JANTA SHIKSHAN SANSTH'S

KISAN VEER MAHAVIDYALAYA ,WAI

Department of Chemistry

Number of students undertaking project work 2023-24

Core Course Practical in Chemistry-VI

B.Sc. III

Sr.No	Roll No.	Name	Name of Project
1	2	GOLE SANIKA RAJENRDA	Estimation of sucrose from sugar cane
2	3	JADHAV PRANAY SANTOSH.	estimation of sugar cane sucrose
3	4	NIKAM ANISHA NIVAS	estimation of sugarcane sucrose.
4	5	JAGTAP SAKSHI ARVIND	estimation of sucrose in sugarcane.
5	6	SHINDE SAKSHI PRAKASH	estimation of sucrose in sugarcane
6	7	JAGTAP RUTURAJ VIJAY	Estimation of sugar cane.
7	8	JAGTAP SHUBHAM SHRIKANT	Preparation of paint pigment
8	9	JEDHE SAHIL BHANUDAS	Preparation of paint pigment
9	10	BHOSALE VINAY RAVINDRA	Analysis of Acidity in tea leaves powder.
10	19	NIMBALKAR NEHA JALINDAR	Preparation of paint pigment.
11	20	BABAR SNEHA SANJAY	Preparation of paint pigment
12	21	PISAL DHAIRYASHEEL SANJAY	
13	22	BABAR SANJIVANI HEMANTKUMAR	Preparation of paint pigment.
14	23	BHOSALE KIRAN SURESH	Pineapple Juice as a natural catalyst
15	24	YADAV SOJAL PRAMOD	Pineapple juice as a natural catalyst
16	25	MAHANGADE GANESH DHARMAJI	Pineapple Juice as a natural catalyst.
17	26	GURAV OMKAR VIJAY	Pineapple Juice as a natural Catalyst
18	27	BAGADE DEEPAK DINKAR	Pineapple Juices as a Natural catalyst

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19	28	JADHAV PRATIKSHA SADASHIV	electrophilic aromatic substitution acetaldehyde and aniline
20	29	PAWAR SUPRIYA ARVIND	Electrophilic aromatic substitution reaction of acetanilide and aniline
21	30	KADAM AISHWARYA SANJAY	
22	31	KARANDE ANIKET RAVINDRA	pineapple juice as neutural catalyst
23	34	PHARANDE NIKHIL RAMESH	
24	36	MANDHARE HEMANT SHASHIKANT	Electrophilic Aromatic Substitution of Acetanilide & Aniline
25	37	DHUMAL ATHARV RAVINDRA	Analysis of face powder
26	38	DAGADE SUHAS RAMESH	
27	39	GAIKWAD SHRIKANT NITIN	Analysis of face Powder
28	41	CHAVAN SAI VIJAY	Analysis of face powder
29	42	JAYKAR SATYAM SATISH	Analysis of face powder
30	43	SHINDE NIKITA PRAMOD	Analysis of face powder
31	44	KOLI NIKITA SHRIKANT	AZO dye Synthesis
32	45	INGALE VINIT JITENDRA	"AZO dye synthesis"
33	46	JADHAV PRANALI BALKRUSHNA	AZO dye synthesis
34	47	JAYKAR AYUSH KIRAN	"AZO dye synthesis"
35	50	KADAM ABHISHEK SANJAY	"AZO dye Synthesis"
36	51	KUMBHAR AVISHKAR HANMANT	"AZO dye Synthesis
37	52	SAYYED ANIS SALIM	The Quantity of casein in Different sample of milk.
38	55	PISAL ATHARV DHANANJAY	Quantity of casein in Different sample of MILK
39	56	SHINDE PRASAD PRAKASH	Quantity of casein Different sampel milk
40	57	GIRI DIKSHA DATTATRAY	Quantity of casein in Different Sample.
41	58	GHADGE REVATI RAJARAM	Casein in Deffeont Sample of milk
42	60	ADSUL PRATHAMESH SUNIL	The Quantity of casein in Different sample of milk
43	61	JADHAV SNEHAL MAHENDRA	Determination of lactic acid from the milk

