KALPATARU FIRST GRADE SCIENCE COLLEGE , TIPTUR

QUALITY INDICATOR FRAMEWORK (QIF)

CRITERION-2

2.5.1- ASSIGNMENTS

File Contains a sample of Assignments.

Assignment

ARUN'S®

BLUE BOOK

INTERNAL ASSESSMENT BOOK

Name ....Deeksha N.H.....

Subject.....Physics..... Class...II BSc, IV Sem

Sl.No.	PARTICULARS	Test Date	Page No.	Marks Awarded	Signature of Staff Incharge
1.	TEST - I				
2.	TEST - II				
3.	TEST - III				
4.					
5.					

Certificate

This is to Certify that Smt./Sri ....Deeksha N.H.... has Satisfactorily completed the course of Assignment prescribed by the ....Tumkur.. University for the semester .....III and Sem.. Degree Course in the Year 20...../20.....

MARKS	
MAX	OBTAINED
32	32

Deeksha N.H
Signature of the Student

Signature of H.O.D

B. SHASHIKALA, M.Sc.,
Associate Professor & HOD of Physics
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Signature of the Staff Member (Incharge of the Batch)

PHYSICS Assignment 32/32 GSH

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1 (a) What is harmonic motion. Give an example.

A to and fro motion of a body about a mean position is called oscillatory motion.

(or) If a body moves back and forth repeatedly about a mean position at regular intervals of time then its motion is called oscillatory motion or vibratory motion.

Ex: To and fro motion of a simple pendulum bob

2 * Vertical oscillations of loaded spring.

(b) Derive an expression for the resultant displacement when two harmonic oscillations of equal frequencies superimposed and hence deduce the expression for resultant amplitude and phase

Consider two SHM's of equal frequencies each acting on a particle along the same straight line. Let the two SHM's be represented by.

$y_1 = a \sin \omega t$.

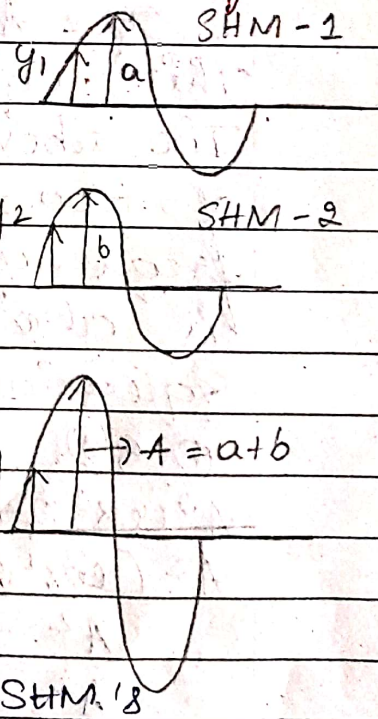
$y_2 = b \sin(\omega t + \phi)$

where y_1 and y_2 → displacements of the particles of two SHM's at any time t.

a and b → Amplitudes of two SHM's

ϕ → Phase difference between two SHM's.

ω → Angular frequency (angular velocity) of two SHM's



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DATE / /

According to the particle of superposition, the resultant displacement is given by

$y = y_1 + y_2$

$y = a \sin \omega t + b \sin(\omega t + \phi)$

Using the trigonometric formula,

$\sin(A+B) = \sin A \cos B + \cos A \sin B$

$y = a \sin \omega t + b \sin \omega t \cos\phi + b \cos \omega t \sin\phi$

$y = a \sin \omega t (a + b\cos\phi) + b \sin\phi \cos \omega t$

Let $(a + b\cos\phi) = A\cos\theta$ — ①

and $b \sin\phi = A \sin\theta$ — ②

where $A \rightarrow$ Resultant amplitude.

$\theta \rightarrow$ Resultant phase angle

$y = a \sin \omega t (A\cos\theta) + A \sin\theta \cos \omega t$

$y = A[\sin \omega t \cos\theta + \cos \omega t \sin\theta]$

Resultant displacement

$y = A \sin(\omega t + \theta)$

This equation gives resultant displacement

The above equation shows that the resultant of two harmonic oscillations of same frequency acting in the same straight line is also harmonic in nature

Squaring and adding the equations ① & ②

$A^2\cos^2\theta + A^2\sin^2\theta = (a + b\cos\phi)^2 + (b\sin\phi)^2$

$A^2(\cos^2\theta + \sin^2\theta) = a^2 + b^2\cos^2\phi + 2ab\cos\phi + b^2\sin^2\phi$

$A^2 = a^2 + b^2(\sin^2\phi + \cos^2\phi) + 2ab\cos\phi$

$A^2 = a^2 + b^2 + 2ab\cos\phi$

$A = \sqrt{a^2 + b^2 + 2ab\cos\phi}$

This gives the resultant amplitude of SHM

Dividing eqn ② by ① we get.

$\tan\alpha = \frac{b\sin\phi}{a+b\cos\phi}$ This is the expression for resultant phase

Special case: (i) If $\phi = 0, 2\pi, 4\pi \ldots 2n\pi$ (same phase) where n is an integer, $n = 0, 1, 2, 3 \ldots$

$A = \sqrt{a^2+b^2+2ab\cos\theta}$.

$A = \sqrt{a^2+b^2+2ab\cos 0^\circ}$

$A = \sqrt{a^2+b^2+2ab}$

$A = \sqrt{(a+b)^2}$

$A = a+b$.

