ENGLISH MEDIUM.

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

मु.उ.पु. 24 पृष्ठ

कार्यालयीन उपयोग के लिए

परीक्षा के नाम की सील: MSSC Exam

केन्द्र क्रमांक की सील: 049

निम्न रिक्तियों की सही प्रविष्टि परीक्षार्थी द्वारा की जाए।

1. विषय कोड 2 2 0 परीक्षा का विषय Chemistry

2. परीक्षा का माध्यम English परीक्षा की दिनांक 06/03/09

3. परीक्षार्थी प्रश्न पत्र का पूर्ण कोड नम्बर (सेट A, B, C, या D) अनिवार्यतः भरें — कोड: U-2044 सेट: D

स्टीकर तीर के निशान से मिलाकर लगायें

परीक्षार्थी का अनुक्रमांक (अंग्रेजी अंकों में)

2	9	5	1	1	8	1	0	8

नीचे दिये प्रत्येक कालम में ऊपर दिये गये अनुक्रमांक के अंकों को उसी क्रम में शब्दों में लिखा जाए :–

two	nine	five	one	one	eight	one	zero	eight

पर्यवेक्षक / केन्द्राध्यक्ष का प्रमाणीकरण

प्रमाणित किया जाता है कि परीक्षार्थी द्वारा निम्नानुसार पूरक उत्तरपुस्तिका ली गई है :–

क :– संख्या शब्दों में 2 अंकों में दो

ख :– परीक्षार्थी की बैठक व्यवस्था कक्ष क्रमांक 7 में है।

ग :– उत्तर पुस्तिका पर प्रश्न–पत्र का कोड नम्बर एवं सेट सही लिखा है।

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हस्ताक्षर (पर्यवेक्षक) ----------

नाम ---------- पद ----------

पता / संस्था ----------

परीक्षार्थी द्वारा ली गई सभी पूरक उत्तर पुस्तिकायें मुख्य उत्तर पुस्तिका के साथ संलग्न हैं।

हस्ताक्षर केन्द्राध्यक्ष

परीक्षार्थी, परीक्षक से अपेक्षा है कि वे पृष्ठ भाग पर दिये गये निर्देशों का यथेष्ट पालन सुनिश्चित करेंगे।

प्राप्तांक

प्रमाणित किया जाता है कि उपरोक्तानुसार संलग्न पूरक उत्तर पुस्तिकाओं की संख्या मूल्यांकन के समय सही पाई गई हैं। होलोक्राफ्ट स्टीकर यथा स्थिति में यथावत् रखते हुए ही उत्तरपुस्तिका का मूल्यांकन किया गया है। मैंने सभी प्रश्नों के उत्तरों का गहन मूल्यांकन किया है। उत्तर पुस्तिका के अन्दर के अंक एवं कव्हर पृष्ठ पर दर्शाये अंक एक समान है एवं योग पूर्णतः सही है।

हस्ताक्षर (परीक्षक) ----------

परीक्षक क्रमांक 9150297

हस्ताक्षर (उपमुख्य परीक्षक)

दिनांक.....

हस्ताक्षर (मुख्य परीक्षक)

दिनांक.....

परीक्षार्थी के लिए निर्देश

1. परीक्षार्थी को अपना अनुक्रमांक/विषय/माध्यम/दिनांक एवं प्रश्न–पत्र का कोड (समूह) मुख पृष्ठ पर अंकित करना अनिवार्य है। अन्यत्र कहीं भी नहीं लिखा जाएगा।
2. अनुक्रमांक नीचे दिये गए उदाहरण अनुसार लिखा जाए :–

1	8	2	4	3	9	5	6	8
एक	आठ	दो	चार	तीन	नौ	पाँच	छः	आठ

3. उत्तर पुस्तिका के दोनों ओर पृष्ठों में लिखें। बीच में रिक्त स्थान न छोड़ें। भूल से छूटा/रिक्त स्थान तथा शेष खाली पृष्ठों को क्रास किया जाए।
4. परीक्षार्थी प्रश्न पत्र हल करते समय ही, कव्हर पृष्ठ पर दी गई तालिका में प्रश्न क्रमांक के सम्मुख वाले कालम में उत्तरपुस्तिका का वह पृष्ठ क्रमांक अनिवार्य रूप से अंकित करें जिस पर प्रश्न का उत्तर लिखा गया है। यदि पूरक उत्तरपुस्तिका का उपयोग किया गया हो, तो उस पर 25 से प्रारंभ करते हुए पृष्ठ क्रमांक परीक्षार्थी द्वारा स्वयं डाले जाएँ।

