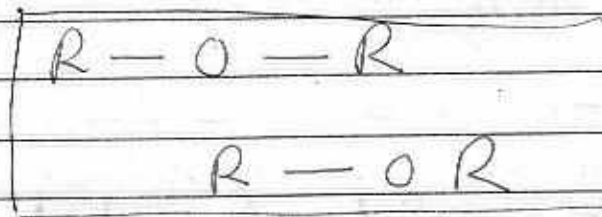
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boiling point of alcohol is higher.



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In ether ($R-O-R$) so such type of bonding is found. Due to absence of Hydrogen bond in ethers the boiling point of ethers are less than alcohols.



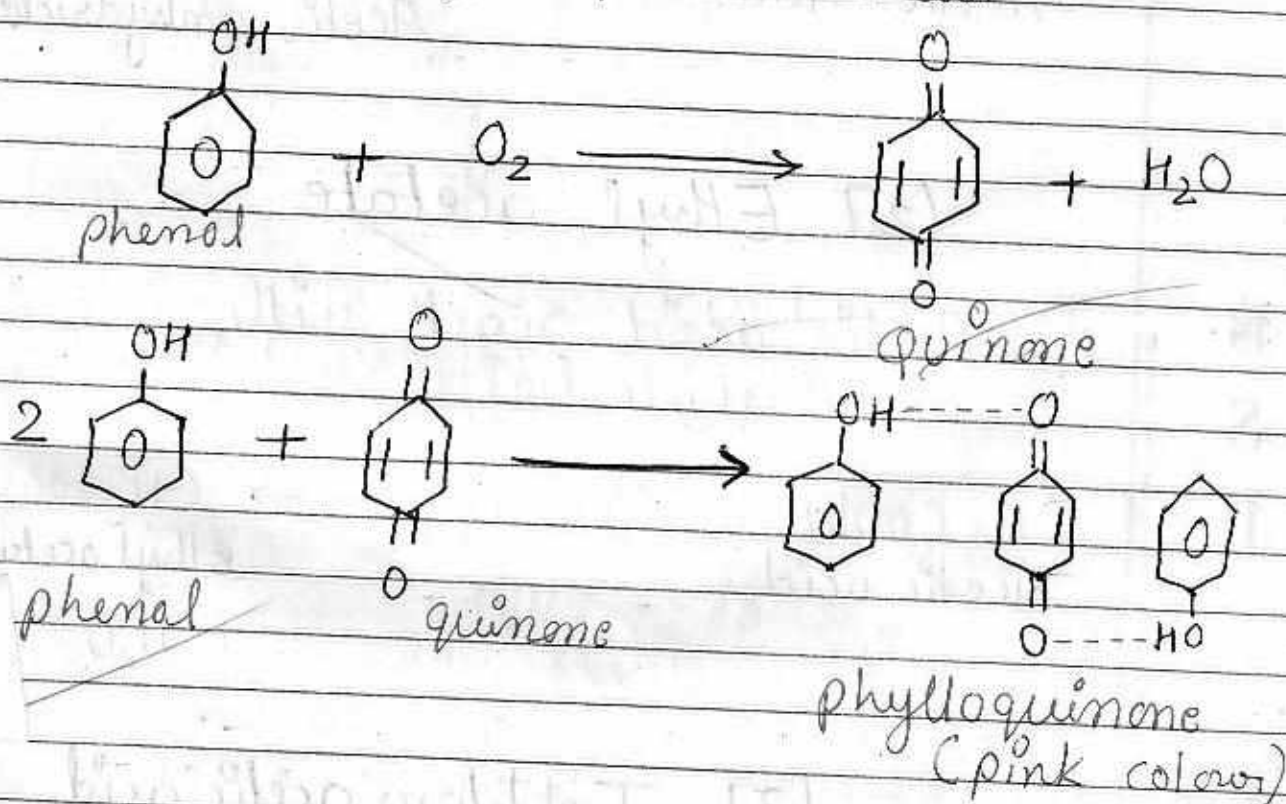
No hydrogen bond.