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44	62	WADKAR MANASI GANESH	Determination of lactic acid from the milk.
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48	71	KADAM SAHIL KONDIRAM	Lactic Acid of milk
49	72	BHOSALE PRASAD RAJENDRA	To compare Neutralizing Power of different comerical Anatacids.
50	73	JADHAV MRUNALI RAJENDRA	
51	79	JADHAV PRATHMESH NAVNATH	To compare Neutralizing Power of different commerical Antacids.
52	80	JADHAV SHREYAS ANIL	To compare Neutralizing Power of different commerical Aantacids.
53	81	JADHAV KEDAR UMESH	To compare Neutralizing Powers of Different Commercial Antacids
54	85	PISAL SAI KRUSHNA	To compare Neutralizing Powder of Different commercial Antacid
55	90	YADAV RUSHIKESH SANJAY	Analysis of Acidity in tea leaves
56	91	TARADE TEJAS TANAJI	Analysis of Acidity in tea leaves Powder
57	92	BHOSALE SAURABH UTTAM	Analysis of Acidity in tea leaves Powder
58	96	JADHAV SAKSHI SUNIL	Analysis of Acidity in tea leaves powder
59	97	SAYYAD NASIR JAKIR	
60	98	PAWAR PRATIK PRAKASH	Analysis of Acidity in tea leaves
61	99	JADHAV PRANAV RAVINDRA	Analyesis of Honey
62	101	JAWALE VAIBHAVI SANTOSH	
63	102	BHOITE PRATIK INDRAJIT	Water Analysis
64	133	SHINDE RAJRATNA RAMDAS	Water Analysis.
65	134	JADHAV SAHIL SANDEEP	Preparation of Paint Pigament
66	135	JADHAV ATHARV SANTOSH	Preparation of Paint Pigment

Head
Department Of Chemistry
Kisan Veer Mahavidyalaya, Wai

DEPARTMENT OF CHEMISTRY

Certificate

This is Certify to that, following candidates,***Miss.Snehal Mahendra Jadhav, Miss. Manasi Ganesh Wadkar, .Mr.Pritam Bharat Jangam, .Mr. Nikhil Pandurang Bhosale., Mr.Siddharth Pradip Sonawale, Mr. Sahil Kondiram Kadam*** ,of B.Sc.-III have successfully completed the project work entitled ***"Determination of lactic Acid in Sample of Milk"*** in practical fulfillment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024.

Date:

Place: Wai

Guide

MISS. N.S.Surve

Examiner

J.S.SANSTHA'S WAI Dist.Satara KISANVEER MAHAVIDYALAYA

Head

Department of Chemistry

Prof. (Dr) D.N.Zambare

Kisan Veer Mahavidyalaya, Wai

Dist. - Satara

DEPARTMENT OF CHEMISTRY

Certificate

This is Certify to that, following candidates, Mr. Ganesh Dharmaji Mahangade, Mr. Aniket Ravindra Karande, Mr. Omkar Vijay Gurav, Mr. Sojal Pramod Yadav, Mr. Deepak Dinkar Bagade. and Mr. Kiran Suresh Bhosale. of B.Sc.-III have successfully completed the project work entitled "pineapple juice as a natural Catalyst" 'An Excellent Catalyst for Biginelli Reaction' in practical fulfilment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024.

Date: 21/2/2024

Place: Wai

Guide

Miss. Pooja S. Jaigude

Examiner

Head

Department of Chemistry

CERTIFICATE

This is to Certify that the following candidates Miss. Koli Nikita Shrikant, Mr. Vinit Jitendra Ingale, Miss. Jadhav Pranali Balkrushna ,Mr. Jaykar Ayush Kiran , Mr. Kadam Abhishek Sanjay , Mr. Kumbhar Avishkar Hanmant of B.Sc.-III has successfully completed the project work entitled "**Azo Dye Synthesis**" in practical fulfilment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024.

Kamble 22/02/2024

Project Guide
Miss. R. R. Kamble

Examiner

Head
Department of chemistry
(Prof. (Dr.) D. N. Zambare)

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI

Certificate

This is to certify that Of B.Sc III Shinde Nikita Pramod, Jaykar Satyam Satish , Dumal Atharv Ravindra, Gaikwad Shrikant Nitin , Chavan Sai Vijay has completed the report of the field work on "Analysis of Face Powder" of Environmental Science subject satisfactory under the guidance of Miss Rutuja Bhoite. During the year 2023-2024 as prescribed by the Shivaji University, Kolhapur.

26/2/24

Name of Guide
Miss. Rutuja Bhoite

J.S. SANSTHA'S WAI Dist.Satara KISANVEER MAHAVIDYALAYA

Head of Department of Chemistry
Prof. Dr. D.N. Zambare

External Examiner

CERTIFICATE

This is to Certify that the following candidates Miss. Gole Sanika Rajendra Mr. Jadhav Pranay Santosh ,Miss. Nikam Anisha Nivas, Miss. Jagtap Sakshi Arvind ,Shinde Sakshi Prakash ,Mr. Jagtap Ruturaj Vijay of B.Sc.-III has successfully completed the project work entitled "Estimation of Sugar Cane" in practical fulfilment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024.

