

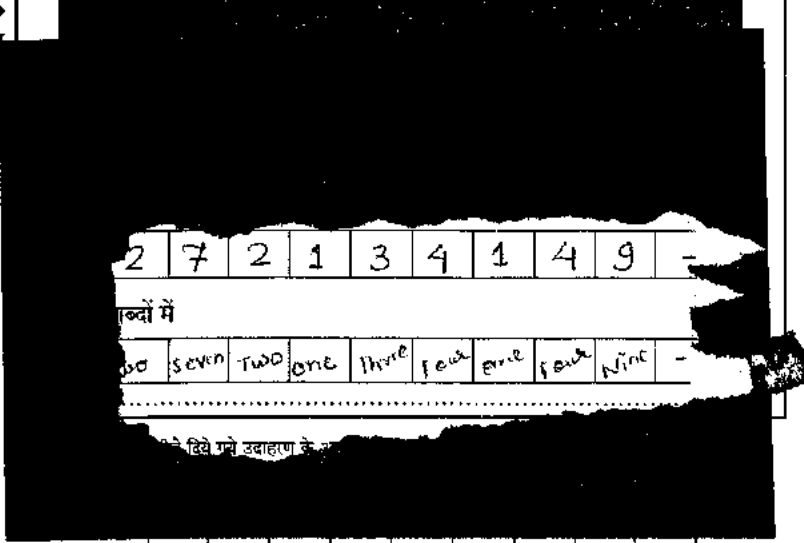


परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय	विषय कोड	परीक्षा का माध्यम
Chemistry	2 2 0	ENGLISH

स्टीकर तौर के निशान ↓ से मिलाकर लगावें

परीक्षार्थी द्वारा भरा जावे



केन्द्राध्यक्ष/सहायक केन्द्राध्यक्ष द्वारा भरा जावे

क - पूरक उत्तर पुस्तिकाओं की संख्या अंकों में शब्दों में

ख - परीक्षार्थी का कक्ष क्रमांक

ग - परीक्षा का दिनांक

परीक्षा का नाम एवं परीक्षा केन्द्र क्रमांक की मुद्रा
सर सेकेण्डरी नर्सी ० परीक्षा केन्द्र क्रमांक-21207

पर्यवेक्षक का नाम एवं हस्ताक्षर संकीप शर्मा Sandeep	केन्द्राध्यक्ष/सहायक केन्द्राध्यक्ष के हस्ताक्षर
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परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

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

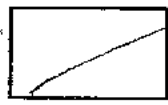
निर्धारित मुद्रा : नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएँ।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा R. N. AMBEO 9770804	परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा R. N. AMBEO 9770804
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केवल परीक्षक द्वारा भरा जावे।		
प्रश्न क्रमांक	पृष्ठ क्रमांक	प्रविष्टि करें। क (अंक)
1		11
2		11
3		11
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23		11
24		11
25	75	11
26	75	11
27		11
28		11
कुल प्राप्तोंक शब्दों में		कुल प्राप्तोंक अंकों में

ABANGOR 977042

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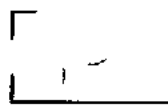
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Q.1.

Q.1

ANSWERS

(a)

(a) 8 ✓

(b)

(d) cm^{-1} ✓

(c)

(a) active mass ✓

(e)

(a) exothermic ✓

(b)

(b) chlorine ✓

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Q.2

Q.2

(a)

seven ✓

(b)

adsorbent ✓

(c)

$HgCl_2$ ✓

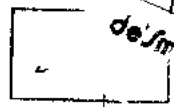
(d)

Dimagnetic ✓

(e)

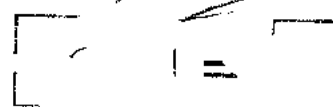
$(C_2H_5)_4Pb$ ✓

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decreases, interionic attraction between electrons and nucleus increases. It becomes difficult to remove electrons. Hence they have highest ionization energy.

Question No - 7.

Ans → 7

IUPAC.

Iupac names

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(i) $K_2 [HgI_4]$:- Potassium tetraiodo mercurate (II)

(ii) $[Ag(NH_3)_2]Cl$:- ~~Diamine~~
Diammine silver(I) chloride

Question No - 8

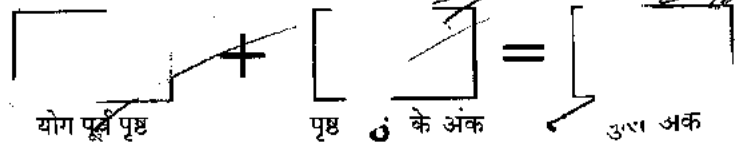
Ans → 8

Carbohydrates

Carbohydrates are the poly polyhydroxy compounds of polyhydroxy aldehydes or polyhydroxy ketones which give polyhydroxy aldehyde or ketones on hydrolysis.