Reason - 2

Pure phenol is colourless solid but when it is placed open in air it oxidizes to form



Quinone. This quinone reacts with other phenol molecule to form pink coloured phylloquinone. That is why phenol turns pink when left open in air.



Que - 17

(1) Acetic Anhydride

On heating Acetic acid in presence of P_2O_5 it loses a water molecule and acetic anhydride is formed.



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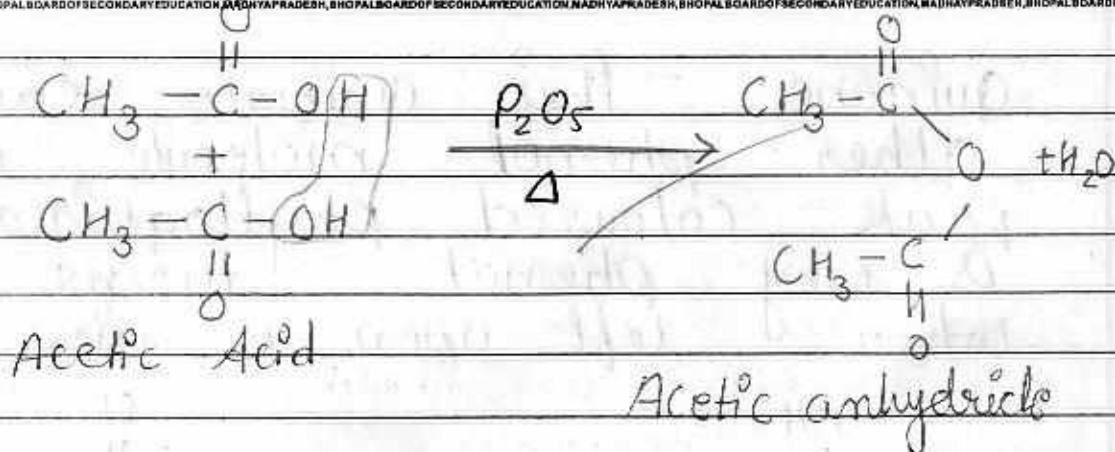
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पृष्ठ 20 के अंक

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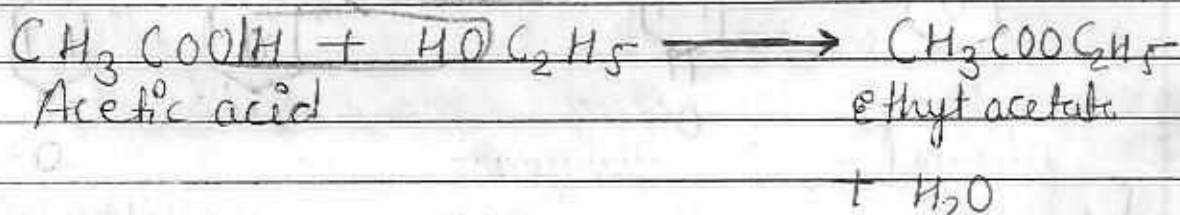
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[2] Ethyl acetate

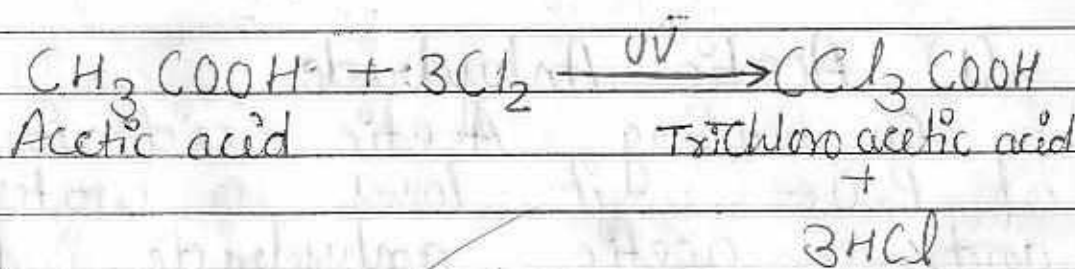
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Acetic acid react with ethyl alcohol