परीक्षक के लिए निर्देश

1. केवल उन्हीं उत्तरपुस्तिकाओं का मूल्यांकन करें जिन पर होलो क्राफ्ट स्टीकर चस्पा है।
2. उत्तरपुस्तिका का मूल्यांकन होलो क्राफ्ट स्टीकर को चस्पा स्थिति में यथावत् रखते हुए ही किया जाये।
3. बिना होलो क्राफ्ट स्टीकर वाली तथा फटे हुए होलो क्राफ्ट स्टीकर वाली सभी उत्तरपुस्तिकाऐं मूल्यांकन हेतु परीक्षा नियंत्रक, माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल को व्यक्तिशः रूप से भेजी जाये।

मूल्यांकन केन्द्र के लिए निर्देश

1. **O.M.R. SHEET** पर प्राप्तांक की प्रविष्टि करने हेतु केवल वही उत्तरपुस्तिकाएँ प्राप्त करें, जिनका मूल्यांकन होलो क्राफ्ट स्टीकर को चस्पा स्थिति में यथावत् रखते हुए ही किया गया है। यदि होलो क्राफ्ट स्टीकर फटा हुआ पाया जाता है तो ऐसी उत्तरपुस्तिकाऐं मूल्यांकन केन्द्र अधिकारी को पृथक से सौपी जाएँ। ऐसे प्रकरणों के प्राप्तांकों की प्रविष्टि **O.M.R. SHEET** में नहीं की जाए। मूल्यांकन केन्द्र अधिकारी ऐसी उत्तरपुस्तिकाऐं पुनः मूल्यांकन के लिये परीक्षा नियंत्रक, माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल को व्यक्तिशः रूप से सौपेंगे।
2. उत्तरपुस्तिका के मुख्य पृष्ठ में अंकों एवं शब्दों में अंकित प्राप्तांकों को मिलान कर **O.M.R. SHEET** में अंकों की सटीक प्रविष्टि करें।
3. **O.M.R. SHEET** पर प्रमाणीकरण कर हस्ताक्षर करें।

B

Q.1]

(i) Schottky Defect

(ii) $C_6H_5 - CH_3COCH_3$

(iii) Homogeneous catalyst

(iv) CH_3COOH

(v) Diabetes

Q.2]

i) Radius ratio

(ii) exothermic

(iii) Copper

(iv) lone pair

(v) Isotonic

Q.3]

① Glass → Amorphous solid

② Arrhenius equation → $K = Ae^{-Ea/RT}$

③ Reaction of nitrous acid → An alcohol with primary amine in cold

④ Diastase → Conversion of starch

into sugar.

5) Standard Hydrogen → Zero volt potential

Q.4)

① $n\lambda = 2d \sin\theta$.

② ~~As_2S_3~~

③ ~~Nessler~~ reagent $[K_2(HgI_4)]$

④ NH_4Cl

Ammonium chloride

⑤ Radon.

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Ans-5|

Molecularity	Order of reaction
The number of reacting species which collide simultaneously in order to bring out chemical changes is called molecularity.	It is the number of molecules whose concentration is changed and may also change the rate of reaction.
It doesn't provide information about mechanism of reaction	It provides information about mechanism of reaction.
It is theoretical concept.	It is calculated experimentally.
It always a whole number. Zero value and fractional value is not possible	It always a whole number but zero value and fractional value is also possible

Ans-6)

① Copper

Ore	Formula
Chalcopyrites	$CuFeS_2$
Malachite (green)	$CuCO_3 \cdot Cu(OH)_2$
Azurite (blue)	$2CuCO_3 \cdot Cu(OH)_2$

B

② Iron

Ore	Formula
Haematite	Fe_2O_3
~~Sidarite~~	
Chalcopyrites	$CuFeS_2$
Iron pyrites	FeS_2
Limonite	$Fe_2O_3 \cdot 2H_2O$

पृष्ठ के अंकों का योग

Properities	White phosphorous	Red phosphorous
Density	2·1	1·8
Odour	Garlic	colourless.
Ignition temperature	Very low temperature	Very high temperature
solubility in organic solvent	It is soluble in CS_2, ether, benzene etc.	It is insoluble in CS_2, ether benzene etc.
Stability	It is unstable under all temperature	It is stable for all temper-ature
Reaction with Cl_2	It react spontaneously forming PCl_5 PCl_3	It react with Cl_2 only at very high temperature
Activity with air	It oxidise and emit light (efforescence)	It doesnot oxidise.

