

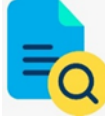

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	Criterion- 2	T, L & E
	KI 2.3	M 2.3.1

Traditional Teaching Learning Methods

2.3.1	Student centric methods, such as experiential learning, participative learning and problem solving methodologies are used for enhancing learning experience and teachers use ICT-enabled tools including online resources for effective teaching learning process)
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Abstract for Documentary Evidence


Details	Documentary Evidence	Page Number	View Document
Traditional Teaching Learning Methods	Chalk and Talk Method	2	
	Model Assisted Teaching	15	
	Continuous Internal Assessment	45	

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1. Chalk and Talk Method

At Atmiya University, we utilize the Chalk and Talk method of teaching to explain concepts effectively, fostering interaction and ensuring a clear understanding of the subject matter. The selective photographs are given below.




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	KI 2.3	M 2.3.1




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2. Model Assisted Teaching

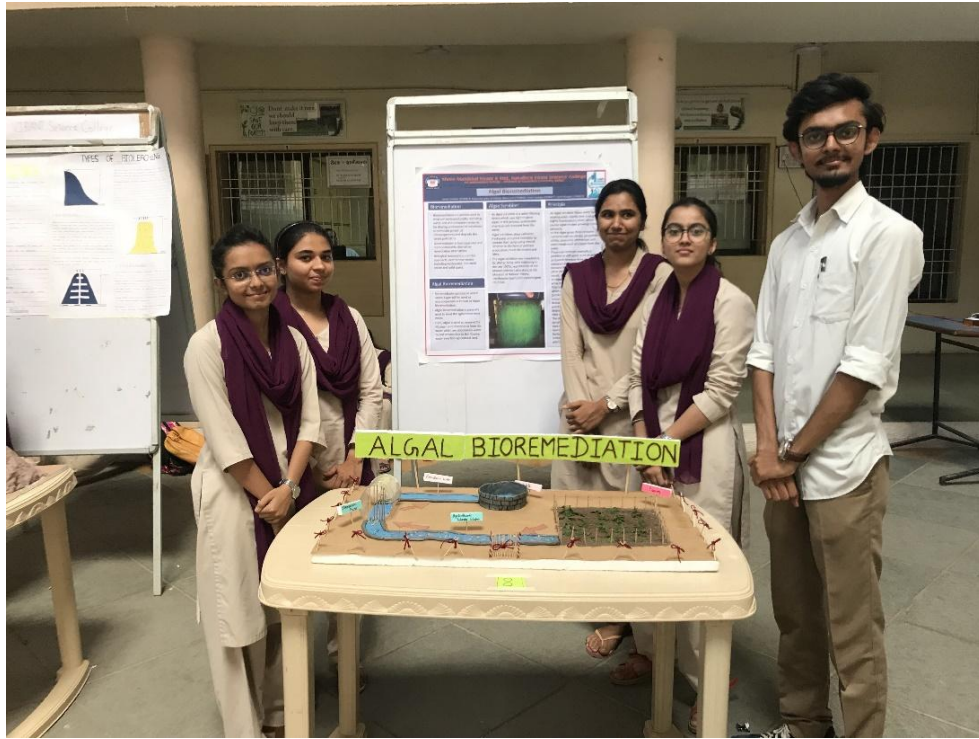
At Atmiya University, we implement Model-Assisted Teaching by using physical and virtual models to simplify complex concepts, enhance engagement, and promote interactive learning. A few of the practiced models are attached below.