Carbohydrates are the source of energy.

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Types of carbohydrates :-

(i) Monosaccharides :- These carbohydrates are the basic carbohydrates which do not dissociate on hydrolysis.

Ex :- Glucose, etc

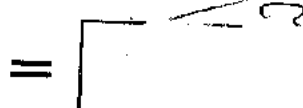
(ii) Disaccharides :- These carbohydrates give two to ten more - saccharides upon hydrolysis.

Ex :- Sucrose etc.

(iii) Polysaccharides :- These carbohydrates are made up of many mono-saccharides and give many mono-saccharides upon hydrolysis.

Ex :- Starch, Cellulose, etc.

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प्रश्न क्र.

Question No - 9

Ans-9 Positive deviation

Negative deviation

(i) Vapour pressure of each of the element of the solution is greater than the vapour pressure expected by Raoult's law.

(i) Vapour pressure of each of the element of the solution is less than the vapour pressure expected by Raoult's law.

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(ii) A-B interaction is ~~greater~~ ^{less} than the A-A and B-B interaction. Therefore volume of the solution increases
 $\Delta V_{mix} = +ve$

(ii) A-B interaction is greater than A-A and B-B interaction. Therefore volume of solution decreases
 $\Delta V_{mix} = -ve$

(iii) Enthalpy change is positive.
 $\Delta H_{mix} = +ve$

(iii) Enthalpy change is negative.
 $\Delta H_{mix} = -ve$

Conditions

$$P_A > P_A^0 X_A$$

$$P_B > P_B^0 X_B$$

$$\Delta V_{mix} = +ve$$

$$\Delta H_{mix} = +ve$$

Conditions

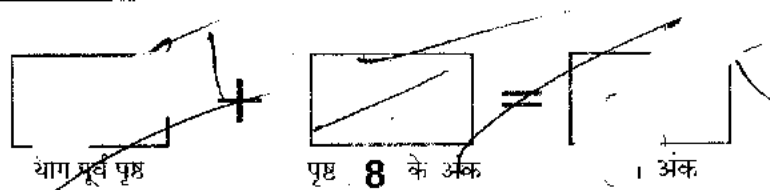
$$P_A < P_A^0 X_A$$

$$P_B < P_B^0 X_B$$

$$\Delta V_{mix} = -ve$$

$$\Delta H_{mix} = -ve$$

8



Question No - 10

(i) Formality :- The number of gram formula mass

The number of moles of solute having gram formula mass dissolved in solution of volume 1 litre is called formality. It is denoted by F.

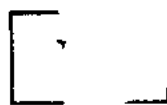
Formality :-
$$\frac{\text{Given mass of solute} \times 1000}{\text{Gram Formula mass} \times \text{Volume in (ml)}}$$

(ii) Parts per million :- Parts per million can be defined as the number of parts present in per million parts of the solution. It is denoted by ppm.

ppm =
$$\frac{\text{Mass of solute} \times 10^6}{\text{Mass of solution}}$$

(iii) Osmotic pressure :- The pressure which is applied on the solution side to prevent the entry of solvent into the solution through

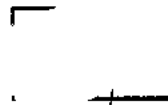
9



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the semi permeable membrane is called osmotic pressure. It is denoted by π .

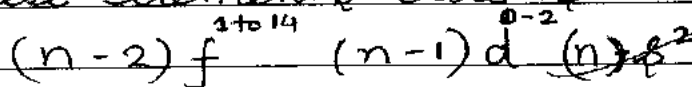
Question No - 11.

Inner Transition elements

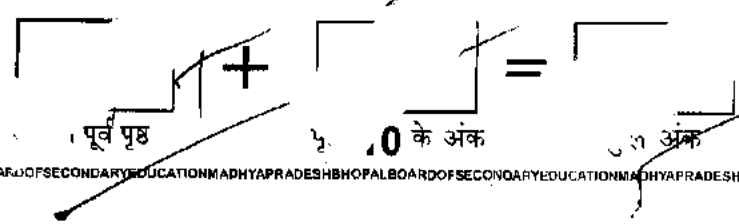
f-block elements are called inner transition elements.