[3] Trichloro acetic acid

Acetic acid react with excess of chlorine



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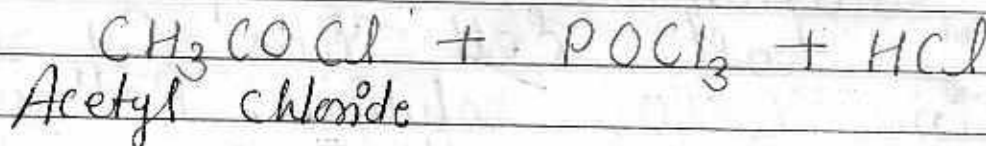
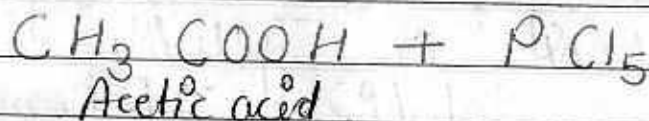
योग पूर्व पृष्ठ

पृष्ठ 21 के अंक

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[4] Acetyl chloride

Acetic acid react with PCl_5



Que - 18

Galvanic cell - This is the type of electrochemical cell where chemical energy is converted into electrical energy. It was designed by ~~Volta~~ Galvani and later modified by Alessandro Volta. Hence it is also called Voltaic cell.

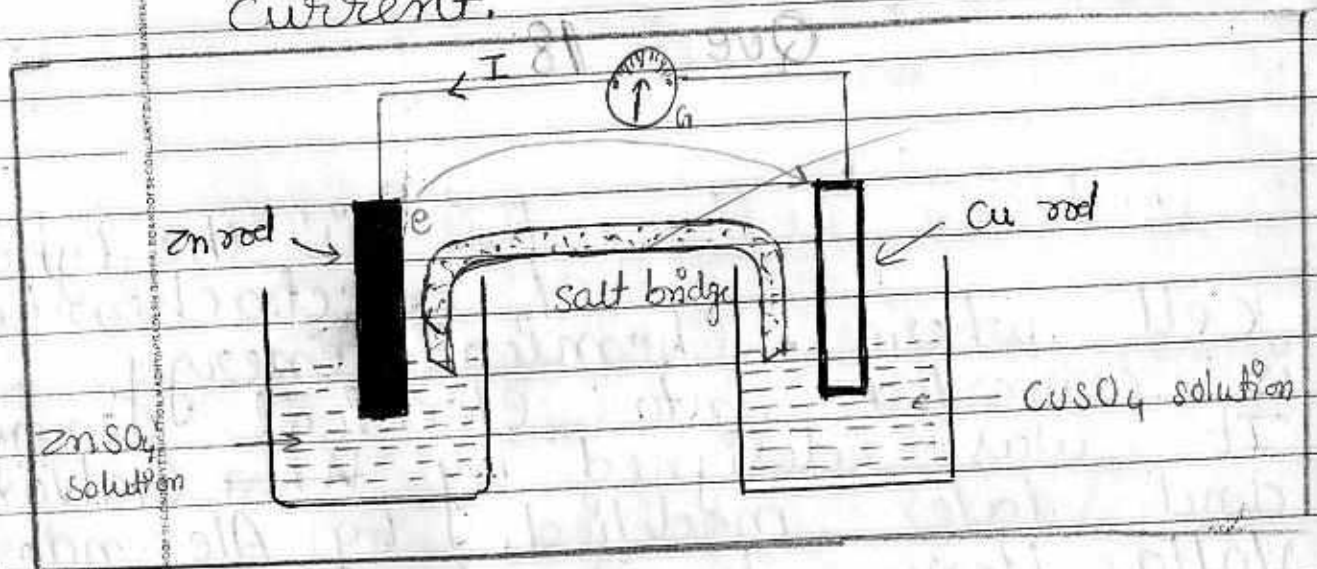
Daniel cell is an example of Galvanic cell.