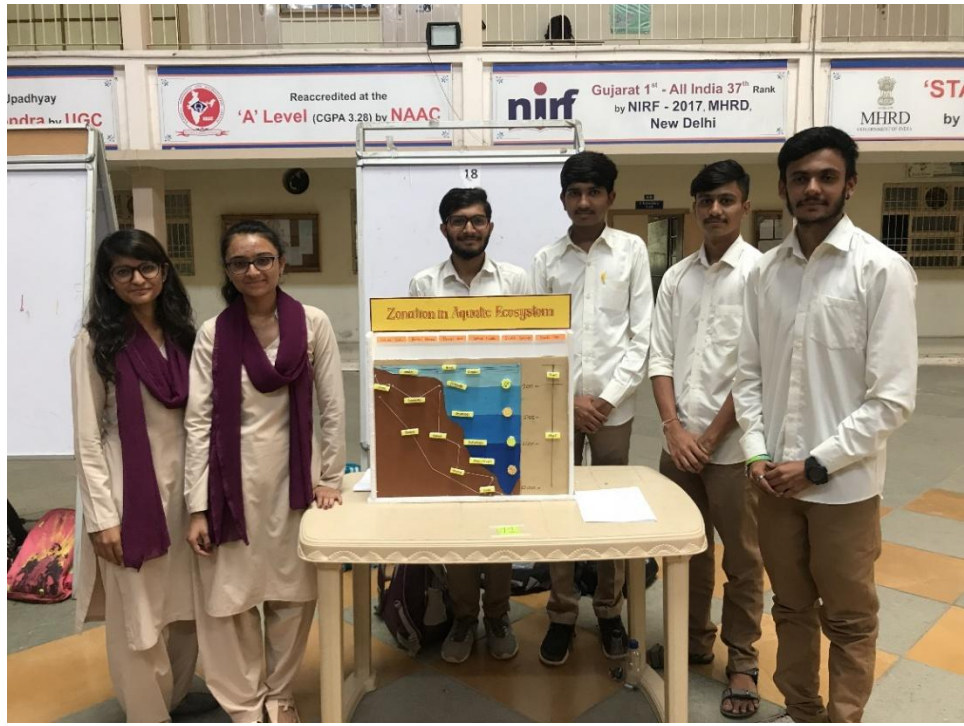
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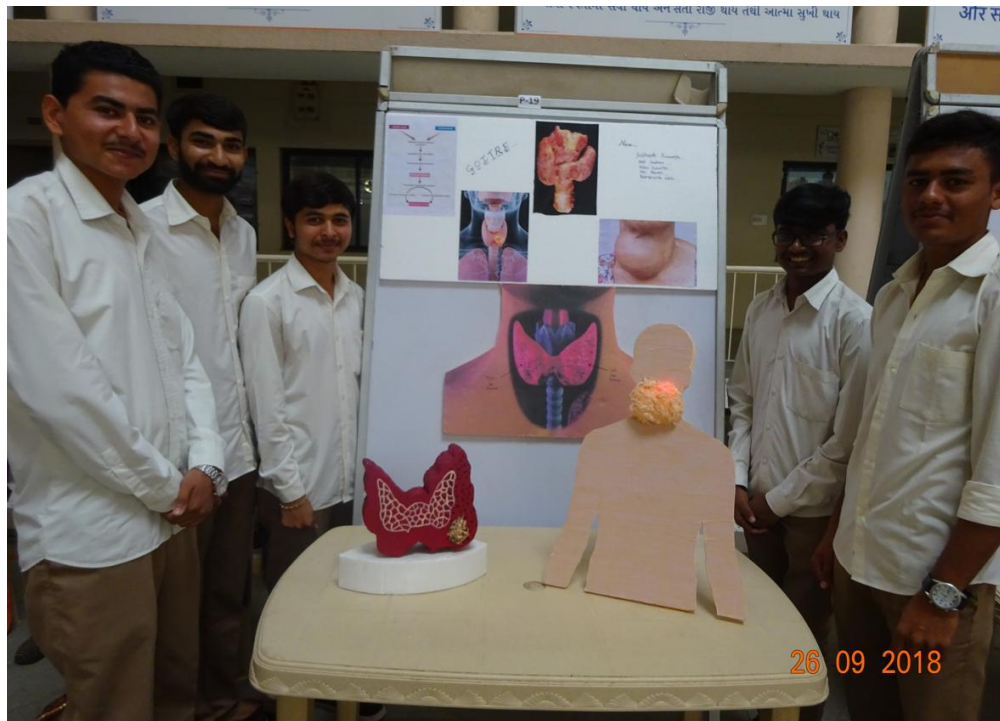
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