The elements in which the last electrons enters into the $(n-2)f$ orbitals or antepenultimate^{sub} shell are called f-block elements or inner transition elements.

The general electronic configuration of these elements are is -



They include actinides and lanthanides. Last electrons enters the inner orbitals i.e $(n-2)f$ orbitals. Therefore these elements are called inner transition elements.



Question No - 12

Q.12

Lanthanides

These elements come after the element lanthanum. Therefore these elements are called lanthanides.

They belong to 4-f series.

Their general electronic configuration is $4f^{1-14} 5d^{0-2} 6s^2$

All the elements are non-radioactive except one (promethium)

Actinides

These elements come after the element Actinium. Therefore these elements are called actinides.

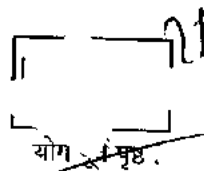
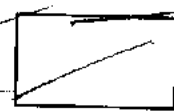
They belong to 5-f series

Their general electronic configuration is $5f^{1-14} 6d^{0-2} 7s^2$

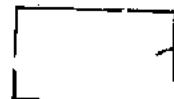
All the elements are radioactive elements.

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(11)

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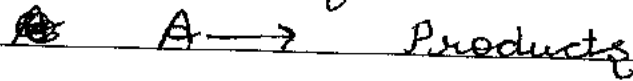
Question No - 13

Half-life period

The total time taken for 50% completion of the reaction or time needed for the reactants to become half of the initial concentration is called half-life period of the reaction. It is denoted by $t_{1/2}$.

Expression :-

Consider a first order reaction is -



Initially at $t=0$ a 0
 at $t=t$ $a-x$ x

$$\text{Rate of reaction} = \frac{dx}{dt} = k(a-x)$$

$$\text{Rate} \quad \frac{dx}{dt} = k(a-x)$$

$$\therefore \frac{dx}{a-x} = k dt \quad \text{--- (i)}$$

Integrating both sides

$$\int \frac{dx}{a-x} = \int k dt$$

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$$-\log_e(a-x) = kt + c \quad \text{--- (ii)}$$

When $t = 0, x = 0$

$$\Rightarrow -\log_e(a-0) = 0 + c$$

$$c = -\log_e a$$

Putting the value of c in eq. (ii)

$$-\log_e(a-x) = kt - \log_e a$$

$$kt = \log_e a - \log_e(a-x)$$

$$kt = \log_e \frac{a}{a-x}$$

$$k = \frac{1}{t} \log_e \frac{a}{a-x}$$

$$k = \frac{2.303}{t} \log_{10} \frac{a}{a-x}$$

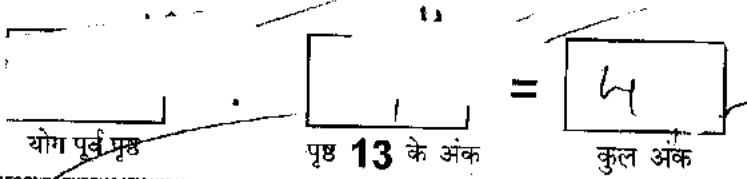
When $t = t_{1/2}, x = \frac{a}{2}$

$$t_{1/2} = \frac{2.303}{k} \log_{10} \frac{a}{a - \frac{a}{2}}$$

$$t_{1/2} = \frac{2.303}{k} \log_{10} \frac{2a}{a}$$

$$t_{1/2} = \frac{2.303}{k} \times (\log_{10} 2)$$

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$$t_{1/2} = \frac{2.303}{k} \times 0.3010$$