The two SHM's are in same phase. Hence the resultant amplitude is maximum

(ii) If $\phi = \pi, 3\pi, 5\pi \ldots (2n+1)\pi$ (out of phase).

$A = \sqrt{a^2+b^2+2ab\cos\pi}$

$A = \sqrt{a^2+b^2+2ab(-1)}$

$A = \sqrt{a^2+b^2-2ab}$

$A = a-b$.

The two SHM's are in out of phase. Hence the resultant amplitude is minimum

If $a=b$

Then $A=0$.

2 (a) What is absorption co-efficient?

The absorption co-efficient of a surface is defined as the ratio of sound energy absorbed by the surface in a given time to that absorbed by a perfect absorber.

(b) Explain the characteristics of good acoustics for a hall.

The acoustics of an auditorium can be.

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DATE / /

improved by using the surfaces with high absorption coefficient. This will reduce the reverberation time below the optimum value. This can be achieved as follows.

① By hanging heavy curtains ② By hanging pictures and maps ③ By having a few open windows

④ By having good audience [each person is equivalent to about 0.50 sq. metre area of an open window.

⑤ The walls and ceiling should be covered with the materials having high absorption co-efficient [perforated cord boards, asbestos fibre glass etc [Absence of echoes)

⑥ Absence of echelon effect (This is eliminated by using a stair carpet or by making the steps irregular)

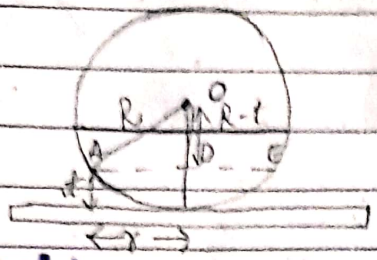
6/

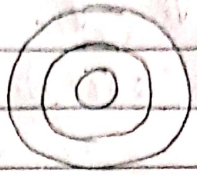
3) What are Newton's rings? Give the theory of Newton's rings by reflected light.

When a plano convex lens of large radius of curvature is placed on plane glass plate such that convex surface is in contact with plane surface, an air film is formed in between the lower surface of lens and upper surface of plate. The thickness of air film gradually increases from center outward on either side. If monochromatic light is allowed to fall normally on film alternate bright and dark concentric rings are obser

These rings are called Newton rings.

Theory of Newton rings [by reflected light]





Consider a plano convex lens placed over a plane surface with convex surface in contact with P. Let 'c' be the point of contact. Air film is enclosed between lens and the plane surface. At point C, the path difference due to film is zero but a phase difference of π occurs due to reflections and hence point C will appear dark when viewed in reflected light.

Let 'A' be a point on surface of air film at which thickness of film is 't'.

Suppose path difference between reflected rays is $2\mu t\cos r + \frac{\lambda}{2}$. Then condition for bright fringe is $2\mu t\cos r + \frac{\lambda}{2} = m\lambda$

for normal incidence $\cos r = 1$ for air $\mu = 1$

$2t + \frac{\lambda}{2} = m\lambda$ (or) $2t = (2m-1)\frac{\lambda}{2}$.

Applying pythagoras theorem:

$AO^2 = AD^2 + OD^2$

$R^2 = r_m^2 + (R-t)^2$

$= r_m^2 + R^2 + t^2 - 2Rt$.

$r_m^2 = 2Rt - t^2$

If $R >> t$, $r_m^2 = 2RT$.

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$t = \frac{r_m^2}{2R}$ $r_m \rightarrow$ Radius of ring at point A

$R \rightarrow$ Radius of curvature of lens

Substituting for t in condition for bright fringe,

$$2t = (2n-1)\frac{\lambda}{2}$$

$$2\left(\frac{r_m^2}{2R}\right) = (2n-1)\frac{\lambda}{2}$$

$$r_m^2 = (2n-1)\frac{\lambda R}{2}$$

$$r_m = \sqrt{2n-1}\sqrt{\frac{R\lambda}{2}}$$

$\therefore r_m \propto \sqrt{2n-1}$ Radius of nth ring is proportional to the square root of odd number

If D_m is diameter of mth bright ring, then

$$D_m^2 = 4(2m-1)\frac{\lambda R}{2}$$

$$D_m = \sqrt{2m-1}\sqrt{2\lambda R}$$

Condition for dark fringe : If P is point of dark fringe

Path difference $= (2m+1)\frac{\lambda}{2}$

$$2\mu t\cos r + \frac{\lambda}{2} = (2m+1)\frac{\lambda}{2}$$

$$2t + \frac{\lambda}{2} = (2m+1)\frac{\lambda}{2}$$

$$2t = (2m+1)\frac{\lambda}{2} - \frac{\lambda}{2}$$

$$2t = m\lambda$$

$$2\left(\frac{r_m^2}{2R}\right) = m\lambda$$

$r_m^2 = m\lambda R$

$r_m = \sqrt{m\lambda R}$

or $r_m = \sqrt{m}\sqrt{\lambda R}$

$r_m \propto \sqrt{m}$ Radius of dark ring is proportional to square root of natural numbers.

$D_m = 2\sqrt{m\lambda R}$

$D_m = \sqrt{4m\lambda R}$

$D_m = \sqrt{m}\sqrt{4\lambda R}$.

$D_m \propto \sqrt{m}$.