Ans - 3)

The word 'halogen' is derived from Greek word "halo" means sea salt "gen" means produces. Thus the word 'halogen' means sea salt producer.

Since, most of the elements of 17th Group (F, Cl, I) occur in sea water so these elements are to called as "halogen."

(a) Oxidation State =

Halogen element have the general configuration ns^2np^5 Hence by accepting an electron they complete its their octet. Hence they mainly show "-1" oxidation state.

Flourine being strongest electroneg-ativity show oxidation states '-1'. These element cannot show variable oxidation states due to absence of vacant - d- orbital while other halogen show variable oxidation state due to presence of vacant - d orbital.

	$2s^2$		$2p^5$			
F =	↿⇂		↿⇂	↿⇂	↿	(−1)

For other halogen element :->

	ns^2		np^5			$(n-1)d$				
=	↿⇂		↿⇂	↿⇂	↿					

Variable oxidation state

② Electronegativity =

Fluorine being smallest in size, is most electronegativity element in the periodic table.

On moving down the group, electronegativity decreases from fluorine to astatine. The electronegativity of fluorine is 3.98 which gradually decreases on moving down the group

③ Oxidising property =

Halogen has the strong tendency to accept electron to form halide ion. Thus they acts as a good

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पृष्ठ के अंकों का योग

oxidising agent.

$$\frac{1}{2}X_2 + e^- \longrightarrow X^-$$

The oxidising property of halogen is due to high electron affinity, low bond dissociation energy and high value of hydration energy. Oxidising property also decreases on moving down the group of 17th.

Ans-9|

Double salt and co-ordination compound

Ans-9)

Double salt and complex compound can be explained by following way :->

Double salt :-

Double salt are those which loses their identity in the solution. They show only normal valencies. In double salt, the bond present within them is ionic or electrovalent.

The physical and chemical property of double salt are almost similar to their constituent compound. But the presence of double salt cannot be tested by any reagent.

For example

$$K_2SO_4 + Al_2(SO_4)_3 + 24H_2O \rightleftharpoons K_2SO_4 \cdot Al_2(SO_4)_3 \cdot 24H_2O$$

Potash alum

Complex Compound:=

Those compound which does not loses their identity in the solution are called co-ordination compound or complex compound.

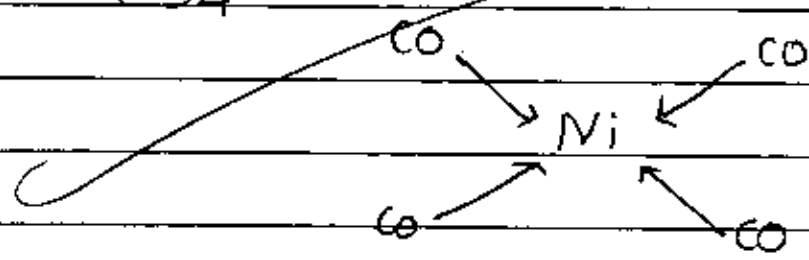
The metal ion exhibit two types of valencies ⓐ Primary valencies
ⓑ Secondary valencies.

In these compound, co-ordinate bond is present within the element. Sometimes ionic bond also present these but in few cases.

The phyical and chemical properities of complex compound are differ from their constituent element i.e. phyical and chemical properities gradually changes. So their presence can easily be detected by any reagent.

For example.

$Ni(CO)_4$



$K_4[Fe(CN)_6]^-$, $Fe(CO)_5$, $Pt(NH_3)_2Cl_2$ are some other example of complex compound.

Complex compound.

$K_4[Fe^{++}(CN)_6]$

Fe = represent central metal ion
CN = Ligand
[ ] = Co-ordination sphere
++ = charge on complex ion