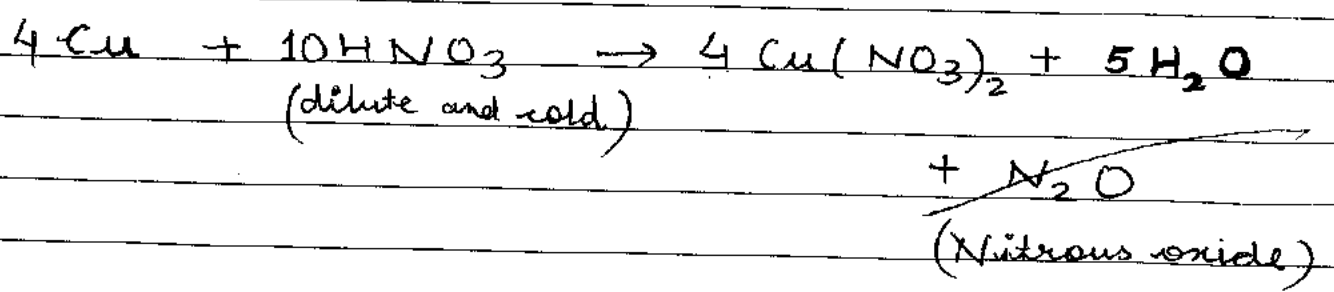
$$t_{1/2} = \frac{0.693}{k}$$

This is required half life period of a first order reaction.

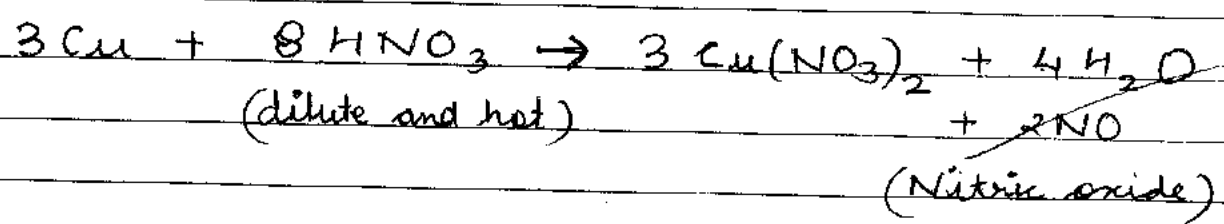
Question No - 14.

B Ans - (14) Copper reacts with nitric acid in 4 different concentration and conditions -

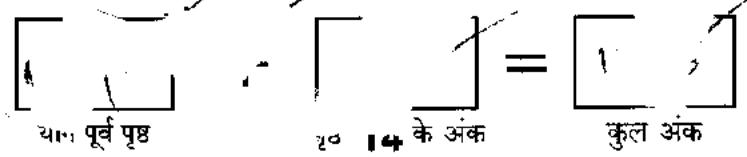
(i) Copper reacts with dilute and cold nitric acid (HNO₃)



(ii) Copper reacts with dilute and hot nitric acid.

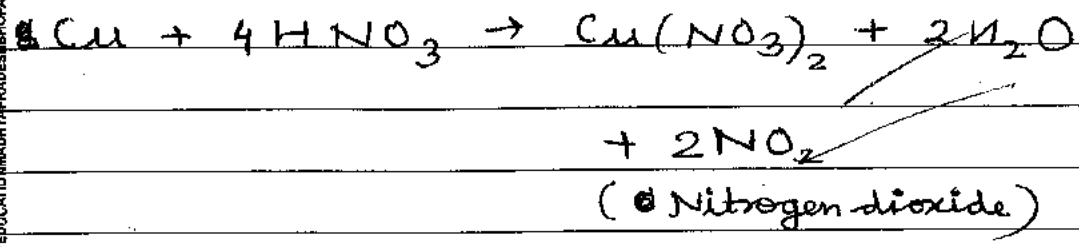


14



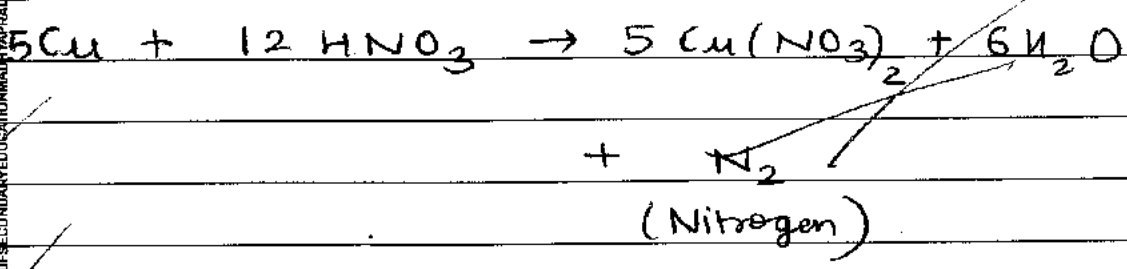
प्रश्न क्र. BOARD OF SECONDARY EDUCATION, MADHYA PRADESH, BHOPAL

(iii) Copper reacts with concentrate and cold HNO_3 .