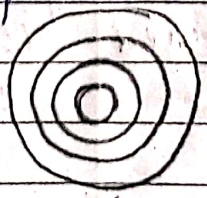
8

4) (a) What is a zone plate? Explain two types of zone plates

A zone plate is a device used to focus light or other things exhibiting wave character. Unlike lenses or curved mirrors, zone plates use diffraction instead of refraction or reflection. Zone plate is a plate of glass marked out into concentric zones or rings alternately transparent and opaque, used like a lens to bring light to a focus. This zone plate is based on the Fresnel's principle. There are two zone plates

(i) Positive zone plate

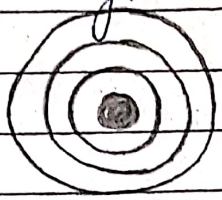
A zone plate which allows light from odd numbered half-period elements and obstructs light from even numbered half period elements is known as positive zone plate.



+ve zone plate

(ii) Negative zone plate:

A zone plate which allows light from even numbers half period elements and obstrude light from odd numbered half period elements is known as negative zone plate



-ve zone plate

(b) Distinguish between zone plate and convex lens:

	Zone plate	Convex lens
1	Zone plate has multiple foci	Convex lens has single focus
2	The focal length of zone plate is given by $f_n = \frac{r_n^2}{n\lambda}$	The focal length of convex lens is given by $\frac{1}{f} = (n-1)\left[\frac{1}{R_1} - \frac{1}{R_2}\right]$
3	The focal length of red colour is less than focal length of violet colour.	The focal length of red colour is greater than the focal length of violet colour
4	Intensity of image is less	Intensity of image is very high
5	The path difference blw waves coming from alt -ernate zones is λ	The path difference blw waves meeting at image point is zero
6.	The image is obtained by diffraction	The image is obtained by refraction

Seen

32/32

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BLUE BOOK

562

Name of the student Chinmayi S

Class / Sem : III BSc V Sem **Branch :** CBZ

USN :

SUBJECT : Chemistry - V - Assignment **Subject Code :**

MAXIMUM MARKS

Test	I	II	III	Average Marks Obtained
Date				**Test**
Marks Obtained				
Signature of the Student				**Assignment** 45/46
Initials of Faculty				**Total** M.B.

Signature of the Student

M.B. Signature of the Faculty

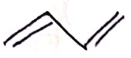
M.B. Signature of the HOD

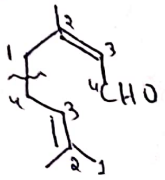
Head
Dept. of Chemistry
KFGSC., Tiptur - 572202

CHEMISTRY - PAPER - V

Part - A

1. The Ingold's isoprene rule states that "all the naturally occurring terpenoids are made up of isoprene units linked by head to tail linkage".


→ Isoprene



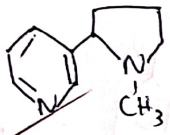
Citral.

3. $C_6H_5SO_2OH + NaOH \rightarrow C_6H_5ONa + Na_2SO_4$

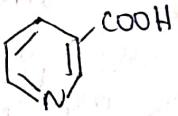
$C_6H_5ONa + NaI$ ~~$C_6H_5SO_2O^-Na^+ + NaNH_2$~~ $\xrightarrow{\text{fuse}} C_6H_5NH_2 + Na_2SO_3$

Benzene Sulphonic acid — Aniline.

2.


Nicotine

$\xrightarrow[CrO_3]{(O)}$

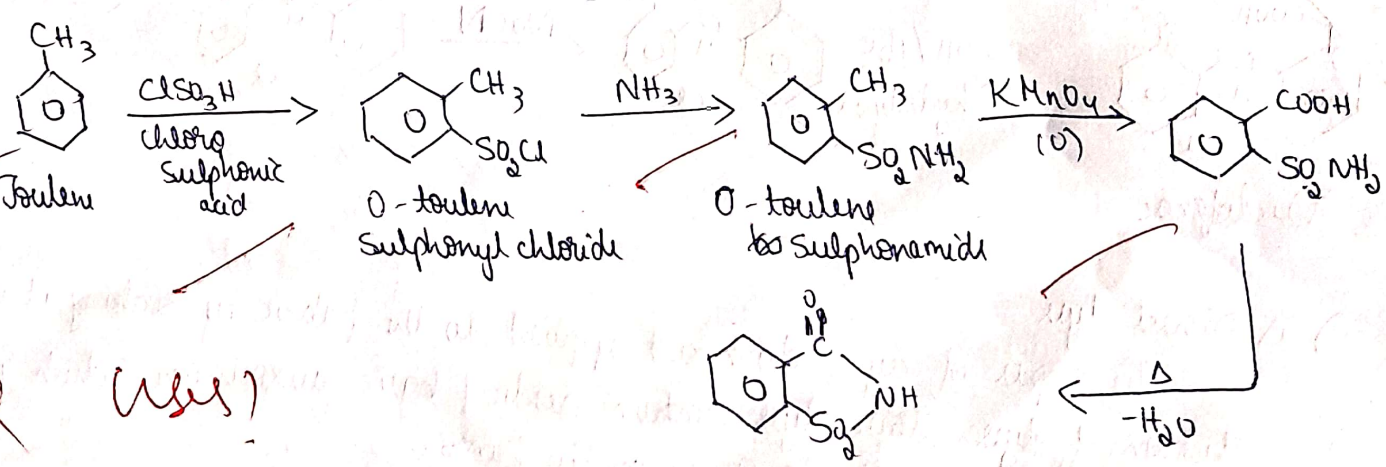


Nicotinic acid

This reaction shows the presence of pyridine ring in Nicotine.