Ans-10|

① Iodoform reaction = When $R-CH_3CO$ group react with NaOI, which is formed by reaction of sodium hydroxide with iodine, forming $RCOCI_3$ and 3 mole of sodium hydroxide which, again on reacting together forming a compound called iodoform

$$2NaOH + I_2 \longrightarrow NaOI + NaI + H_2O$$

$$RCH_3CO + 3NaOI \longrightarrow RCOCI_3 + 3NaOH$$

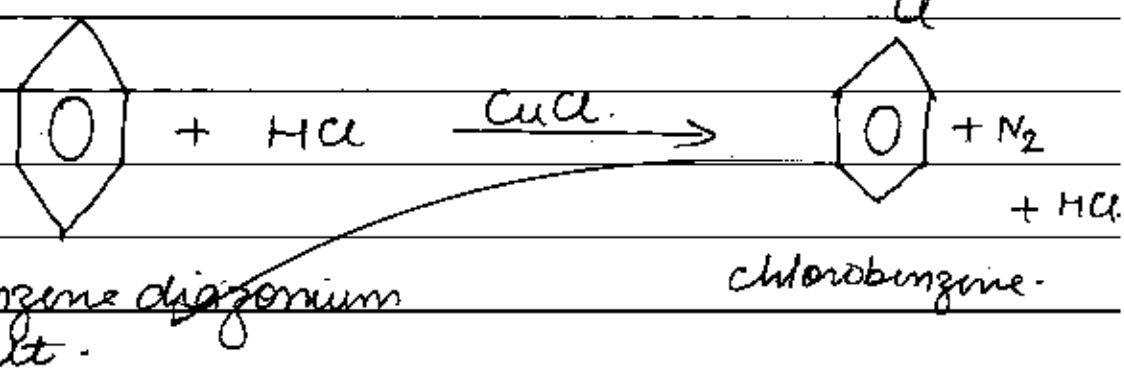
$$RCOCI_3 + NaOH \longrightarrow CHI_3 + RCOONa$$

Iodoform (yellow)

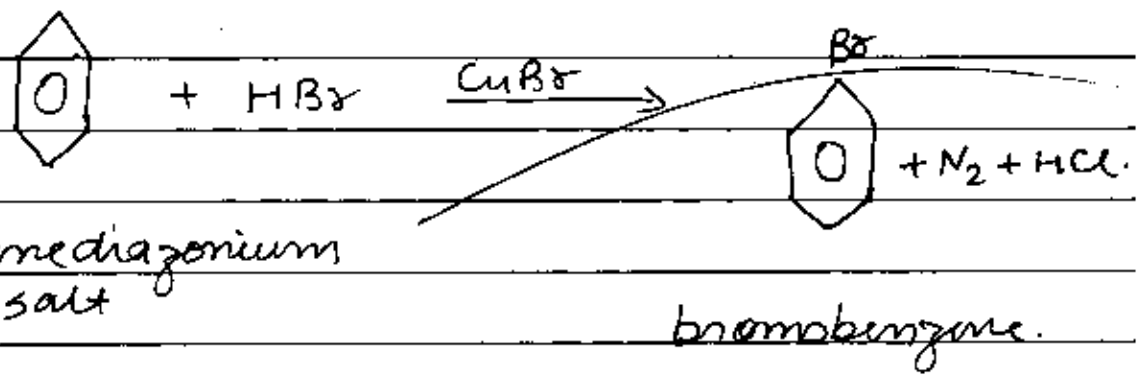
These reaction is called iodoform reaction. This reaction is given by aldehyde group and acetone group (in nature).

② Sandmeyer reaction = When benzene diazonium chloride (salt) reacts with HCl, HBr and HCN in the presence of cuprous chloride then it form chlorobenzene, bromobenzene cyanobenzene etc.

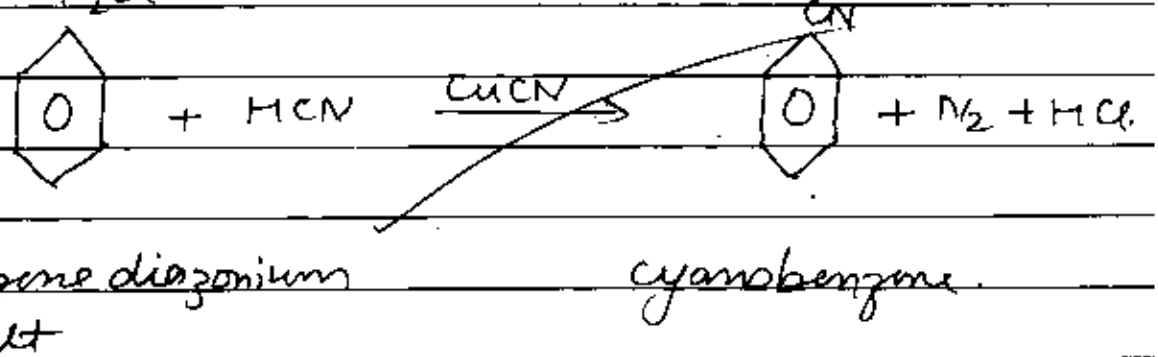
(a)