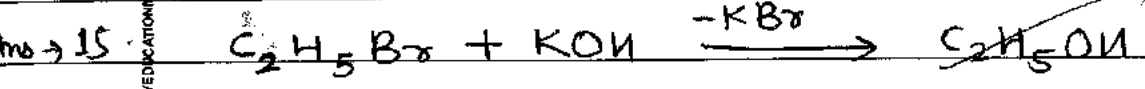


(iv) Copper reacts with concentrate and hot HNO_3

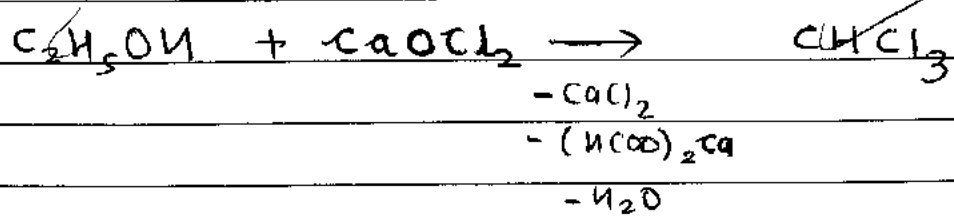
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Question NO - 15.



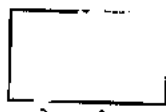
$\therefore A = C_2H_5OH$



$B = C_2H_5Cl$

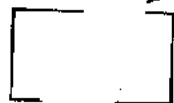
C_2H_5Cl
 $CaCl_2$
 $(HCOO)_2Ca$
 H_2O

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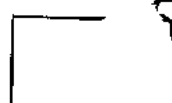
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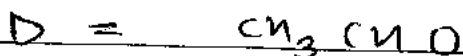
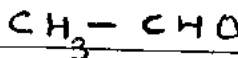
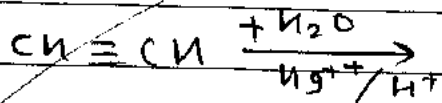
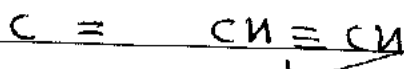
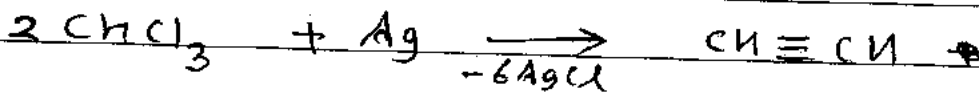
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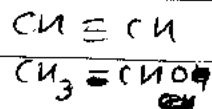


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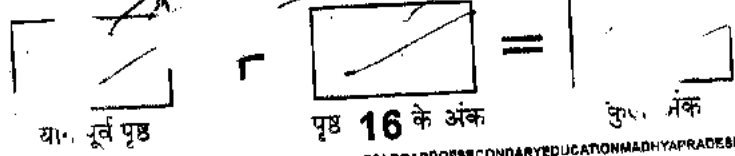
A =	C ₂ H ₅ OH	ethyl alcohol
B =	CHCl ₃	Chloroform
C =	CH \equiv CH	ethyne
D =	CH ₃ CHO	ethanal

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Question No - 16

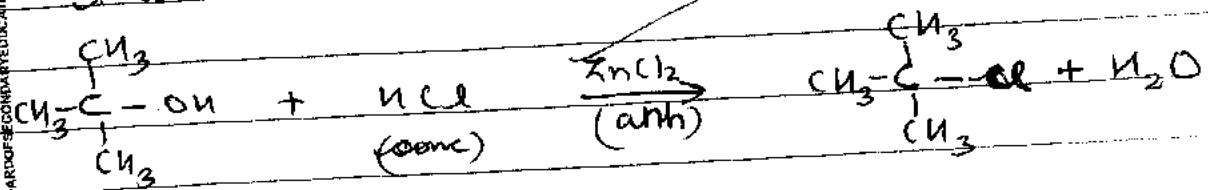
(i) Lucas reagent :

Lucas reagent is a mixture of anhydrous $ZnCl_2$ and conc. HCl .

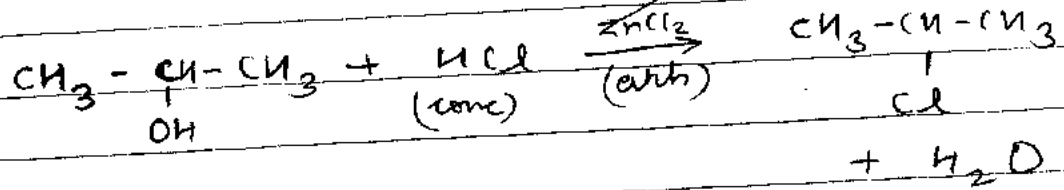
It is used to distinguish between primary, secondary and tertiary alcohol.

