



ADITYA PHARMACY COLLEGE

(An Autonomous Institution)

Approved by PCI Permanently, Affiliated to JNTUK, Recognized by UGC (Sections 2f)

ISO 9001 : 2015 Certified Institution, Accredited by NAAC with "A" Grade.

301865 Aditya Nagar, ADB Road, Surampalem - 533 437, Kakinada District, A.P.

Sl. No.:

PART - I



Program : Pharmacy.

Hall Ticket No.: 23361R0002.

Name : Ainaaparthi Syvalini

Examination : II Semester.

Month-Year : Feb- 2025

Branch : B. Pharmacy.

Course Code : BP301T

Course Name : Ph. organic Chemistry.

Date of Exam : 24/02/25.

G. Saidevi

Signature of the Controller of Examinations

Ashwathini
24/2/25

Signature of the Student with date

MS
24/2/25

Signature of the Invigilator with date

Serial No.
Last Page Written

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INSTRUCTIONS TO STUDENTS

1. The Answer Booklet contains 36 pages Ensure all the 36 pages are in proper order.
2. Student must verify the details of particulars in the PART - 1 i.e Name, Hall Ticket No., Examination, Course Name etc.,
3. In case of any deviation in the above or if the PART - 1 is torn / damaged, report to the invigilator and return the damaged booklet .
4. You are prohibited from writing on or tampering the PART-1 except affixing the signature and serial number of last page written in the space provided.
5. Student is prohibited from:
 - i. Writing their Hall Ticket No. and name in any part of the answer booklet.
 - ii. Addressing the examiner in any manner whatsoever in the answer booklet. If they do so, their script will not be valued.
 - iii. Writing religious symbols.
 - iv. Either seeking or providing any assistance to the fellow students in the examinations.
 - v. Possessing a manuscript or a printed matter, in any form, in the examination hall.
 - vi. Bringing Mobile Phones / Cameras / Bluetooth Devices / Programmable calculators etc.
 - vii. Violation of the above mentioned instructions will be viewed as a case of malpractice, which is punishable offence.
6. Before beginning to answer any question, the students should write the correct number of that question in the margin provided. Answers written at different places for the same question will not be valued.
7. Students should write the answers, within the margins provided on both sides of the paper and on all the lines of each page. It is not necessary to begin each answer in a fresh page. Answers must be legibly written with blue or black pen.
8. Do not write anything except Question Number in the margin.
9. No loose sheets of papers will be allowed in the examination hall. No paper must be detached from or attached to the answer booklet except graph sheet.
10. Strike off all unused pages.
11. NO ADDITIONAL ANSWER BOOKLETS/SHEETS WILL BE SUPPLIED.



SPACE FOR ROUGH WORK



02

Part-II

23. Baeyer's strain theory.

In the year 1891 the scientist Adolf von Baeyer who proposed the strain theory.

Where this theory will tell about the carbon has 4 valency. When they 4 carbon all moves toward the corners. Where they are tetrahedral where the angle of the carbon is 109.28°.

There is a compression of the internal angle by the formation of the angle it is known as internal strain.

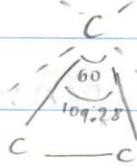
They is used by the formula of the angle it is calculated then it would be the result of angle of strain.

$$\alpha = \frac{1}{2} (109.28^\circ - a)$$

where a = angle of strain

He tells about the cycloalkenes are about cyclopropane, Cyclobutane & cyclopentane.

cyclopropane



* The tetrahedral angle of cyclopropane is 109.28°

* The compression occurred in the cyclopropane to the 60°

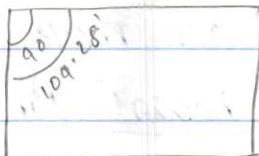
* Then the angled is pulled by the angle of strain is 24.64°

* It is the less stable to take the protom.