(b)



(c)



कुल अंक

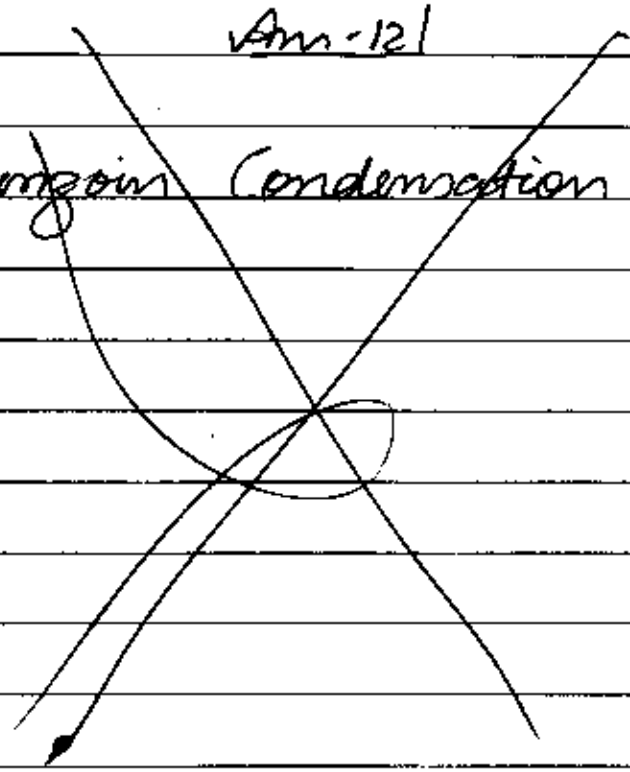
Ans-11

Properities	Alcohol	Phenol
Nature	It is neutral in nature	It is acidic in nature
Melting and Boiling point	Melting and boiling point is less than phenol	melting and boiling is high
Reaction with carboxylic acid	It forms ester with carboxylic acid $R-OH + R'COOH \longrightarrow R-\overset{O}{\overset{\|\|}{C}}-OR' + H_2O$	It doesnot form form with carboxylic acid
Reaction with halogen acid	It react with halogen acid to for alkyl halides $R-OH + HCl_{(aq)} \longrightarrow R-Cl + H_2O$	It doesnt react.

Oxidation	On oxidation it form acetaldi-hyde and acetone	On oxidation it form coloured compound quinone
Nucleophillic substitution reaction	Not happen	Phenol show nucleophillic substitution reaction such as halogination, nitration sulphonation in o- and p- position

Ans-12)

② Benzoin Condensation =



Ans-12

① Cannizzaro Reaction = When two moles of formaldehyde react with sodium hydroxide (aqueous), then one molecules is oxidised to sodium formate and other is reduced to methyl alcohol. This is given by aldehyde group.

$$2HCHO + NaOH \longrightarrow CH_3OH + HCOONa$$

formaldehyde — sodium hydroxide — Methyl alcohol — sodium formate

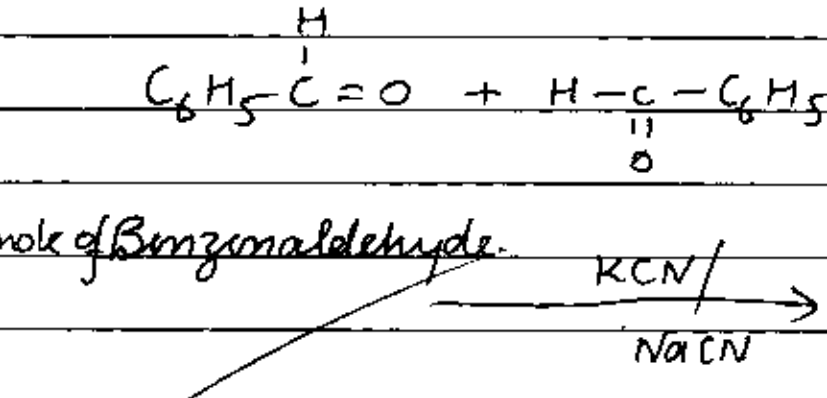
$$2C_6H_5CHO + NaOH \longrightarrow C_6H_5CH_2OH + C_6H_5COONa$$

Benzaldehyde — Benzyl alcohol — Sodium benzoate

This reaction is called cannizzaro reaction.