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(a) If turbidity occurs within seconds then the alcohol is tertiary.



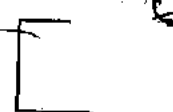
(b) If reaction occurs within 5 minutes then the alcohol is secondary.



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या. पूर्व पृष्ठ



पृष्ठ 17 के अंक

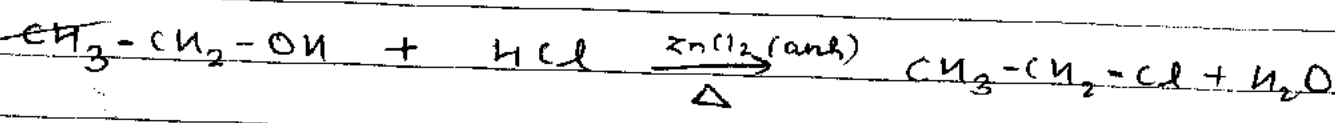


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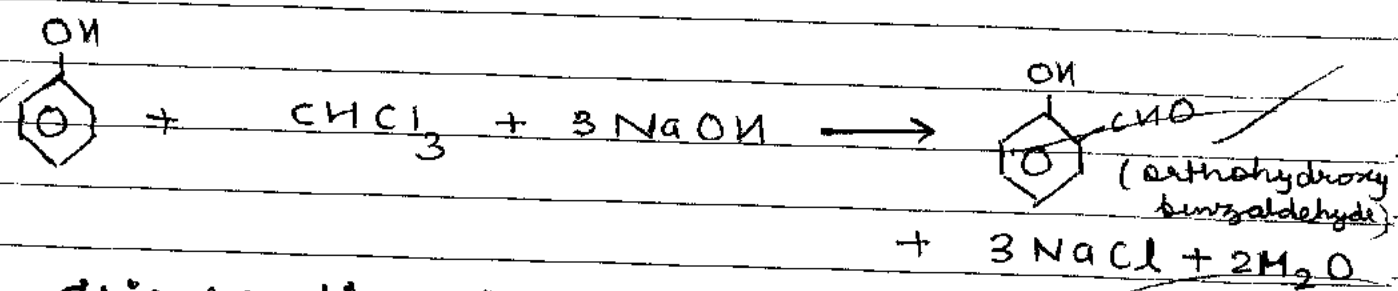
म. प्र. शिक्षा बोर्ड, उत्तर प्रदेश

(k) If the reaction does not occur when cold conditions are there. But if the mixture is heated then reaction occurs then the alcohol is primary.



(ii) Reimer Tiemann reaction :- when

phenol reacts chloroform in the presence of alkali such as NaOH, then we get orthohydroxy benzaldehyde as the product and some amount of para hydroxy benzaldehyde is also formed.



this reaction is known as Reimer Tiemann reaction.



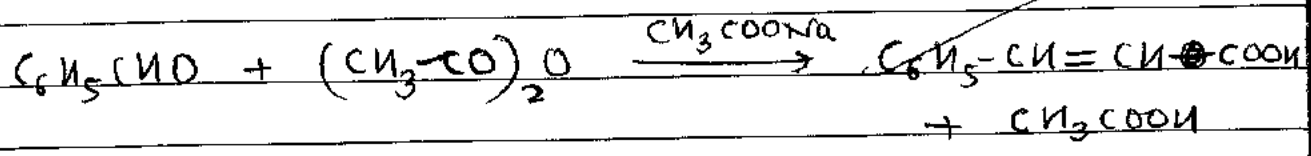
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Question No - 17.

Ans-17

(i) Perkin reaction \Rightarrow When benzaldehyde reacts with acetic anhydride in the presence of sodium ^{acetate} benzoate then we get cinnamic acid as the product and acetic acid.