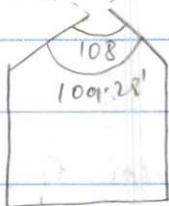
$$\begin{aligned} d &= \frac{1}{2}(109.28' - a) \\ d &= \frac{1}{2}(109.28 - 60) \\ &= 24.64^\circ \end{aligned}$$

Cyclobutane



$$\begin{aligned} d &= \frac{1}{2}(109.28' - a) \\ d &= \frac{1}{2}(109.28 - 90) \\ &= 9.64^\circ \end{aligned}$$

- * The tetrahedral angle of the cyclobutane is 109.28'
 - * The compression of the internal angle is 90°.
 - * The angle is pulled to the angle of strain is 9.64°
 - * It has the same little stable when compare to the cyclopropane.
- cyclopentane.



$$\begin{aligned} d &= \frac{1}{2}(109.28' - a) \\ d &= \frac{1}{2}(109.28' - 108) \\ &= 0.64^\circ \end{aligned}$$

- * The tetrahedral angle of the cyclopentane is 109.28'
- * The compression of the internal angle is 108°.
- * The angle is pulled to be 0.64°



Melvin

This theory clearly tells about the cycloalkenes.

- * The cyclopropane is a less stable so it is easy to remove the protons.
- * The cyclobutene is some stable so it will able to remove when the time of the experiments.
- * The cyclopentene is difficult to remove the protons it is more stable.

Limitation

The cyclopropane are more widely stable when compare to the all.

They doesn't discussed about the cyclohexene, & cyclo homologus.

He didn't proposed the other homologus alkenes theory.

~~Varony~~

~~Acidity~~ ~~phenols~~

The phenols are the very important organic compounds.

They are generally colourless crystal compound. They are also known as the derivatives of benzene.

They have boiling point 111°

The phenols are very not strong acids the one are the weak acid.

These are stronger then the alcohol & they are weaker then the carbocyclic acids.



They are the 4 type of the reactions that are used in the acidity of the phenols.

* Haloarenes

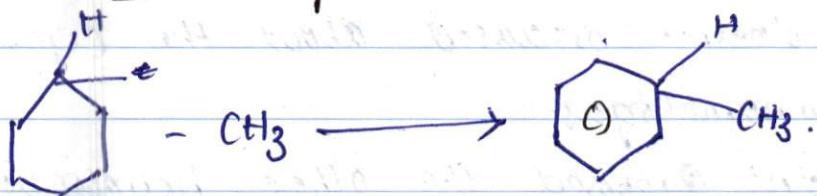
Chlorides

21. Electrophilic Substitution reaction

The electrophilic substitution reaction where the electrophilic are undergoes reaction to form $\text{ENu} + \text{catalyst} \rightarrow \text{E}^+ \text{Nu}^- \text{ catalyst}$.



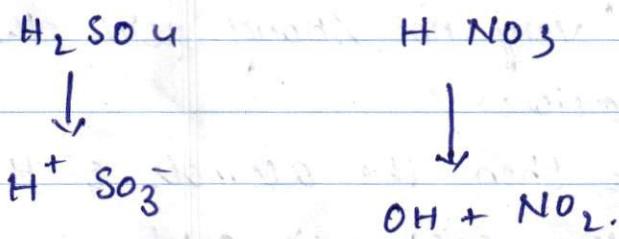
Formation of electrophile



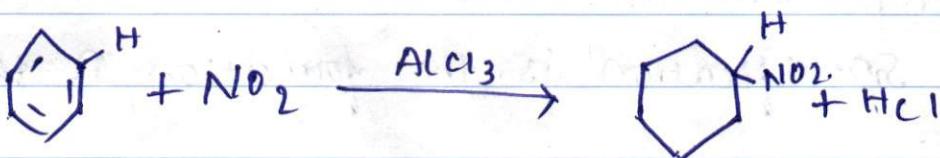
Formation of carbocation

Nitration

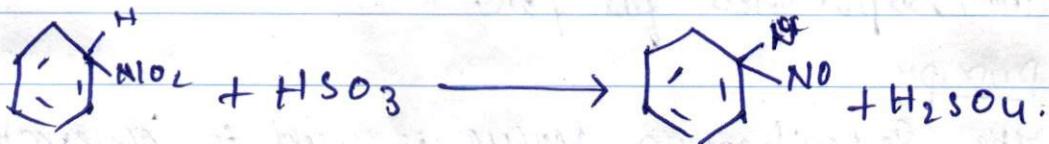
When the Nitrogen is reacted with the Nitric mixture ($\text{H}_2\text{SO}_4 \& \text{HNO}_3$) their by the formation of the nitrobenzen.



formation of electrophile.



formation of carbocation.