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Construction - This cell consists of two half cells joined with the help of salt bridge. Salt bridge has KNO_3 or KCN in gelatin or agar-agar solution. It completes the circuit. 1st half cell has Zn rod dipped in solution of $ZnSO_4$ and 2nd half cell has Cu rod in $CuSO_4$ solution. Both are connected with wire and galvanometer to detect the current.



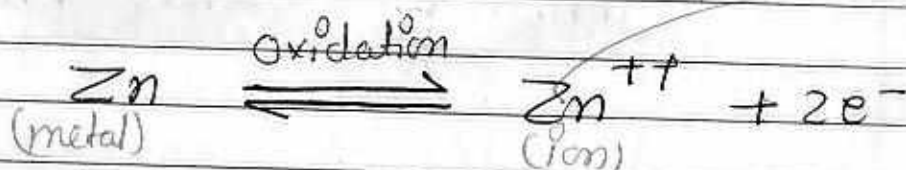
Labelled diagram



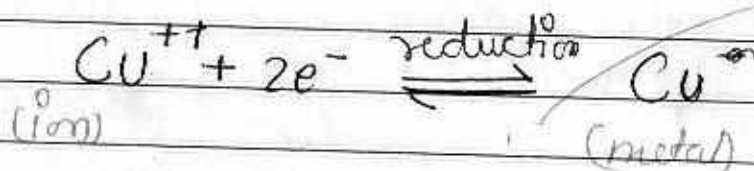
Working - Zn gives two electrons and form Zn^{++} ion and goes to solution. The electron reaches to Cu by wire where Cu^{++} ion of solution accept electron to form Cu and deposit on cathode. Zn rod act as anode due to oxidation taking place and Cu as cathode. Salt bridge complete the circuit, in wire current flows to the opposite direction of electrons.

Cell Reaction -

At anode -



At cathode -



Complete cell reaction -



This is the description of a Galvanic cell.



माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

4 प्रश्नीय

तर्ष-2018

परीक्षा का विषय

परीक्षार्थी द्वारा भरा जावे ↓

विषय कोड

परीक्षा का माध्यम

परीक्षा का दिनांक

26/03/2018

Chemistry

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English

स्टोकर तीर के निशान ↓ से मिलाकर लगायें

परीक्षा का नाम एवं परीक्षा केंद्र क्रमांक की द्वा

हायर सेकेण्डरी सर्टि.परीक्षा

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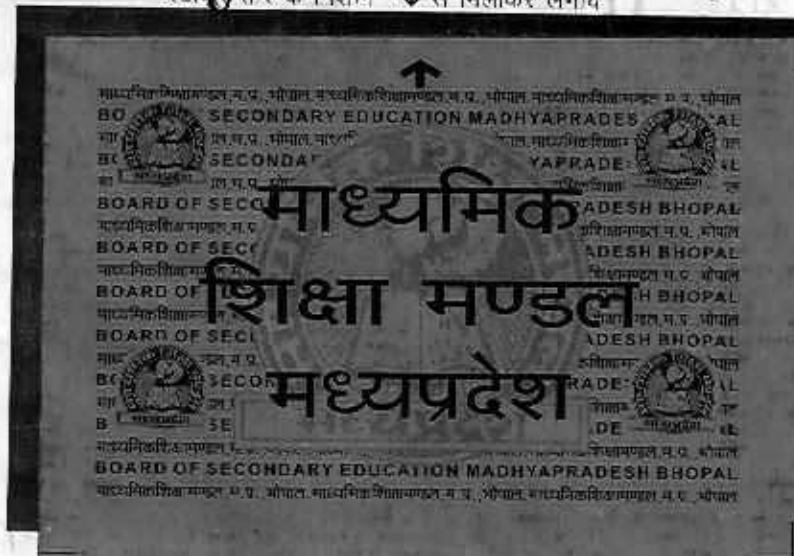
पर्यवेक्षक का नाम एवं हस्ताक्षर