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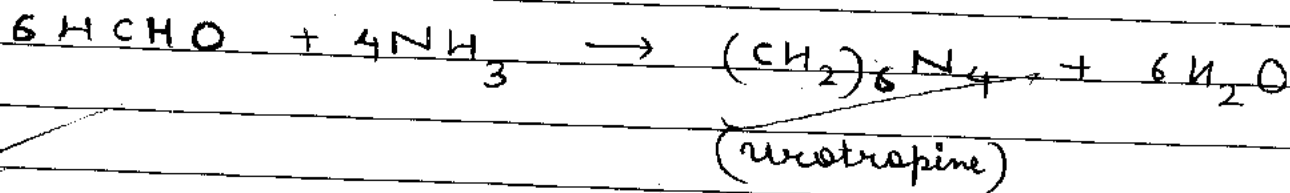
Here $C_6H_5-CH=CH-COOH$ = cinnamic acid
 and CH_3COOH = acetic acid.

(ii) Urotropine :-

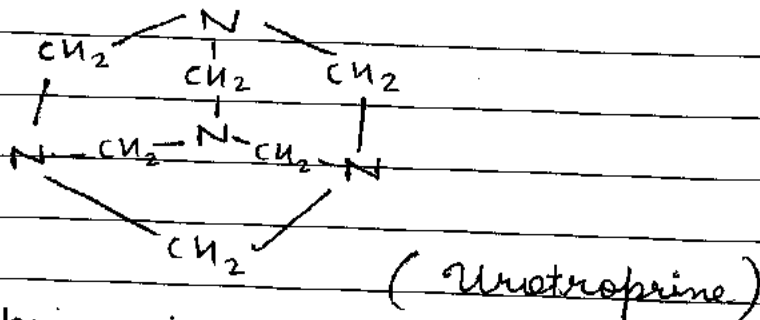
Urotropine is formed when formaldehyde reacts with NH_3 . We get a hexamethylene ~~ter~~ tetra amine as the product which is called urotropine.

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$$\boxed{\text{योग पूर्व पृष्ठ}} + \boxed{\text{पृष्ठ 19 के अंक}} = \boxed{\text{कुल अंक}}$$



Structure



Urotropine is used in medicines for urinary infections.

Question No - 18.

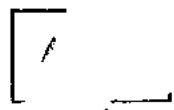
Ans → 18

Kohlrausch law

Kohlrausch calculated the value of limiting molar conductivity of different electrolytes of same cation and same anion.

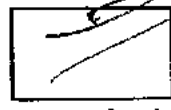
At infinite dilution, when all the molecules dissociated and the inter ionic attraction between them is negligible, then each ion make a certain contribution to the conductivity.

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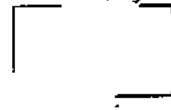
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of the electrolyte.

According to the Kohlrausch law, the molar conductivity of electrolyte at infinite dilution is the sum of ionic conductivities at cation and anion.

Mathematically,

$$\Lambda_m^\infty = x d_{\text{(cation)}}^+ + y d_{\text{anion}}^-$$

where Λ_m^∞ = molar conductivity at infinite dilution

d_{cation}^+ = ionic conductivity of cation

d_{anion}^- = ionic conductivity of anion.

Applications

(i) To find the molar conductivity of weak electrolyte.

Molar conductivity of weak electrolyte



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cannot be determined by simple methods to determine conductivity. But it can be easily calculated with the help of Kohlrausch law.

Ex: - To find the molar conductivity of acetic acid. (CH_3COOH)

We know that

$$\Lambda_{CH_3COOH}^\infty = \cancel{d_{CH_3COO^-}} + \cancel{d_{H^+}} \quad \text{--- (I)}$$

Now

$$\Lambda_{CH_3COONa}^\infty = d_{CH_3COO^-} + d_{Na^+} \quad \text{--- (II)}$$

$$\Lambda_{NaCl}^\infty = d_{Na^+} + d_{Cl^-} \quad \text{--- (III)}$$

$$\Lambda_{HCl}^\infty = d_{H^+} + d_{Cl^-} \quad \text{--- (IV)}$$

$$(II) + (IV) - (III)$$

$$= \cancel{d_{CH_3COO^-}} + \cancel{d_{Na^+}} + d_{H^+} + d_{Cl^-} - \cancel{d_{Na^+}} - \cancel{d_{Cl^-}}$$

$$= d_{CH_3COO^-} + d_{H^+}$$

$$= \Lambda_{CH_3COOH}^\infty$$

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$$\boxed{\quad} + \boxed{\quad} = \boxed{\quad}$$