Remain

* Saponification

Sulphonation

The Sulphur is reacted with the sulphuric acid in the presence of sulphuric acid to form the Sulphurbenzene.

* Friedel-Craft Alkylation.

They are the involved in the Alkylation.

of the aromatic ring attached to that ~~also~~ & reacted with AlCl_3 & react.



Part: II24. Saponification.

The saponification is the formation of the soap.

The saponification value is used to determine the saponified fat/oil.

principle

The Saponification value is used to determine the No. of milligram of KOH is required to saponify 1 gram of oil/fat.
It used to prepare the formation of the soap.

$$\text{Saponification value} = \frac{28.9(B-A)}{w}$$

Where: B = Blank solution.

A = Sample solution.

w = weight of the sample.

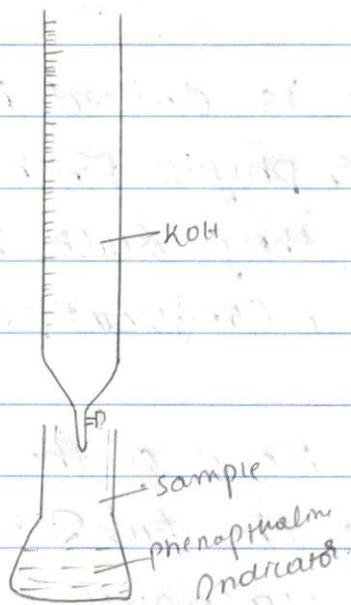
Take the required amount of the sample & then add the excess amount of the KOH in the conical flask now.

Add the phenolphthalein indicator to the conical flask.

Now titrate it against with the KOH that is taken in the burette.

Then note down the value that was noted.





Significance

The Saponification value is used to determine the saponification of the oil.

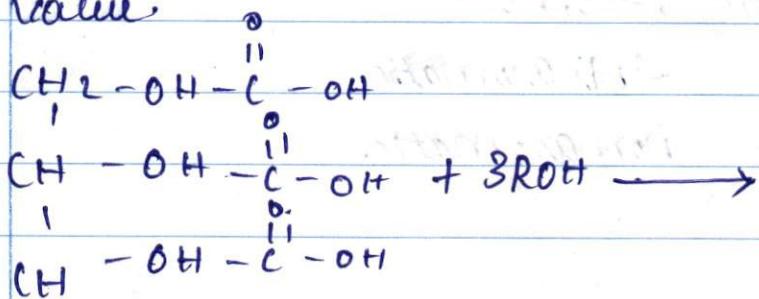
Which oil contains the fatty acids they are been used to saponify.

The saponification is generally for formation of the Soap.

They are generally done by the two methods the one is Sample by using the sample

The another method is blank method where they are cured for the saponification value

The value which is noted by the given formula that value is known as saponification value.



26 Huckel's Rule

The huckel rule is derived by the scientist German chemist & physics Erich huckel. He discovered that they rule which are about the planar conjugation of the compound.

He said that the bond of the carbon that would be having the $4n \pi$ bonds. They are general valency of the bond. Where which have been given by the by the calculating the equal value of the numbers they are generally used to obey the the $4n$ types of the rules.

- The compound should be planar.
- The compound should be conjugated.
- The compound should be follow the huckel rule.
- The compound should have $4n \pi$ bond where

The compound are generally in plane & they are conjugated.

They been the Aromatic

Anti aromatic

non aromatic.



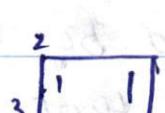
Planar

- ① $=, -, =$
- ② $=, -, +ve$
- ③ $=, -, -ve$
- ④ $=, -, ..$

conjugation



Conjugated
cyclic.



Conjugated
cyclic.



Conjugated
cyclic.



Conjugated
cyclic.

Now:

$$\Theta 4n^2 \pi.$$

$$4(2) \times 2$$

$$4(2) = 8.$$

$$4(2)^2 = 6, 10, 14, 18, 22.$$

These are aromatic & anti aromatic.

$$4n^2 \pi.$$

$$4(2) 1$$

$$= 2, 4, 8, 12,$$

These are non aromatic.



Aromatic

Cyclic.