Kamate
22/02/2024

Project Guide
Miss. R. S. Kamate

Examiner

J.S. SANSTHA'S WAI Dist. Satara KISANVEER MAHAVIDYALAYA

Head
Department of chemistry
Prof.(Dr.) D.N.zambare

JANATA SHIKSHAN SANTHA'S

Kisanveer Mahavidyalaya,Wai

Dist-Satara

DEPARTMENT OF CHEMISTARY

Certificate

This is to certify that following candidates Miss. Jadhav Pratiksha Sadashiv, Miss. Pawar Supriya Arvind, Mr. Mandhare Hemant Shashikant of BSC-III has successfully completed the project work entitled " ELECTROPHILIC AROMATIC SUBSTITUION OF ACETANILIDE AND ANILINE'' in practical fulfillment of the award of master of chemistry as laid down by the Shivaji University Kolhapur during the academic year 2023-24.

22/02/24

Miss. P.S. Bhosale

Department Of Chemistry

Prof. (Dr.) D.N. Zambre

Head Of Department Of Chemistry

External Examiner

Shivaji University. Kolhapur

KISANVEER MAHAVIDYALAYA * J.S.S. SANSTHA'S WAI Dist. Satara

JANATA SHIKSHAN SANTHA'S

Kisanveer Mahavidyalaya, Wai

Dist-Satara

DEPARTMENT OF CHEMISTARY

Certificate

This is to certify that following candidates Mr. Shinde Prasad Prakash, Pisal Atharv Dhananjay, Giri Diksha Dattatray, Ghadge Revati Rajaram, Anish Sayyad of BSC-III has successfully completed the project work entited **"TO STUDY OF THE QUANTIITY OF CASEIN IN DIFFERENT SAMPLE OF MILK"** in Practical fulfilment of the award of master of chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024

26/2/2024

Miss A. S. Sankpal
Department of chemistry

Prof. (Dr) D. N. Zambre
Head of Department Of Chemistry

External Examiner

J.S. SANSTHA'S WAI Dist. Satara KISAN VEER MAHAVIDYALAYA

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA WAI

CERTIFICATE

This is to certify that. **Prasad Rajendra Bhosale, Sai Krushan Pisal, Prathamesh Navnatha Jadhav, Kedar Umesh Jadhav, Shreyas Anil Jadhav.** has successfully completed the project work on **"To Compare Neutralizing Powers of Different Commercial Antacids"** which is submitted here with as a partial fulfillment for the award of Degree of Bachelor of Science in Chemistry, **Shivaji University Kolhapur**. This project is to the result of original work completed under my guidance and to the best of my knowledge and belief the work embodied in this report has not formed earlier for the basis of any degree on similar title of this or any other university on examining.

Miss A.B. Gadhave
Project Guide

Prof. Dr. D.N.Zambare
Head Of Department

J.S. SANSTHA'S WAI Dist. Satara KISANVEER MAHAVIDYALAYA

KISAN VEER MAHAVIDYALAYA, WAI

CERTIFICATE

DEPARTMENT OF CHEMISTRY

This is to certify that Of **B.SC. III Bhoite Pratik Indrajit, Shinde Rajratna Ramdas** has completed the report of the field work on "**Water Analysis**" of Chemistry subject satisfactory under the guidance of **Dr. S.B.Wategaonkar.** During the year **2023-2024** as prescribed by the Shivaji University, Kolhapur.

For

Teacher In charge

Dr. S.B. Wategaonkar

Department of Chemistry

Prof. (Dr.) D.N.Zambare

External Examiner

Shivaji University Kolhapur

J. S. SANSTHA'S KISAN VEER MAHAVIDYALAYA WAI Dist. Satara

JANATA SHIKSHAN SANSTHA'S

KISAN VEER MAHAVIDYALAYA, WAI

DEPARTMENT OF CHEMISTRY

A

Project Report

On

"ESTIMATION OF SUGAR CANE"

Submitted To

SHIVAJI UNIVERSITY KOLHAPUR,

IN THE PRACTICAL FULFILMENT OF

BACHELOR OF SCIENCE

IN

CHEMISTRY

BY

Miss. Gole Sanika Rajendra

Mr. Jadhav Pranay Santosh

Miss. Nikam Anisha Nivas

Miss. Jagtap Sakshi Arvind

Miss. Shinde Sakshi Prakash

Mr. Jagtap Ruturaj Vijay

UNDER THE GUIDANCE OF

Miss. R. S. Kamate

2023-2024

CERTIFICATE

This is to Certify that the following candidates Miss. Gole Sanika Rajendra Mr. Jadhav Pranay Santosh ,Miss. Nikam Anisha Nivas, Miss. Jagtap Sakshi Arvind ,Shinde Sakshi Prakash ,Mr. Jagtap Ruturaj Vijay of B.Sc.-III has successfully completed the project work entitled "Estimation of Sugar Cane" in practical fulfilment of the award of Bachelor of Chemistry as laid down by the Shivaji University, Kolhapur during the academic year 2023-2024.