② Benzoin Condensation = When two mole of benzenaldehyde react together in the presence of KCN or NaCN, then benzoin condensation is formed.

For Example :→



This is called benzoin condensation

Ans-13|

Vit	Chemical name	Deficiency diseases
Vit A	Retinol ($C_{20}H_{30}O$)	Night blindness, retar-ded growth (Xerophtalmia)
Vit B [B_{12}]	Cyanocobalamin ($C_{63}H_{90}CoN_{14}O_{14}P$)	Beri-Beri, Degradation of spinal cord.
Vit C	Ascorbic acid ($C_6H_8O_6$)	Scurvy, bleeding gum etc
Vit D	Calciferol or ergocalciferol $C_{28}H_{44}O$	Rickets

Ans-14|

The substances which is require to sweeten the food product is called sweetening agent. But artificial sweeteners are used in small concentration in food product which donot have any nutrient value.

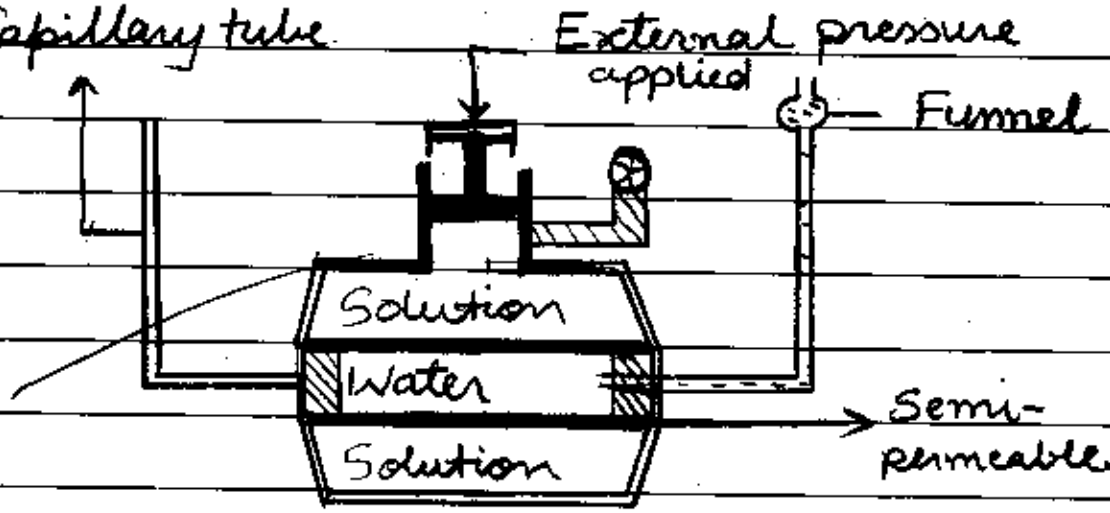
The first artificial sweetener agent used was "saccharin sodium ortho - benzenesulphonamide or the calcium salt which is about 300 times sweeter than sucrose.

Sweeter :- It is commercial name for saccharin and has zero calorie nutrient. It is used as a sweetening agent for fat person, diabeter patient and other who are not permitted to use sucrose. Saccharin have no nutrient value and remain excreted out through urine. But when this sweetening agent combine with cyclamates and Aspartame, its bitterness is reduced and remain unchanged. It is mainly in "Pan-Masala or Supari" etc.

The name of Artificial Sweeteners are as follow:->

(i) Cyclamates
(ii) Aspartame
(iii) Sorbitol
(iv) Saccharin

Ans - 15)



Berkeley and Hartley's method.

Consides a ~~strong~~ glass vessel made ~~up of steel~~ Inside the glass vessel porous pot is fitted along with ~~a~~ semi-permeable membrane i.e copper ferrocyanide is used as semi-permeable membrane. There is a funnel and capillary tube which is ~~connected~~ with porous pot on either ~~sides~~ side of it.

There is solution on the upper and lower side of porous pot

When solvent molecules (water) enter into solution through semi-permeable membrane, then there is rise in the capillary tube.

But when we applied external pressure on solution then they stopped the flow of solvent molecules through semi permeable membrane. Whatever external pressure applied is equal to its osmotic pressure.

Advantages of this method are :->

① As high pressure is not applied on vessel, it remain safe against damage.

② This gave an accurate measurement of osmotic pressure.