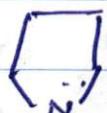
Aromatic

Cyclic



Non aromatic

Non cyclic



Non aromatic

Non cyclic



28. Rancidity

The rancidity is known as when oil or any substance that is exposed to the air or the microorganism it will get the change in the taste & in the smell in the smell.

They is generally occurred by the air or by the microorganisms that are present in the air will cause the rancidity of the oil/fat that are produced by the fatty acids.

Oxidation

When the fat/oil that is left in the air it will definitely has the different change in the taste or in the smell of the product which is very danger to consume it will be very harmful for the health.

They are various type of the different changes.

They by the cause the different problem that be

Ex:

fatty acids

When the oil/fats that left in the air the microorganism which present in the air which caused the rancidity.



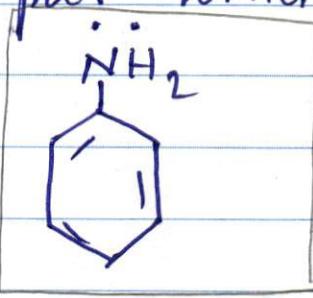
where they will spoil the product from the normal state of the condition if it would be different form of the condition it will be generally used for the deficit to the substance to get it back into the normal condition.

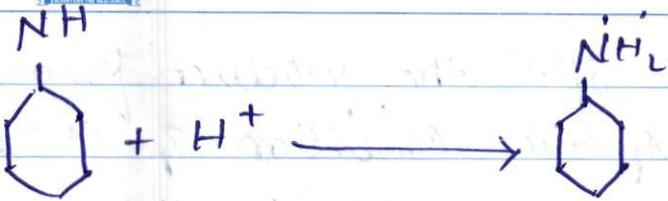
e.g.: When the butter is left out side for the long hours the butyric acid is released from the butter & it will have the change in the taste and the smell of the butter thus by it having the bad taste & the bad smell. bad smell of the butter.

24. Basicity of amines.

The amines are the basic in nature. they are not. Basicity is depend because the amines of Basicity is depends upon the lone pair of electrons the present on the top of amine.

The amine are the derivatives of the ammonia. where they are they by they are having the lone pair which will helps in.

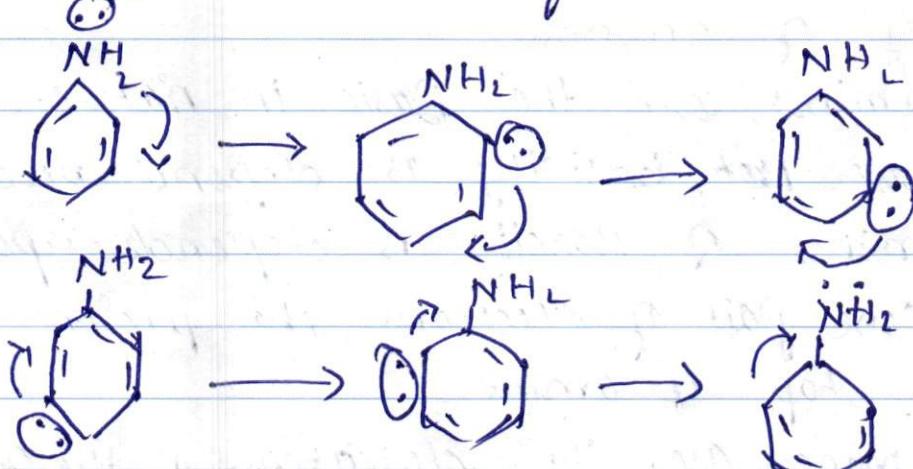




There is the resonance of the lone pair of the electrons will happen due to the delocalizing of the electrons the lone pair will be delocalised for the stability of the electrons.

The lone pairs will be generally used to donate their pair from the form of the resonance of the

they by the shifting of lone pair from form to another form.