HL

केंद्राध्यक्ष/सहायक केंद्राध्यक्ष के हस्ताक्षर

(B.L. Ghormare)

परीक्षार्थी द्वारा भरा जावे



मुख्य उत्तर पुस्तिका के अंतिम पृष्ठ क्रमांक.....तक कुल प्राप्तांक

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Que - 19

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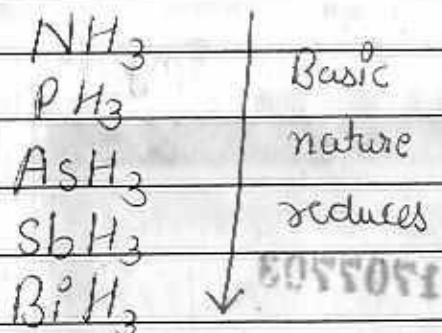
Hydrides of Nitrogen family-

Nitrogen family forms MH_3 types of hydrides such as NH_3 (Ammonia), PH_3 (phosphine) etc. AsH_3 (Arsine), SbH_3 (stibine), BiH_3 (Bismuthine).

(a) Basic property

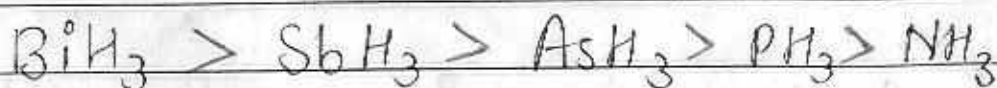
The basic property of NH_3 is highest and it decreases down the group.

के अंकों का योग



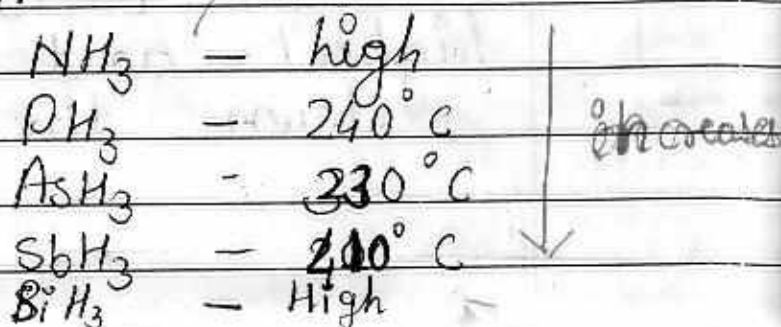
[b] Reducing property

The hydrides of Nitrogen family are good reducing agents. The reducing property increases down the group.



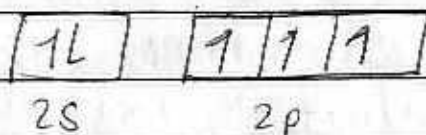
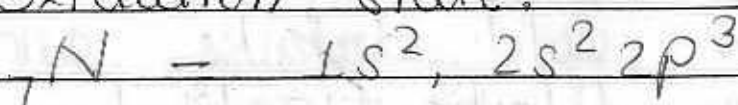
[c] Melting and Boiling point

Except ammonia, MP and BP on moving down decreases. Due to hydrogen bond in NH_3 its BP and MP are very high.