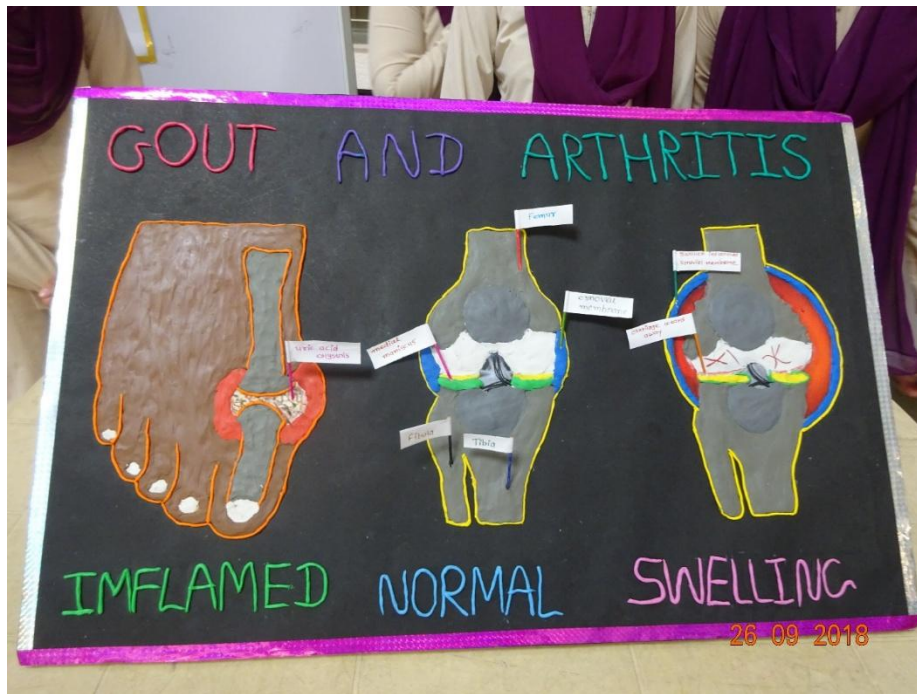
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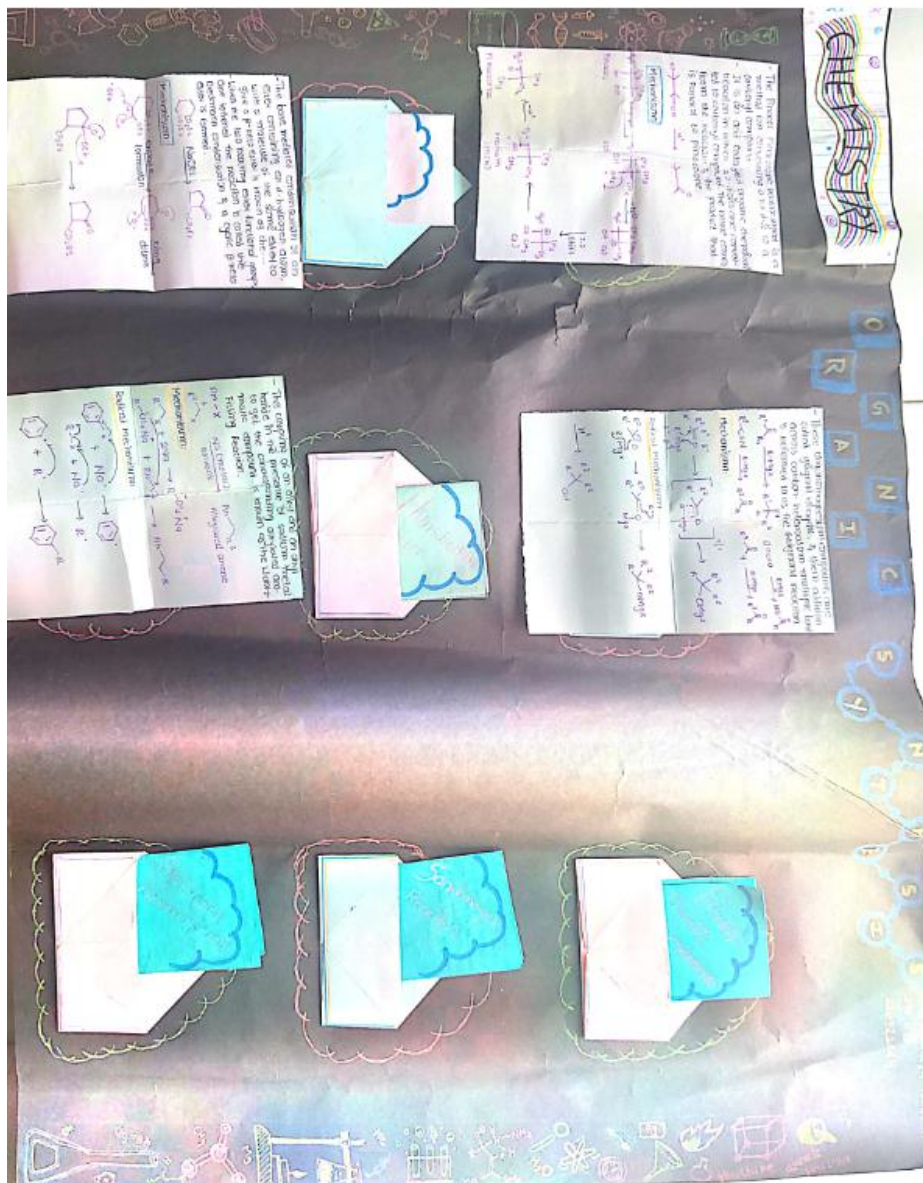
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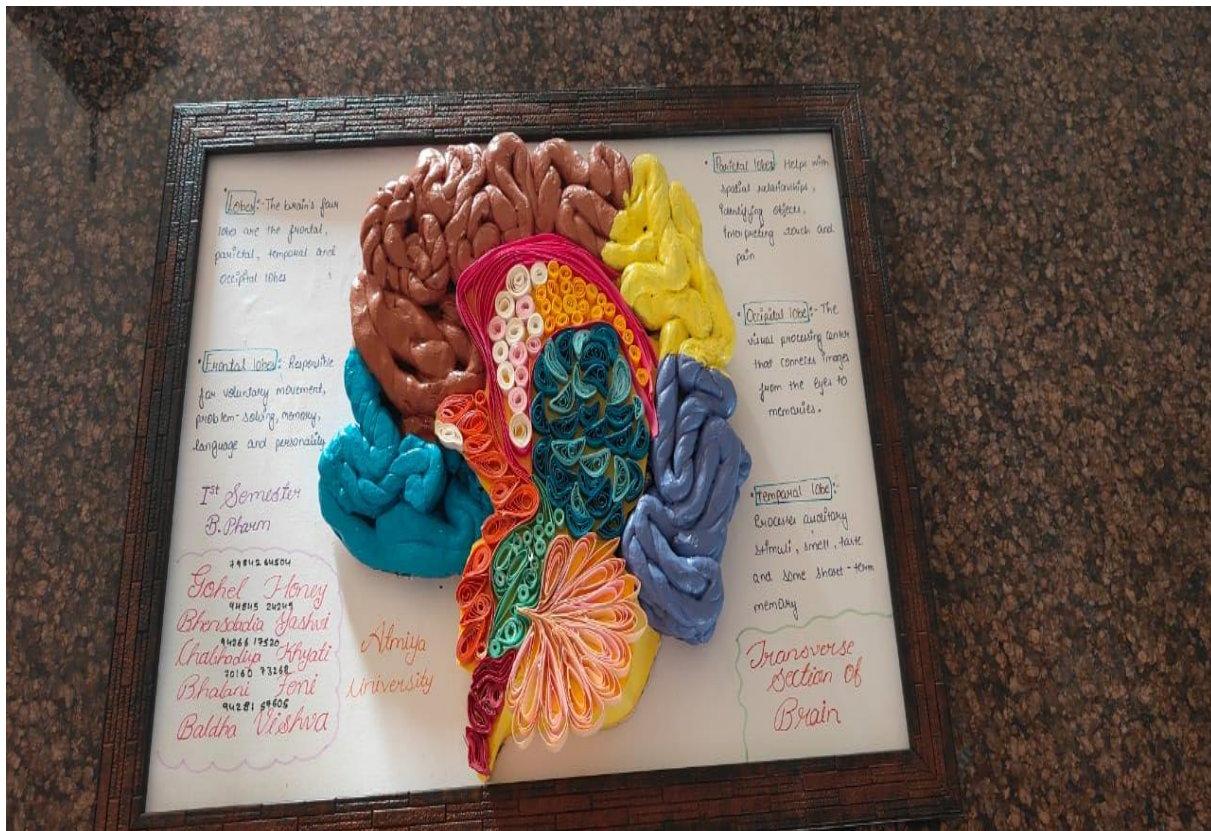
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	Criterion- 2	T, L & E
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Subject: Human anatomy and physiology