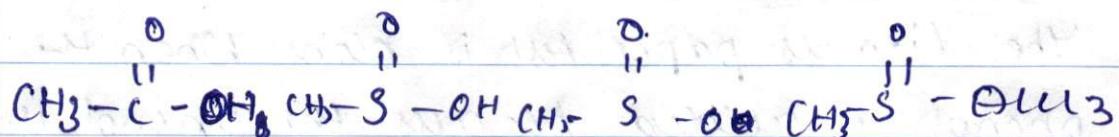
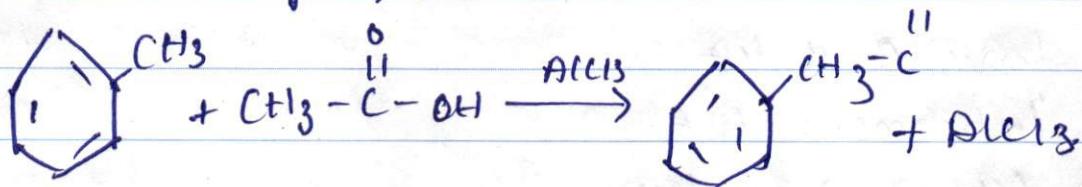


The resonance is happening due to the delocalizing the lone pair of electrons.

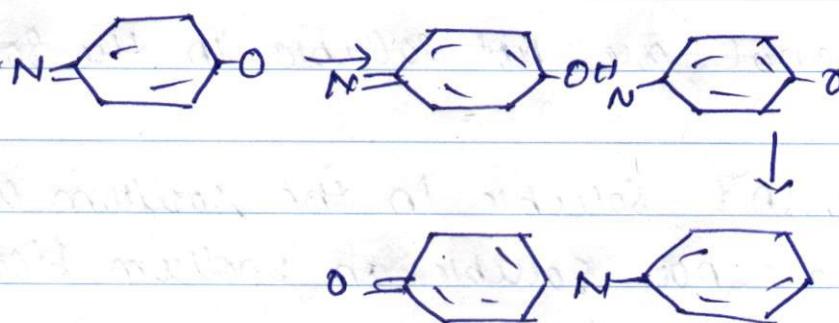


(30)

They Friedel-Crafts acylation is involved in the acyl group where it is attached to the aromatic ring by the AlCl_3 .



The formation of carbocation cation is would be occurred.



Then by the used for the acylation of the benzene

they are the α mechanism they are use for the acylation

It would be used furtherly for the given formula of the acylation



(3) Qualitative Test

Litmus paper test

Solubility test.

Bromine water test.

Ferric acid test

Liebermann's test.

→ Litmus paper test

The Litmus paper test is done when the phenol is added because the Phenol is acidic the blue Litmus turns into red litmus

→ Solubility

The Phenol are not soluble in the Sodium Chloride.

They doesn't soluble in the sodium carbonate & they are not soluble in Sodium bicarbonate

→ ferric acid test

When the Phenol soln is add to the ferric acid it will give the dark color where the color is in the darker lik.

Red, blue, green colors are observed.

The acidic nature will change.



Liebermann test

It is test where Phenol is added to H_2SO_4 & HNO_3 it will gives the yellow.

Quinine monoxide colour the it add Supher the $AgNO_3$ it will gives the iodide colour peroxide then the formation of the Phenol.

Bromin water

When the bromin water is added to the phenol the white precipitate is form the Phenol oxide is formed.

22. Acidity of phenols

The Phenols are very important organic compound they are colourless they are crystal

They are stronger than alcohol & they are weaker the carboxylic acids.

They are the strong acid & the one weak acid.

The acidity of the Phenol can may be depend up on the methods & the reaction of the Phenol that been chemical reactions & the chemical methods that are given by the Phenol they are used on some antibiotics of the chem.

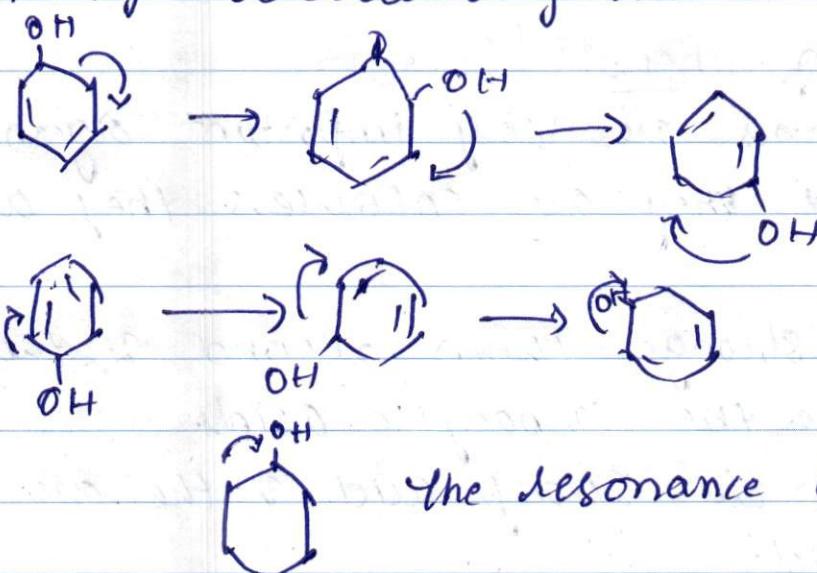


Effect of substituent on acidity of phenol.