Part - B

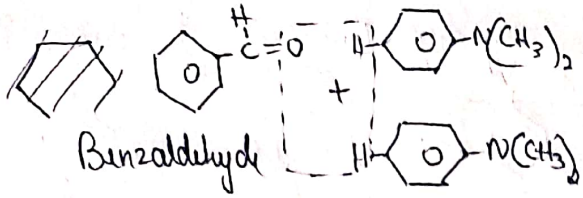
4. a)

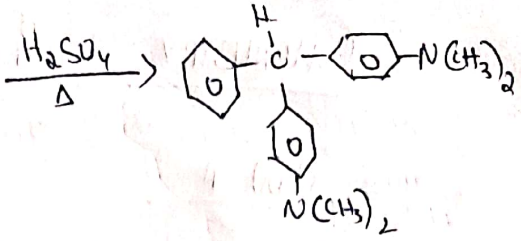


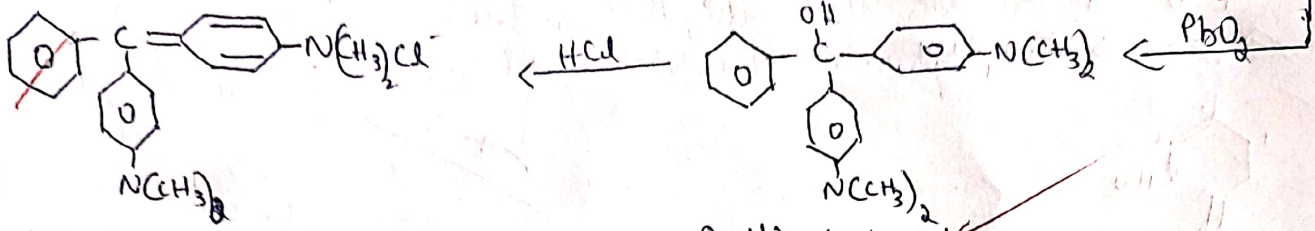
Toulene — O-toulene sulphonyl chloride — O-toulene bis sulphonamide — Saccharin.

c) * The material is not chemically affected
* The data obtained will be precise & permanent.
* The rate of reaction can also be studied.

b)



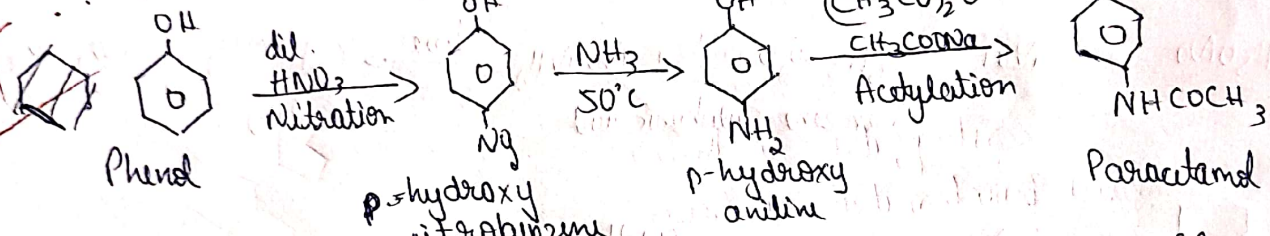




Malachite green.

Oxidised leucobase.

5. a) Antipyretics are a class of drugs which are used to lower the body temperature

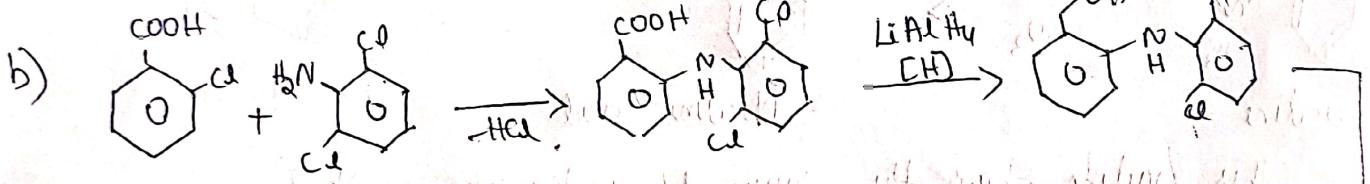


p-hydroxy nitrobenzene

p-hydroxy aniline

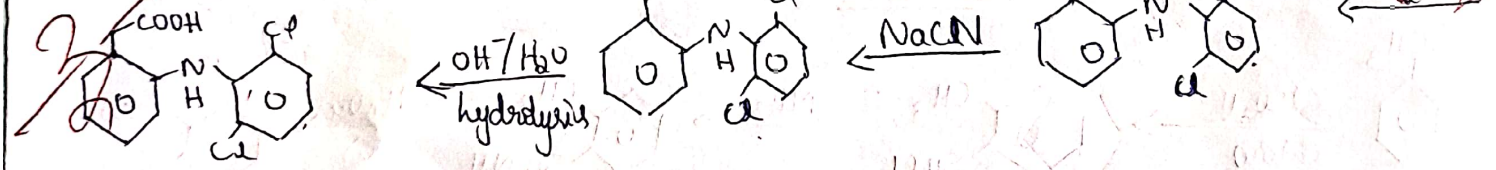
Paracetamol

b)



2 chloro benzoic acid

2,5 dichloro aniline



Diclofenac

c) i) Direct dyes

The types of dyes which are applied to the fabric by soaking it in the solution of dyes. These dyes contain acidic / basic auxochromes which get attached to the opposite $\delta\oplus$ group in the fabric.

ii) Vat dyes.