22/02/2024

Project Guide
Miss. R. S. Kamate

Examiner

J.S.SANSTHA'S WAI Dist.Satara KISANVEER MAHAVIDYALAYA

Head
Department of chemistry
Prof.(Dr.) D.N.zambare

ACKNOWLEDGEMENT

We wish to express our deep sense of gratitude to **Miss. R. S. Kamate** for valuable suggestions, guidance, aids and inspiration received from her throughout the work. Her enthusiasm and optimism of science is an invaluable source of inspiration for us. It was great pleasure and privilege to study under her mentorship.

Wish to record my thanks to the Honorable Principal **Dr. G. J. Fagare** for providing all required facilities from time to time.

We are also thankful to **Prof. (Dr.) D. N. Zambare,** Head of Chemistry Department for providing necessary departmental facilities & encouraging us for this project. We are also very thankful to our non-teaching staff for their kind of co-operation & help.

We also wish to put on record our sense of gratitude towards our parents who inspired us & looked after everybody at home to let us devotedly pursue the knowledge of Chemistry.

Lastly, we are expressing our sincere thanks to all those who directly or indirectly encouraged & helped us as our well wishers.

Place: Wai

Student Name

Miss. Gole Sanika Rajendra

Mr. Jadhav Pranay Santosh

Miss. Nikam Anisha Nivas

Miss. Jagtap Sakshi Arvind

Miss. Shinde Sakshi Prakash

Mr. Jagtap Ruturaj Vijay

DECLARATION

I hereby declare that the project entitled "Estimation of Sugar Cane" Completed and written by me under the guidance and supervision of Miss.R.S.Kamate has not previously formed the basis for the award of our Degree for any other university or examining body in academic year 2023-2024.

Place: Wai

Date: 22/02/2024.

Sr. No.	Roll.no	Name of Students	Sign
1	02	Gole Sanika Rajendra	
2	03	Jadhav Pranay Santosh	
3	04	Nikam Anisha Nivas	
4	05	Jagtap Sakshi Arvind	
5	06	Shinde Sakshi Prakash	
6	07	Jagtap Ruturaj Vijay	

INDEX

Introduction:-

ORIGIN OF THE CROP

Cultivation of sugarcane in India dates back to the Vedic period The earliest mention of sugarcane cultivation is found in Indian writings of the period 1000 to 1000 B.C. It is now widely accepted that India writings is the original home of saccharum species saccharum barberry and Polynesian group of island especially New Guinea is the centre of origin of S offrcinarum. It belongs to family Gramineae (Pinaceae), class monocotyledons and order glomalean sub family panicoid, tribe Andropogon and sub me saccharine. The cultivated canes belong to two main groups. (a) thin, hardy north Indian types S, barberry and S. Silence and (b) thick. Juicy noble canes saccharum officinarum highly prized cane's S. offcomer.

IMPORTANCE OF SUGARCANE

In agriculture sector, a sugarcane shared is about 7 to 10 of the total value of agriculture output and occupied about 2.6% of Indian's gross cropped area during 2006-07. Sugarcane provides raw materials for the second largest ago based industry after textile.

SCIENCE NAME OF SUGARCANE

The genus saccharum has five important species viz,

1. Saccharum Officinarum
2. S. SineVAnse
3. S. barberi
4. S. robustum
5. S. spontanuem

MORPHOLOGY

MORPHOLOGY OF SUGERCANE

Sugarcane is a tall perennial plant growing erect even up to 5 or 6 meters and produces multiple steps. The plant is composed of four principal parts, root system, stalk, leaves and inflorescence steam is green with red blotches, moderate to heavy bloom scarious border prominent, sheath is splitting occasional clasping, spines present on the middle of the sheath, deciduous. Blade joint or Transverse mark is purplish green; medium; fair bloom; ligules; Medium; Cresson tiform; symmetrical; gradually tapering towards the edges.

The inflorescence of sugarcane generally caused me 'arrow' is an open panicle. It is long (30 centimetre or more) and tapering. Cane is medium thick, slightly staggered, slightly oval in cross section, internal tissue yellow coins purple tinge rind hard, pith present as small cavity Node & buds are slightly depressed, leaf scan slightly inclined buds are medium, piumpy, ovate, occasionally hairs at the tip of me bud noticed, inserted at leaf scan. Sugarcane is a ca plant having efficiency in storing solar energy and most efficient converter of solar energy to sucrose. Sugarcane has essentially four grown phases: -

1. Germination
2. Till ring phase
3. Grand growth phase
4. Maturity and ripening phase

NUTRITIONAL VALUE OF SUGARCANE

The juice sugarcane per serving per serving (28-35 grams) contain energy- 111.13 kg (26-56 kcal), Carbohydrates- 27.51 g, Protein 0.279. Calcium 11.23 mg (1%), Iron 0.37 mg (3%), potassium c 1.96 mg (1%), sodium 17.01 mg (1%).