They are the 2 types of the effects they are generally with drawing & the resonance with drawing.

When they have phenol has with drawing of the bonds then they will has increases the positive charge then it is possible to have the proton with drawing resonance.

The resonance of the phenol whereby the changing of the bond by the one by one by decreasing the.



The resonance of the Phenol

~~more~~ Phenols more acidic than Alcohols.

The Phenols are acid than alcohols because these Phenols are used as the antiseptic, antibacterial. The alcohol are has less acidic than the phenol they are generally used for the different variation of the possibility.





They are generally used for the phenol. Compound has high acidic pH.

When the alcohol they having the low acidic pH they by the increasing of the acidic which makes the alcohol having the high pH & they are more stable than the alcohol.

They are more powerful the alcohol.

The phenol are acidified the alcoholic drugs they are able give the correct form.

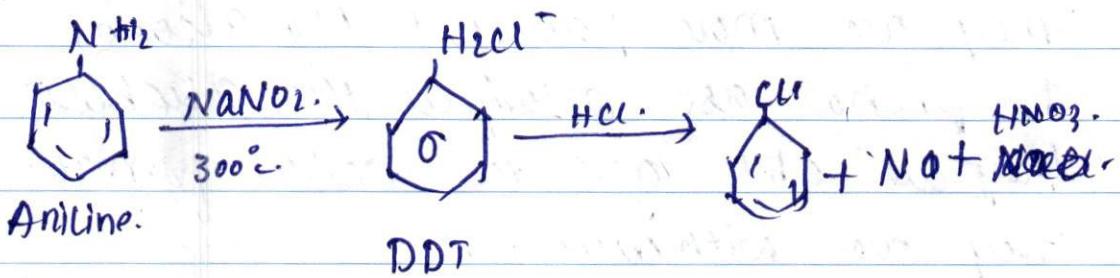
They are with dianions
& Odonates

Odonate the protons & they will draw the protons from the given form.



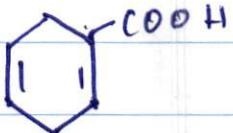
12. Iodine value.

- The Iodine value is used to NO of milligram of the iodine is required for the neutralization of the fat or oil.
- It is the degree of unsaturation of compound.

14. Diazonium salt

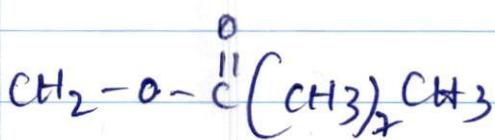
When aniline is treated with NaNO_2 with the high heat then it give DDT then it is treated with HNO_3 .

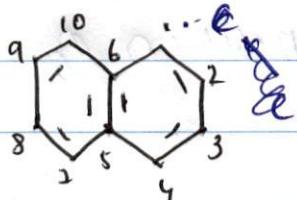
(13)



The Saccharin it is used as dye it is used for in the pharmaceutical industry for the medicines.

(15)



(12) Danthracene.Resorcinol(20) Acid value

The acid value the no of mill grams of the KOH is required for the neutralized the 1gram of oil / fat.

$$\text{Acid value} = \frac{56.1 \times N \times V}{W}$$

1 B

2 D

3 B

4 A

5 A

6 B

7 B

8 C

9 A

10 A



(16) Para effect:

The para effect is the effect which by the carbon present at the para position of the benzene.

Eg:



(18) Sandmeyer's reaction:

These is the reaction which is used to determine the cycloalkens.

(11) Aromaticity.

It is the compound which are attached to the aromatic ring of the benzene it is called as aromaticity.

Eg: cyclic & conjugated benzene.



Q.No.



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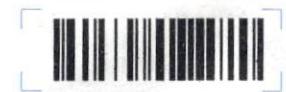
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