These dyes are insoluble in water, but form a colourless soluble compound when reduced with NaHS. After which fabric is dipped in the colourless solution & kept in air / treated with oxidants then the colour is imparted.

iii) Mordant dyes

These dyes are insoluble in water but react with oxides of aluminum etc, which are called mordants. These salts are treated with fabric to impart colour.

iv) Azoic dyes / Ingrain dyes.

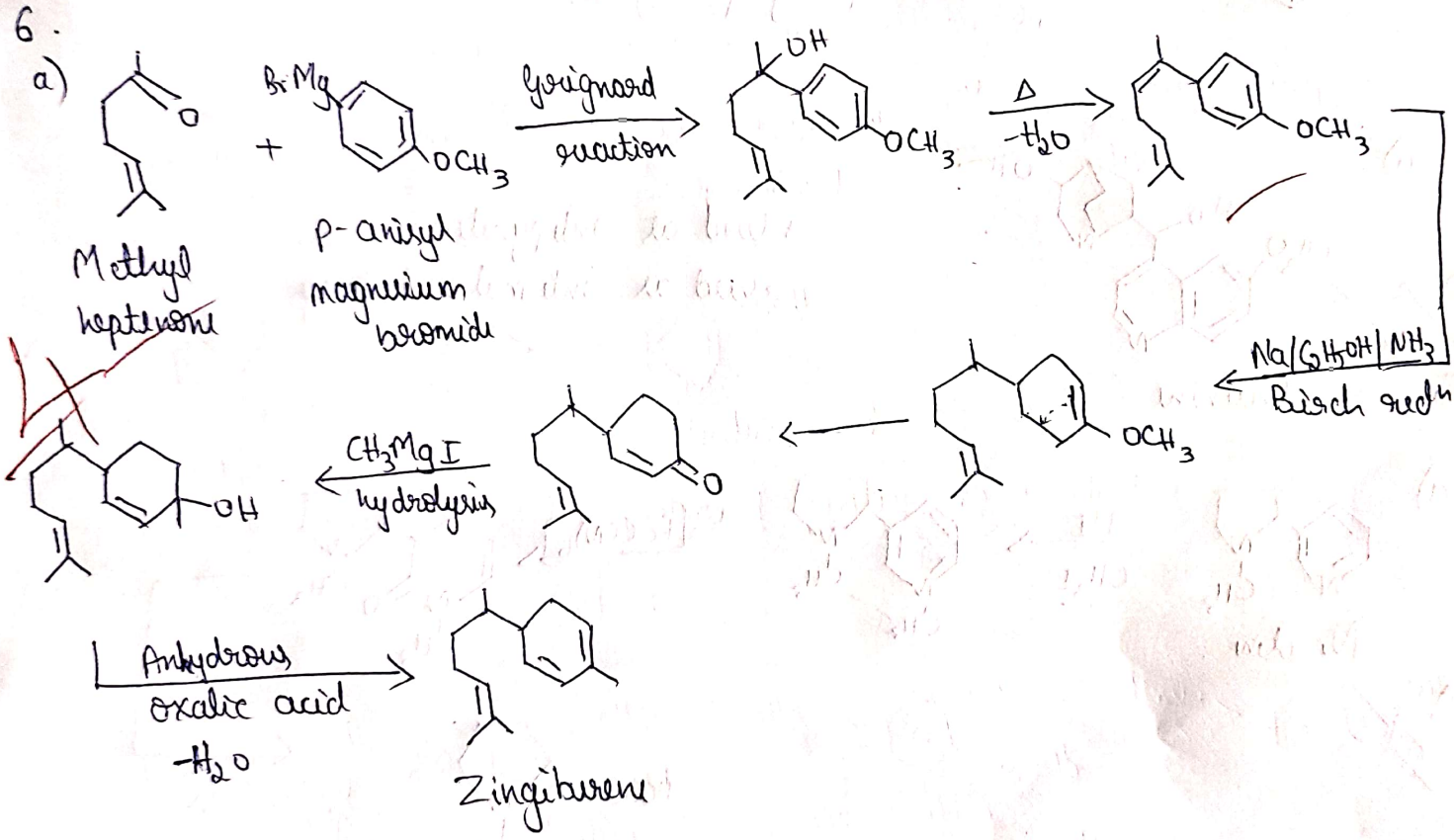
These dyes are directly developed on the fabric. The fabric is treated with reducing agents like phenols & then with appropriate diazonium salts, the dye is formed.

v) Disperse dyes.

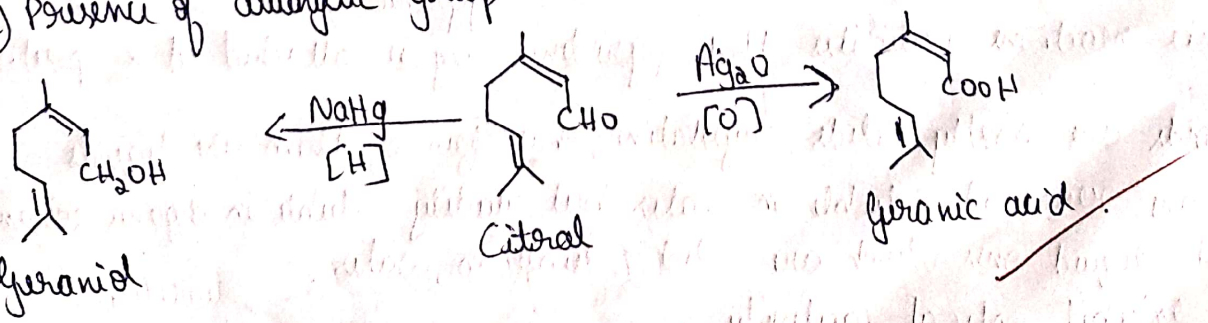
These dyes are insoluble in water but form a colloidal solution. The fabric is treated with this colloidal solution, the crystals of dye get attached to the crystal structure of fabric.