AREA PRODUCTION, IMPORTMEXPORT

Area production and yield of sugarcane in major growing countries.

Brazil is major sugarcane production of about 717.46 Million ton followed by India sugarcane productivity is highest in Colombia (101.32 t/ha)
followed by Philippines (93.71 1/ha). Amongst 10 major producing country Colombia has the highest yield of sugarcane due to the richest biodiversity's in the world and has access to multiple climates. The yield gap of sugarcane in India with respect to 10 major sugarcane producing countries during the last 5 years is ranges 1.33031.22 1/ha.

Export import status of sugarcane produce: -

Sugarcane as such is neither exported nor imported however the sugar which is a main produce of sugarcane crop is exported and imported as per the government policies. As per cooperative sugar (vol-44 No 4 Dec 2012) the total export of sugar during 2010-11 is 32.49 lakh ton for value Rs-10.35 thousand corer and import are 10.00 lakh ton for value Rs. 2.72 corer during the same year.

Crop distribution

Sugarcane growing countries of the world are lying between the latitude 36.7° north and 31.0° south of the equator extending from tropical to sub-tropical zones. In India sugarcane is cultivated all over the country from latitude 8° N to 33°, except cold hilly areas like Kashmir valley, Himachal Pradesh and Arunachal Pradesh.

CLIMATIC REQUIRMENT

The different critical stages are germination, tillering, early growth active growth and elongation. Optimum temperature for sprouting (germination) of stem cuttings is 32" to 38" It is slows down below 25", reaches plateau between 30"-34" temperatures above 38 reduce the rate of photo synthesis and increase respiration for ripening, however, relatively low temperature in the rage of 12° to 14° are desirable.

Reduction in yield of sugarcane due to rise in temperature

The sugarcane productivity and juice quality are profoundly influenced by weather conditions prevailing during the various crop growth sub periods sugar recovery is highest when the weather is dry with low humidity bright sunshine hours cooler nights with wide dermal variations and very rattle rainfall during ripening period. These conditions flavour high sugar accumulation. The dalmatic conditions like very high temperature of very low temperature deteriorate the juice quality and thus affecting the sugar quality favourable dalmatic like warm and humid climate Favor the insect pest and diseases, which cause much damage to the quailing and yield of its juice and finally sucrose contents.

Recommendation for cultivation of crop in view of climate change. A biotic and biotic stresses.

In the tropical region, sugarcane gets more or less ideal climatic conditions to its growth. It is cultivated with better package of practices and higher irrigation level. The growing season is long with more equitable and favourable conditions floods, water logging, diseases such as red rot, wilt, smut etc. are the main problems for sugarcane cultivation in the region. Moisture stress during the early part of the cane growth mostly during March to June is an important problem. In the coastal are as red rot has become a major threat. Among the pests, early shoot borer, particularly in the late planted corps, and woolly aphid are considerably serious in this region. In subtropical region, the extreme of climate is the characteristic feature. During April to June, the weather is very hot and dry and the temperature touching subzero levels in many places. The major portion of the zone very low temperature in December - January which often causes frost.

Because of extremes of weather, the active sugarcane growth is restricted to 4-5 months only. In eastern U.P. Bihar and west Bengal, sugarcane suffers due to floods and water logging during monsoon months.

Several pests and diseases, particularly red rot and top borer and payroll are common and serious. The cane yield is lower in the sub- tropics due to short growing season, moisture stress, more pest and disease problems, floods and water logging delayed planting after wheat and very poor rations. The management of these stresses will necessitate the development of better cultivation and integrated disease and insect pests' management modules.

PLANING OF SUGARCANE CROP

Method of planting

Sugarcane can be planted by improved of planting like deep furrow system.

Resource conservation technology in sugarcane.

Application of nitrogen fixing and phosphate solubilizing bio-fertilizers were found to reduce the requirement of chemical fertilizers to the extent of 25% Reduction in the close of chemical fertilizers reduces soil degradation Trash mulching of dry leaves, drop irrigation for water saving and mechanization through Roiroon management device (RMD), sugarcane cutter planter trench opener, powder weedier etc. are successfully using for saving for man power as well as time.

Seed Rate

Seed rate in sugarcane varies from region to region. Generally higher seed rate are used in north western India (Punjab, Haryana and Rajasthan) because of the lower germination percent and also adverse climatic condition (very hot weather with desiccating winds) during tillering phase. A northern region seed rate generally varies from 38,000 three budded sets per hectares while in southern region it range between 25,000 to 40,000 three budded sets.