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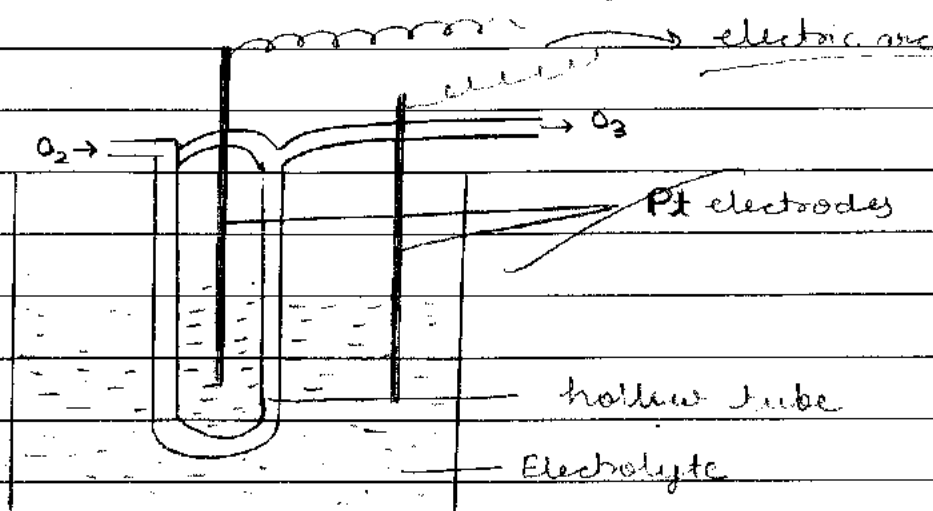
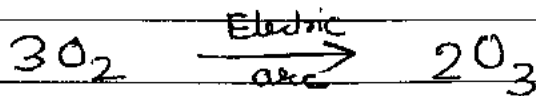


Question No - 19.

Brodie's ozonizer :-

It is a device which convert the oxygen to ozone. It is the laboratory method to prepare ozone.

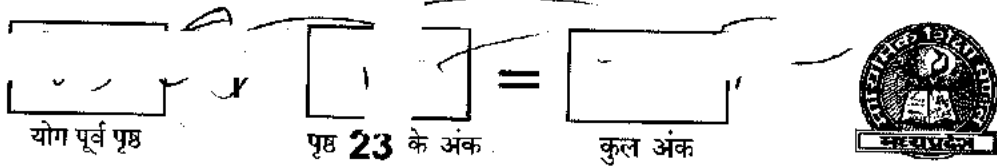
The principal equation is



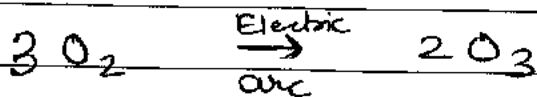
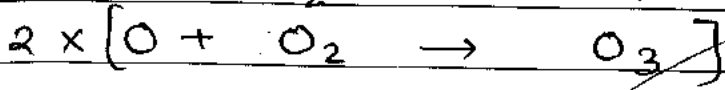
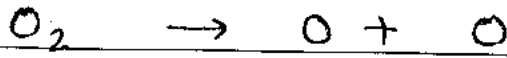
It consists of a hollow shaped tube which consists of air.

It is surrounded by an electrolyte (H_2SO_4) from both sides. One platinum rod is dipped inside and one is outside the tube.

(23)



Through this tube electric arcing is given. The oxygen due to the electric arc gets dissociate and then combine with another oxygen molecule to form ozone. Hence from the outer tube, ozonoid oxygen comes.



Hence this is the ozonizer given by scientist Brodie to prepare ozone.

Question No - 20

Charak :- Charak ^{was} is the son of a sage. He had spent his whole life in caring for the suffering of the other. He travelled from one village to other village to remove the suffering of the people. He was known to many peoples of the

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country. He was known as the father of ancient surgery. He was able to cure others by his own made medicines by the uses of many medicinal plants. He studied and preached in ancient vishwa-vidyalayas of the country. He was able to cure many diseases and could perform many operations.

He has given his own principles ⁱⁿ ~~of~~ medical ~~or~~ science known as Charak Samhita and could predict accurately about the genetic order.

(ii) Nalanda Vishwa Vidyalaya :-

One of the ancient vidyalaya of the India. It is situated near Bihar. It was famous all over the world. Students from many countries come here to learn various fields. This vidyalaya was famous for the teachings such as grammar, surgery, archery, etc. Many acharya used to teach there. Nagarjuna also belong to this vishwavidyalaya. It was known for a large library which was later burnt by a criminal. We can say it was the ancient best place for studying and teaching.

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