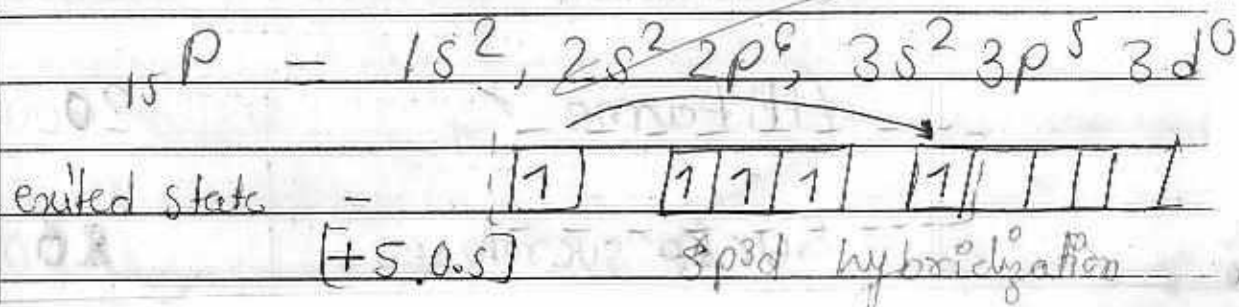


(ii) PCl_5 exists but NCl_5 does not, why?

NCl_5 doesn't exist because Nitrogen doesn't have d-orbital in its valence shell so its electrons can't get excited to higher energy and hence it doesn't show +5 oxidation state.



But Phosphorus has vacant d-orbital so its electrons get excited to higher energy and it shows +5 oxidation state so PCl_5 exists but NCl_5 does not.





Que 20

Artificial Sweetness - The substances which are used to sweeten the things artificially are called artificial sweeteners. They have very low caloric value. They can be used in cold drinks and are useful for diabetic patients. Their relative sweetness is more than sugar but has very low calories.

Artificial sweetening Agent	Relative Sweetness
Aspartame or sugar free	100 times
Saccharin	550 times
Alitame	2000 times
Sucralose	2600 times



माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

वर्ष 2018

परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय

विषय कोड

परीक्षा का माध्यम

परीक्षा का दिनांक

26/03/18

Chemistry

220

English

स्टैम्प के निशान ↓ से मिलाकर लगायें

परीक्षा का नाम एवं परीक्षा केंद्र क्रमांक की नुद

हायर सेकेण्डरी सर्टिफिकेट

781111

पर्यवेक्षक का नाम एवं हस्ताक्षर

R. Gosewami

केन्द्राध्यक्ष / सहायक केन्द्राध्यक्ष के हस्ताक्षर

(B.L. Ghormare)

मुख्य उत्तर पुस्तिका के अंतिम पृष्ठ क्रमांक

तक कुल प्राप्तांक

+ =

B
S
E

Aspartame is commonly used as sugar free. Sacharin is used in cold drinks. Sucralose is very effective sweetener.

Artificial sweeteners have no bad effect on health. They are very useful for all kind of people and specially for those who are suffering from diabetes mellitus.

पृष्ठ के अंकों का योग



Insect repellents - Insect repellents, as the name suggest, are the substance which repel insects. The substance used on body, clothes or houses to keep away the annoying insects are called insect repellants.

Insects are attracted to human by their body odour and smell of CO_2 , the repellants make the people unattractive for feeding and hence insects repel away.

It is of 3 kinds -

- ① Bio pesticide repellants
These are obtained from living plants.
Ex - oil of citronella, oil of lemon
Eucalyptus



(2) Synthetic repellants - These are synthesized chemical.

ex - DEET is a chemical repellent.

(3) Area or cloth repellants-

- Allthrin - It is an area repellent which is used in coils and Allouts.
- Picaridin etc.

Que - 9

SO - given, $W_B = 4 \text{ gm}$

$$W_A = 100 \text{ gm.}$$

$$\Delta T_f = 1.24^\circ \text{C}$$

$$K_f = 1.86 \text{ K mol}^{-1}$$

We know that,

$$\Delta T_f = \frac{K_f W_B}{M_B} \times \frac{1000}{W_A}$$



$$M_B = \frac{KF \times W_B \times 1000}{\Delta T_f - T_n \quad W_A}$$

$$= \frac{1.86 \times 4 \times 1000}{24 \times 100}$$

$$M_B = 60 \text{ gm}$$

Ans

The molecular mass of Urea is 60 gm