Distance

The row spacing in sub-tropical part is ranges 60-120 cm whereas 90-150 cm in tropical region.

Water management: Application and conservation methods, their water use efficiency, water requirement of crops, critical stages for irrigation and probable losses if not applied.

In tropical area, irrigation is to be given once in 7 days during germination phase (1-35 days after 100 days after planting) and once in 15 days during Maturity phase (271 days after planting up to harvest) adjusting it to the rainfall pattern of the area. About 30 to 40 irrigations are needed where as in sub-tropical area about 7-10 irrigations are being given to the sugarcane crop.

Sugarcane is a high-water requirement crop. About 280 tons of water is needed to produce one tone of sugarcane method like ultimate furrow irrigation, drip irrigation and trash mulching could be of use to economics irrigation water during water scarcity periods. Foliar spraying of a solution containing 2.5% area.

Aim: - To determine the amount of sucrose in the given solution of sugarcane juice.

Chemicals:- 1. Sodium carbonate (solid)

2. Fehling A solution (copper sulphate solution)

3. Fehling B solution (Sodium potassium tartarated solution).

4. Potassium ferrocyanide solution.

5. Methylene blue.

6. I NHCL

Principle:- Sucrose i.e., cane sugar is not a reducing sugar. However when sucrose is hydrolysed by acid, it converts into reading sugar i.e. glucose and fructose. The product of hydrolysis is then titrate against Fehling's solution and the amount of reducing sugar is determined. A known volume of the Fehling solution (blue coloured solution of cupric ions) is reduced to cuprous ions (precipitate as red cuprous oxide) by glucose i.e. reducing sugar solution. The amount of sucrose is then determined from the volume of glucose solution consumed in the reactions.

Procedure:- Procedure contains two parts.

A) Hydrolysis of sugar to inverted sugar: -

1. To the given solution add 5 cm^3 of INHcl solution and heat the flask on water bath for about 30 minutes.
2. Cool the flask at room temperature. Neutralize the solution by adding Solic sodium carbonate till effervesces of carbon dioxide ceases.
3. Dilute the solution to exactly 250 cm^3 using measuring flask. This is inverted to sugar solution which contains glucose and fructose.
4. Fill the burette up to the mark with this inverted solution.

B) Estimation of glucose:-

1. Take 5 cm^3 of Fehling A solution and 5 cm^3 of Fehling B solution in an evaporating dish. To it add about 15 cm^3 of distilled water.
2. Heat the solution till it boils.
3. Titrate it against inverted sugar solution taken in burette.

END POINT:-

End point can be obtained by two methods.

a) External indicator method (potassium terrocyanide solution):- Take a drop of reduced solution on the folded titrate paper strip. Open the fold and add a drop of potassium ferrocyanide solution near it. Disappearance of red tinge at the junction of two drops is the end point.

b) Internal indicator method (methylene blue):- Add a drop of Fehling's solution and titrate this against inverted sugar solution taken in burette.

End point :- Disappearance of blue colour.

Reaction:-

1. $C_{12}H_{22}O_{11} + H_2O \xrightarrow[\text{Hydrolysis}]{HCl} \underset{\text{Glucose}}{C_6H_{12}O_6} + \underset{\text{Fructose}}{C_6H_{12}O_6}$

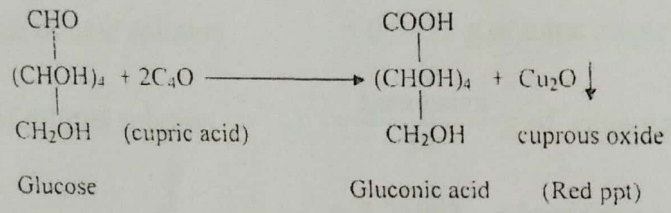
2. $\underset{\text{Glucose}}{\begin{matrix}CHO\\|\\(CHOH)_4\\|\\CH_2OH\end{matrix}} + \underset{\text{(cupric acid)}}{2C_4O} \longrightarrow \underset{\text{Gluconic acid}}{\begin{matrix}COOH\\|\\(CHOH)_4\\|\\CH_2OH\end{matrix}} + \underset{\text{cuprous oxide (Red ppt)}}{Cu_2O\downarrow}$

1) For 86032 variety of Sugarcane

Observation:-

1. Solution in burette : Inverted sugar solution
2. Solution by Pipette : 5 cm^3 of Fehling A- 5 cm' of Fehling B
3. Indicators : External potassium ferrocyanide solution.
   Internal me Mylene blue.
4. End point : External Indicator Disappearance of red tinge at the junction of two drops.
   : Internal Indicator Disappearance of blue color.