Topic: Brain anatomy and physiology

Using a brain anatomy and physiology model to teach students is an effective and engaging educational approach. These models provide a tangible, three-dimensional representation of the brain's structure, allowing students to visualize and understand its complex organization and functions. By interacting with the model, students can identify key regions such as the cerebrum, cerebellum, brainstem, and various lobes, as well as internal structures like the thalamus, hypothalamus, and ventricles. This hands-on experience enhances comprehension of how these structures contribute to processes like sensory integration, motor control, and cognitive functions.




 ATMIYA UNIVERSITY	NAAC – Cycle – 1 AISHE: U-0967	
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Subject: Biochemistry

Topic: DNA structure

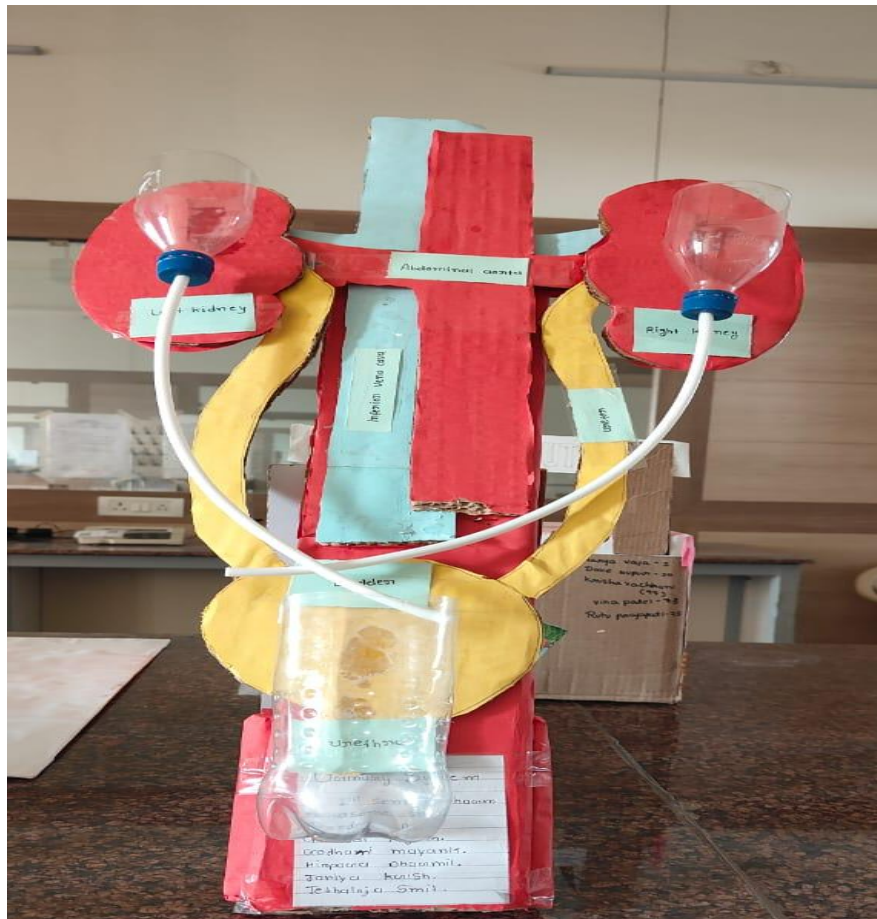


Using a DNA model to teach students about DNA structure is an effective hands-on approach that enhances comprehension and retention. The model visually represents the double helix structure, showcasing the sugar-phosphate backbone and the paired nitrogenous bases (adenine-thymine and guanine-cytosine) connected by hydrogen bonds. By manipulating the model, students can understand the 3D arrangement, the complementary base pairing, and the anti-parallel orientation of the strands. This interactive method bridges abstract concepts with