6.

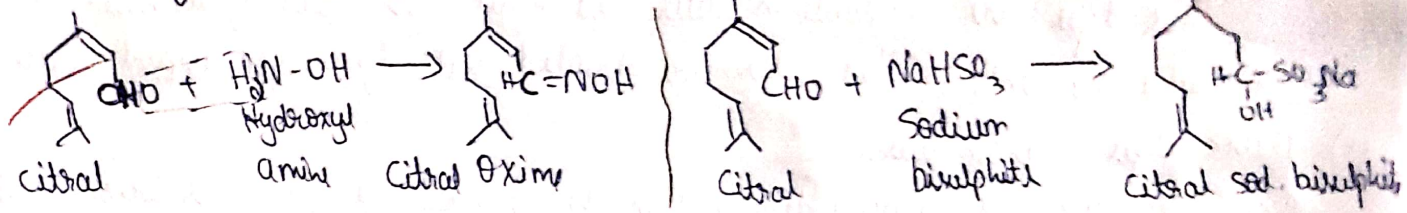
a)



b) i) Presence of aldehydic group

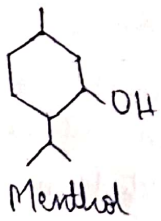


ii) Presence of carbonyl group.



c)

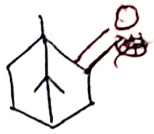
i)



Menthol

* Used in toothpaste, mouthwash etc.
* Used as artificial flavoring agent.

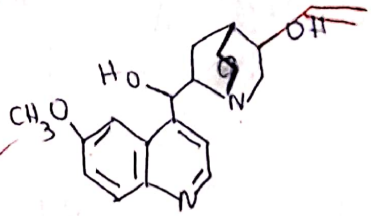
ii)



* Used as moth repellent.
* Used in photographic films.

7.

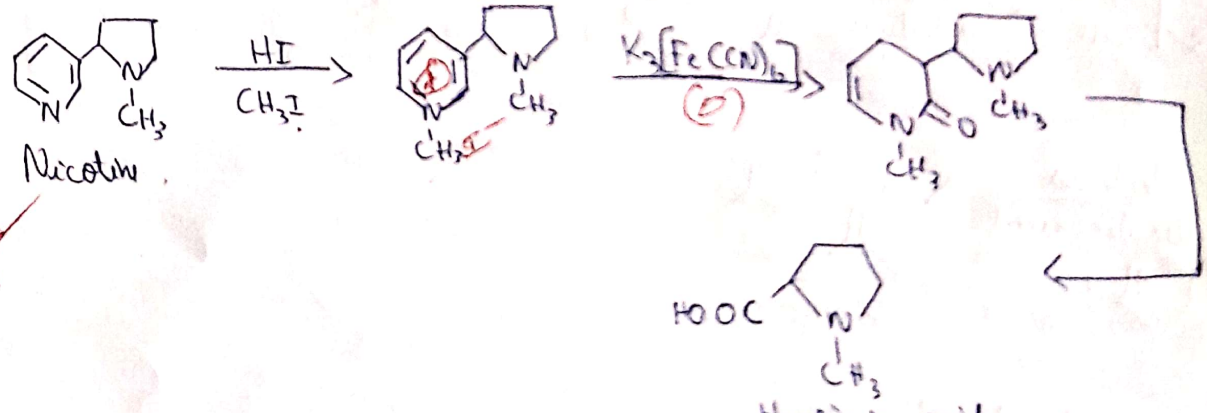
b)



Quinine

* Used as antipyretic
* Used as anti malarial drug.

a)



Nicotine

Hygrinic acid.

This reactions indicates that pyridine ring is attached at α-position.

c) * Alkaloids are mostly solids, crystalline, but few of them are liquids.
* They are not soluble in water but readily soluble in organic solvents except liquid ones which are soluble in water.
* They exhibit optical acitivity.
* They have physiological significance.

Rool NO = 10
Deekshitha.U.

KALPATARU

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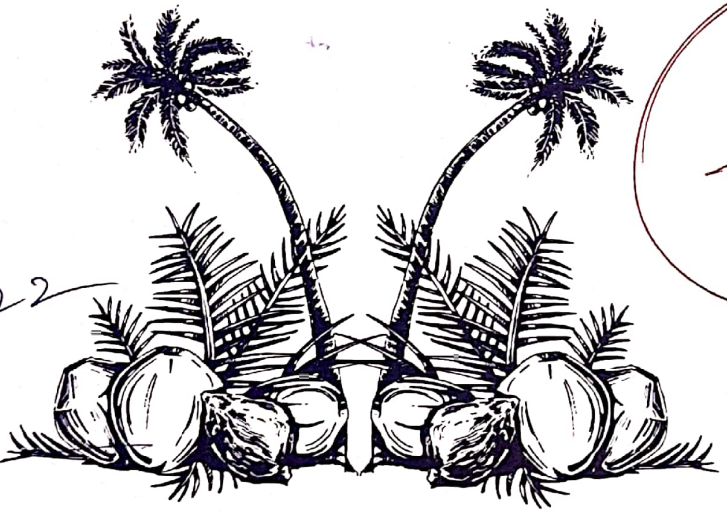


39/40

2021-22
TY BSc

Name..... Deekshitha.U.