5. Reaction :



Observation Table :

Reading	Burette reading in cm^3			Constant burette reading in cm^3
	1	2	3	
Finial Intial	3.2	3.2	3.2	
Difference	0.0	0.0	0.0	3.2 cm^3
	3.2	3.2	3.2	

Calculation :-

1cm3 of Fehling solution = 0.00275 g of cane sugar

10cm3 of Fehling solution = 0.0475g of cane sugar

Suppose 'V' cm3 is burette reading Then,

Now, as 10 cm^3 fehling solution = 'V' cm^3 of reducing sugar

i.e. 3.2 cm^3 of diluted solution = 0.0475 g of cane sugar

$\therefore$ 250 cm^3 of diluted solution $= \frac{250 \times 0.0475}{3.2}$ g of cane sugar

= 3.71093 g of cane sugar

Calculation of % of sugar in sugar cane

25 ml juice = 3.71093 gms

$\therefore$ 100ml juice = 14.8%

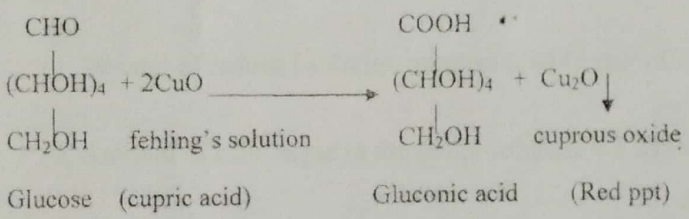
Results:-

1. 10 cm3 of reduced solution requires 3.2 cm^3 of sugar hydrolyzed sugar.
2. Amount of cane sugar in the given solution = 3.71093 g ('W' gm)
   =3.7109 kg
3. Percentage = 14.8%

2) For 265 variety of sugarcane

Observation:-

1. Solution in burette : Inverted sugar solution
2. Solution by pipette : 5cm3 of Fehling A+5 cm3 of Fehling B
3. Indicators : External potassium ferrocyanide solution
   Internal methylene blue.
4. End point : External Indicator Disappearance of red tinge at the junction of two drops.
5. Reaction :



Observation Table :

Reading	Burette reading in cm^3			Constant burette reading in 'V' cm^3
	1	2	3	
Finial Intial	3.6	3.6	3.6	
Difference	0.0	0.0	0.0	3.6 cm^3
	3.6	3.6	3.6	

Calculation:-

$1 cm^3$ Fehling solution = 0.00475 g of cane sugar

$\therefore$ 10 cm^3 of Fehling solution = 0.0475 g of cane sugar

Suppose 'V' cm^3 is burette reading Then ,

Now, as 10 cm^3 fehling solution = 3.6 cm^3 of reducing sugar

i.e. 3.6 cm^3 of diluted solution = 0.0475 g of cane sugar

250 cm^3 of diluted solution = $\frac{250 \times 0.0475}{3.6}$ g of cane sugar

= 3.29861 g of cane sugar

100ml juice = $\frac{3.29861 \times 100}{250}$ = 13.1%

Result :-

1. 10 cm3 of reduced solution requires 0.0475 cm^3 of sugar hydrolysed sugar.

2. Amount of cane sugar in the given solution = 3.29861 g ('W' gm)

=3. 29861 kg

3. Percentage = 13.1%

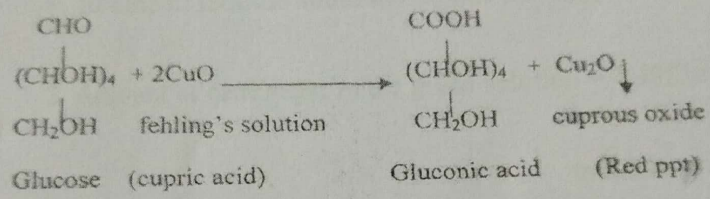
3) For 9805 Variety of Sugarcane

Observation :-

1. Solution in burette : Inverted sugar solution.
2. Solution by pipette ; 5 cm^3 of Fehling A + 5 cm^3 of Fehling B
3. Indicators : External potassium ferrocyanide solution Internal methylene blue.
4. 4. End point : External Indicator Disappearance of red tinge at the junction of two drops.

   Internal Indicator Disappearance of blue colour.