The concentration of the osmotic pressure doesn't change hence it gave better result

③ ~~The high pres~~ This method take lesser time to measure the osmotic pressure.

BSEM

Ans-16)

Corrosion =

Corrosion is a process in which metal deteriorates as a result of conversion of ~~oxides~~ oxides into other metal, on exposure to air and water.

It is electro-chemical process.

Corrosion mean "to rust".

Examples = Rusting of iron.

Factor affecting corrosion :->

(a) Air and moisture = Air and moisture affect the corrosion very much. It is so because they act as medium in which acceptance of electron occur in present of certain positive ion.

(b) Impurities = Impurities also helpful in setting up corrosion cell and metal corrode easily by adding any impurities.

(c) Strain in metal = Strain in metal also helpful for corrosion because

पूरक उ.पु. 4 पृष्ठ

2009 माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

1. केन्द्र की सील
2. पर्यवेक्षक के हस्ताक्षर व दिनांक
3. केन्द्राध्यक्ष के हस्ताक्षर की सील
4. केन्द्र क्रमांक 511049
6. परीक्षा का नाम H.S.S.C. Exam
7. विषय 8. माध्यम
8. दिनांक

परीक्षक के लिये
स्टीकर तीर के निशान से मिलाकर लगायें

[redacted]

पृष्ठ

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atom-atom bond become weaker in such part of the metal

Prevention =

① ~~Using~~ anti ~~rust~~ rotation =

Mechanism :→

Electrolytic in the film of moisture having dissolved O_2 and CO_2 Impure iron acts as ~~cathode~~ anode while pure iron acts as cathode.

At anode :→ oxidation takes place.