H. O. D. of Botany
Kalpataru First Grade Science College
TIPTUR - 572 201.

Class / Semester ..... III BSc [CBZ] .....

Subject..... Botany Paper-VII .....

College..... K F G Sc. .....

Botany - Paper - VII

Practical Test.

① Separate the photosynthetic method from the sample Paper chromatography.

Materials Required :- Petroleum Ether, acetone. What's man filter paper. Pigment Extract Capillary tube. glass Jar. Split Cork.

Principle the photosynthetic pigements like chlorophyll a. Chlorophyll b. Caretonoids. xanthophylls The pigments absorb solar engy at different wavength of visible Spectrum.

~~Procedure~~. Paper chromatography is used widely used for seperating photosynthetic Pigments from a mixture. It Contains 2 phase Stationary phase & Mobilephase

Procedure :- Preparation of pigment Extract 50g of fresh Tacoma leaf are. grinded in 40 ml of 80%. acetone until a drop green Colour formed filter the solution through muslin cloth & collect beaker.

* Transfer 3 to 5mL of petroleum ether and acetone mixture to the glass tube.
* using the Scissors Cut the paper and Point a loading Spot and place with glass Jar. Pigment observed to form Colours in different wavength.

Observation :-

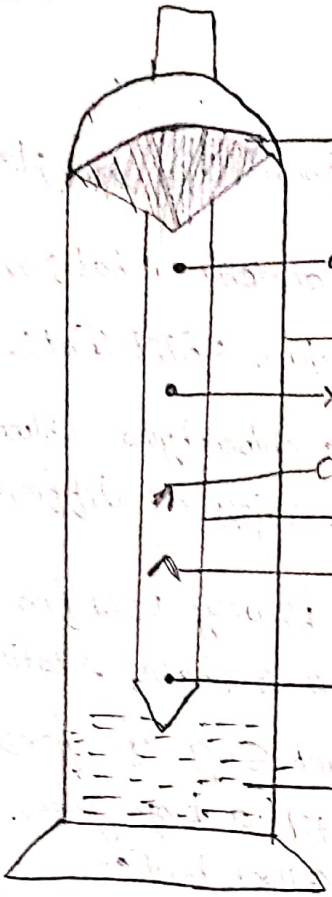
$$\text{Rf value} = \frac{\text{Distance travelled by the pigment}}{\text{Distance travelled by Solvent.}}$$

$$\text{Rf of Chlorophyll b} = \frac{7.5}{15.2} = 0.49$$

$$\text{Rf of chlorophyll a} = \frac{11.7}{15.2} = 0.76$$

$$\text{Rf of xanthophyll} = \frac{12.8}{15.2} = 0.84$$

$$\text{Rf of Carotene} = \frac{14.2}{15.2} = 0.93$$



Solvent • 15.2
Carotene • 14.2
Xanthophyll ↑ 12.8
Chlorophyll a ↑ 11.7
Chlorophyll b ↑ 7.5

Conclusion :- The photosynthetic pigments can be identified by ... natogram based on their colour from base to apex as follows chl... [green]. Chlorophyll [a] [orange] Xanthophyll [yellow], Carote...

(3)

Ex :- **Phototropism**

The given Experiment phototropism

Principle = The plants shows movement in the response of External Stimuli Such type of mechanism is Called Phototropism

Tropic movement or bending movement of plant parts in response to light is Called phototropism.

Materials = phototropic chamber - growing seedling.

Procedure = Keep the growing seedling into phototropic chamber. and close the lid the chamber is placed in such a way that window hole of the box directed towards the source of light keep for few days.

Observation:- The shoot of the seedling bend towards the window hole. few days plants comes under window hole and bend upwards the source of light.

Conclusion. The plant get light only through side wide the the unidirection light falling on the side of the stem causes unequal distribution of auxins.
The auxins accumulated shaded side then the cell-division and cell elongation occurs in that side. Therefore plant develop. towards sunlight

(2) Determination of Stomatal Index by Quick fix method.