5. **Reaction:**



Observation Table :

Reading	Burette reading in cm^3			Constant burette reading in 'V' cm^3
	1	2	3	
Finial Intial	2.7	2.7	2.7	2.7 cm^3
Difference	0.0	0.0	0.0	
	2.7	2.7	2.7	

Calculation:-

$1 cm^3$ Fehling solution = 0.00475 g of cane sugar

$\therefore$ 10 cm^3 of Fehling solution = 0.0475 g of cane sugar

Suppose 'V' cm^3 is burette reading Then ,

Now, as 10 cm^3 Fehling solution = 2.7 cm^3 of reducing sugar

i.e. 2.7 cm^3 of diluted solution = $\frac{250 \times 0.0475}{2.7}$ g of cane sugar

100ml juice = $\frac{4.39814 \times 100}{250}$ = 17.5%

Result :-

1. 10 cm3 of reduced solution requires 2.7 cm^3 of sugar hydrolysed sugar.

2. Amount of cane sugar in the given solution = 4.39814 g ('W' gm)

   = 4.39814 kg

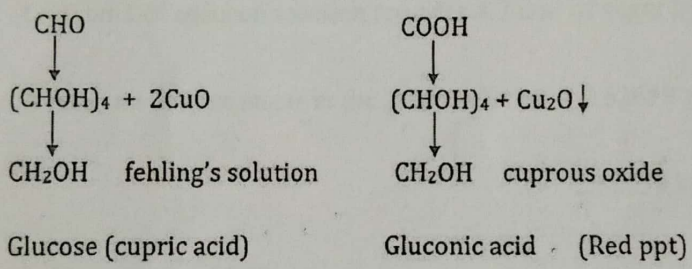
3. Percentage = 17.5%

4) For 716 variety of sugarcane

Observation :-

1) Solution in burette	:	Inverted sugar solution.
2) Solution in Pipette	:	5 cm^3 of fehling A + 5 cm^3 of fehling B
3) Indicators	:	External potassium ferrocyanide solution Internal methlene blue.
4) End point	:	Internal Indicator Dissappearance of blue color.

5) Reacion :



Glucose (cupric acid) Gluconic acid (Red ppt)

Observation Table :

Reading	Burette reading in cm^3			Constant burette reading in 'V' cm^3
	1	2	3	
Finial Intial	4.7	4.7	4.7	
Difference	0.0	0.0	0.0	4.7 cm^3
	4.7	4.7	4.7	

Calculation: -

$1 cm^3$ Fehling solution = 0.00475 g of cane sugar

$\therefore$ 10 cm^3 of Fehling solution = 0.0475 g of cane sugar

Suppose 'V' cm^3 is burette reading Then ,

Now, as 10 cm^3 Fehling solution = 4.7 cm^3 of reducing sugar

i.e. 4.7 cm^3 of diluted solution = $\frac{250 \times 0.0475}{4.7}$ g of cane sugar

100ml juice = $\frac{2.52659 \times 100}{250}$ = 10.1%

Result :-

1. 10 cm3 of reduced solution requires 4.7 cm^3 of sugar hydrolysed sugar.

2. Amount of cane sugar in the given solution = 2.52659 g ('W' gm)

   = 2.52659 kg

3. Percentage = 10.1%

5) For 865 variety of sugarcane

Observation :-

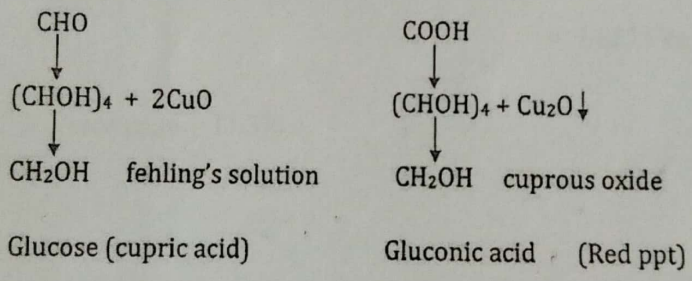
1) Solution in burette : Inverted sugar solution.

2) Solution in Pipette : 5 cm^3 of fehling A + 5 cm^3 of fehling B

3) Indicators : External potassium ferrocyanide solution
Internal methlene blue.

4) End point : Internal Indicator Dissappearance of blue color.

5) Reacion :



Observation Table :

Reading	Burette reading in cm^3			Constant burette reading in 'V' cm^3
	1	2	3	
Finial Intial	4.2	4.2	4.2	
Difference	0.0	0.0	0.0	4.2cm^3
	4.2	4.2	4.2	

Calculation:-

1 cm^3 Fehling solution	=	4.2 g of cane sugar
i.e. 2.7 cm^3 of diluted solution	=	0.0475 g of cane sugar
$\therefore$250 cm^3 of diluted solution	=	$\frac{250 \times 0.0475}{4.2}$ g of cane sugar
	=	2.8276 g of cane sugar

Result :-

1. 10 cm3 of reduced solution requires 4.7 cm^3 of sugar hydrolysed sugar.

2. Amount of cane sugar in the given solution = 2.8273 g ('W' gm)

   = 2.8273 kg

3. Percentage = 11.3%