$Fe^{2+} + 2e^{-} \longrightarrow Fe + 2e^{-}$

पृष्ठ के अंकों का योग

कुल अंक

At cath

These electron then accept by Hydrogen which is produced from H_2O and H_2CO_3

$$H_2CO_3 \rightleftharpoons 2H^+ + CO_3^{--}$$

$$2H^+ + 2e^- \longrightarrow H_2$$

This hydrogen then react with O_2 to form water

$$H_2 + \frac{1}{2}O_2 \longrightarrow H_2O$$

Overall reaction

$$2H^+ + 2e^- \longrightarrow H_2$$

$$H_2 + \frac{1}{2}O_2 \longrightarrow H_2O$$

$$2H^+ + 2e^- + \frac{1}{2}O_2 \longrightarrow H_2O$$

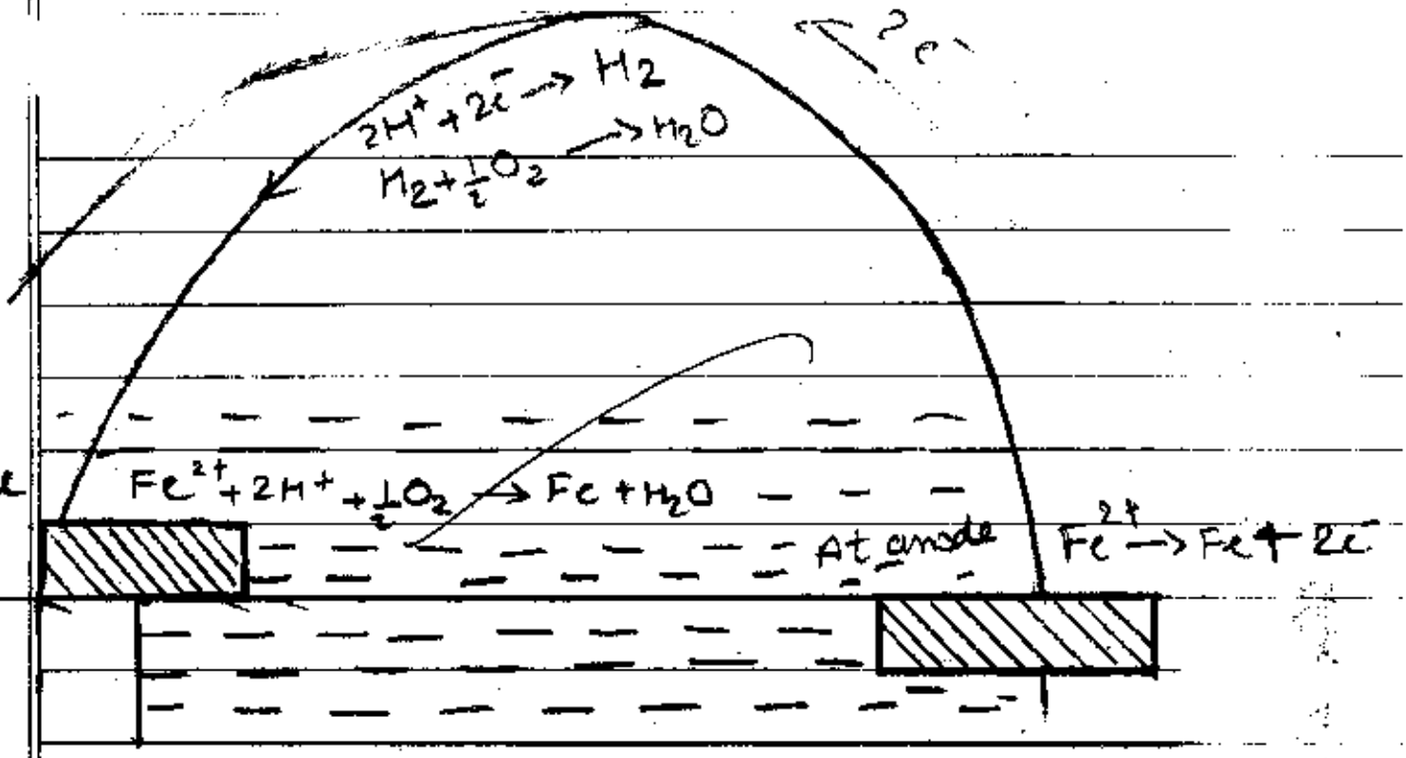
Final overall reaction

$$Fe^{2+} \longrightarrow Fe + 2e^-$$

$$2H^+ + 2e^- + \frac{1}{2}O_2 \longrightarrow H_2O$$

$$Fe^{2+} + 2H^+ + \frac{1}{2}O_2 \longrightarrow Fe + H_2O$$

पृष्ठ के अंकों का योग



Film of electrolytic.

Corrosion

Prevention :-

① By barrier protection →

When Iron article is dipped in a film of barrier between iron oxide and other metal corrosion takes places. It can be prevented by

barrier prevention in 3 way :=>

(a) By paint :-> Corrosion can be prevented by painting red oxides on that metal that comes in rust i.e. corrode (metal)

(b) By forming alloy = Iron can be prevented by corrosion by forming an alloy.

(c) By oiling or greasing = Iron can also be prevented by oiling and greasing that metal which comes in contact with corrosion

(d) By galvanising =>
Iron can be prevented by corrosion by galvanising it i.e. dipped it into molten zinc.

पूरक उ.पु. 4 पृष्ठ

2009 माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

1. केन्द्र की सील
2. पर्यवेक्षक के हस्ताक्षर व दिनांक 6/3/09
3. केन्द्राध्यक्ष के हस्ताक्षर की सील
4. केन्द्र क्रमांक 511049
6. परीक्षा का नाम H.S.S.C Exam
7. विषय 8. माध्यम
8. दिनांक

परीक्षक के लिये
स्टीकर तीर के निशान से मिलाकर लगायें

[redacted]

पृष्ठ

Ans-17.

Lanthanides		Actinides
These elements come after lanthanum, hence they are called lanthanide	1)	These elements come after actinums hence, called as actinides
Differentiating or last electron enters in 4-f orbital	2)	Differentiating or last electron enters in 5f orbitals
These contain 14 element starting from element (58 to 71) atmic number except lathanum (57)	3)	These contain also 14 elements starting from atomic number (90 – 103) atm number except actinum (89)

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These element have characteristics oxidation states. They show oxidation number (+3) but in few metals they oxidation number +2, +4 etc	These element dosnot have characteristics oxidation number. They show oxidation (+3) along with +4, +5, +6 in most of the metals
Tendency to form complex compound is poor as compared to actinides. Also these element doesnot form oxo ions	Tendency to form complex compound is more than lanthanide elements. These element also form oxo ion such as UO_2^{2-} etc.
Lathanides are less basic than actinides elements	Actinide elements are more basic than Lanthanides elements

③ ☐ + ☐ = ☐ 

योग पूर्व पृष्ठ | पृष्ठ 3 के अंक | कुल अंक

B
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☐

पृष्ठ के अंकों का योग

योग पूर्व पृष्ठ + पृष्ठ 4 के अंक = कुल अंक

BSEMP

पृष्ठ के अंकों का योग