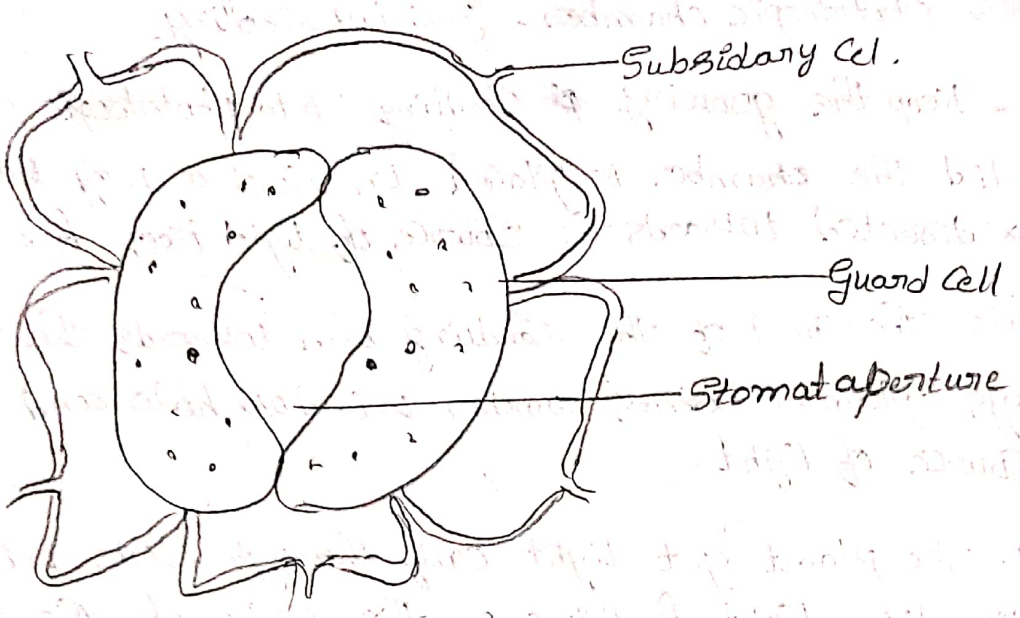
Materials = Vinca leaves or beatal leafe. Coverslips. Slide microscope. Stain.

Procedure = Apply thin film of quick fix on the surface of leaf. Peeling it from the surface of leaf. mount in ~~each of the solution~~ ~~Experiment as such for 15-30 minutes~~ after mount it on the slide with a drop of same water & stain count the no of epidermal cell visible under microscopic field. Caluclate no of stomata.

Calculation:-

$$SI = \frac{S}{E+S} \times 100$$

SI = Stomatal Index
S = No of stomata in an unit area
E = No of epidermal cell in unit are.



STOMA

Sample = Vinca leaf. [E]

No of Epidermal Cells in an unit are = 130

No of Stomata in an unit are = 85. [S]

$$S.I = \frac{S}{E+S} \times 100$$

$$= \frac{85}{85+130} \times 100$$

$$= 39.53\%$$

(3) Q = The given Experiment is KUHNE'S EXPERIMENT

Experiment to demonstrate alcoholic Fermentation.

Def = In Incomplete oxidation of Sugar in absence of oxygen to CO_2 & Ethyl alcohol with the release of small amount of Energy is called alcoholic fermentation.

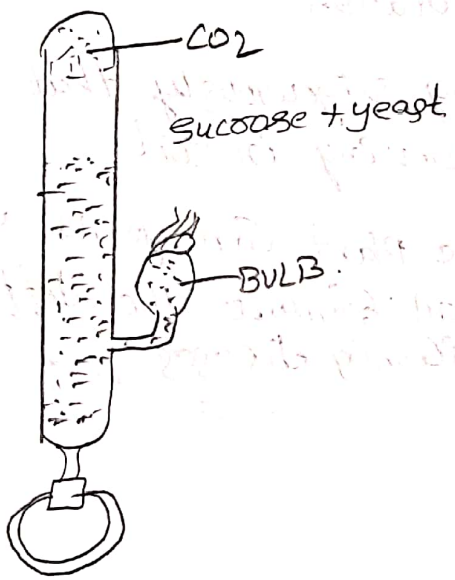
materials = 10% glucose soln, beaker, Yeast Kuhnes vessel. Cotton. KOH Sticks.

Procedure = 10% Glucose soln is prepared in a beaker and small amount of yeast is added.

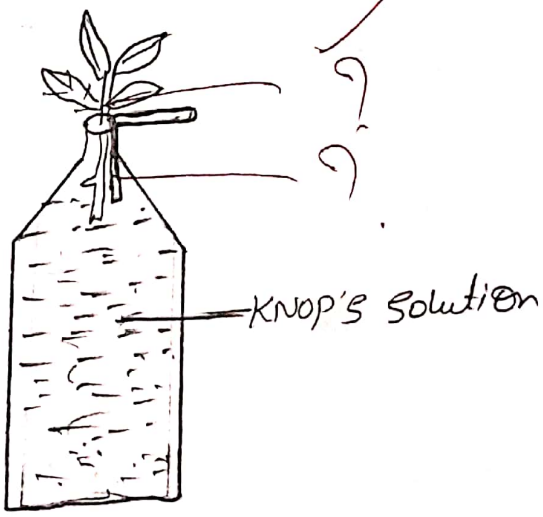
the Solution is poured into Kuhnes vessel in such a way the Eoect tube is Completely filled and side bulb is half filled
The mouth of the bulb is plugged with cotton.

observation:- A gas is collected in a eoosect tube by downward displacement of Solution on alcoholic Smell is detected.
* KOH Sticks is added to the solution.

Conclusion:- A fall in the level of soln in the Eoosect tube due to formation of Co_2 during fermentation alcoholic Smell is due to formation of ethyl alcohol.



(3)
D The given Experiment is hydroponics.



Water Culture.

Composition

Potassium nitrate = 1g
Acid. pot. phosphate = 1g
Magnesium sulphate = 1g
Calcium nitrate = 4g
Ferrous chloride Soln - Few drops
Water. = 100 ml

Procedure = The Given Expt Consists of a large bottle Containing Knop's Soln & rooted plant & a bent tube Introduced through two holed rubber Cork the bottle is wrapped with black paper to protects to roots from heavy radiation

Observation The plant is growing vigourously that is 100 times more than plant growing in soil

Conclusion This Prove that the plant Can grow Satisfactorily only when it is supplied with all Element the deffeciency of one Element leads to diffiCiency diseases