tangible learning, allowing students to grasp the intricacies of replication, transcription, and mutations. Additionally, such models encourage engagement, critical thinking, and a deeper appreciation for molecular biology.


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Subject: Human anatomy and physiology

Topic: The excretory system

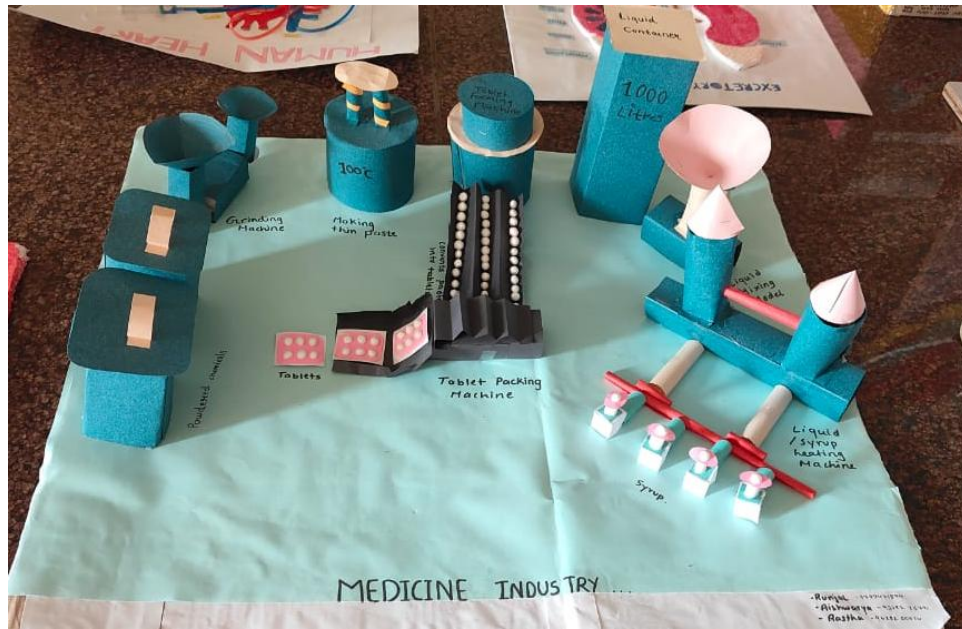


Teaching the excretory system using a model is an engaging and effective method to help students visualize and understand its components and functions. Begin by presenting a 3D model of the excretory system, highlighting the kidneys, ureters, bladder, and urethra. Explain each part's structure and role in waste removal and homeostasis. Use the model to trace the journey of blood entering the kidneys, where filtration occurs in the nephrons, and demonstrate how waste is converted into urine. Show the urine's pathway through the ureters to the bladder and finally out through the urethra. Interactive activities, such as labeling parts on the model or simulating the filtration process with props (e.g., sieves for filtering), can deepen understanding. Reinforce concepts with analogies, like comparing kidneys to a water filter, and encourage discussions about maintaining kidney health. This hands-on approach enhances comprehension and retention of the excretory system's key functions.


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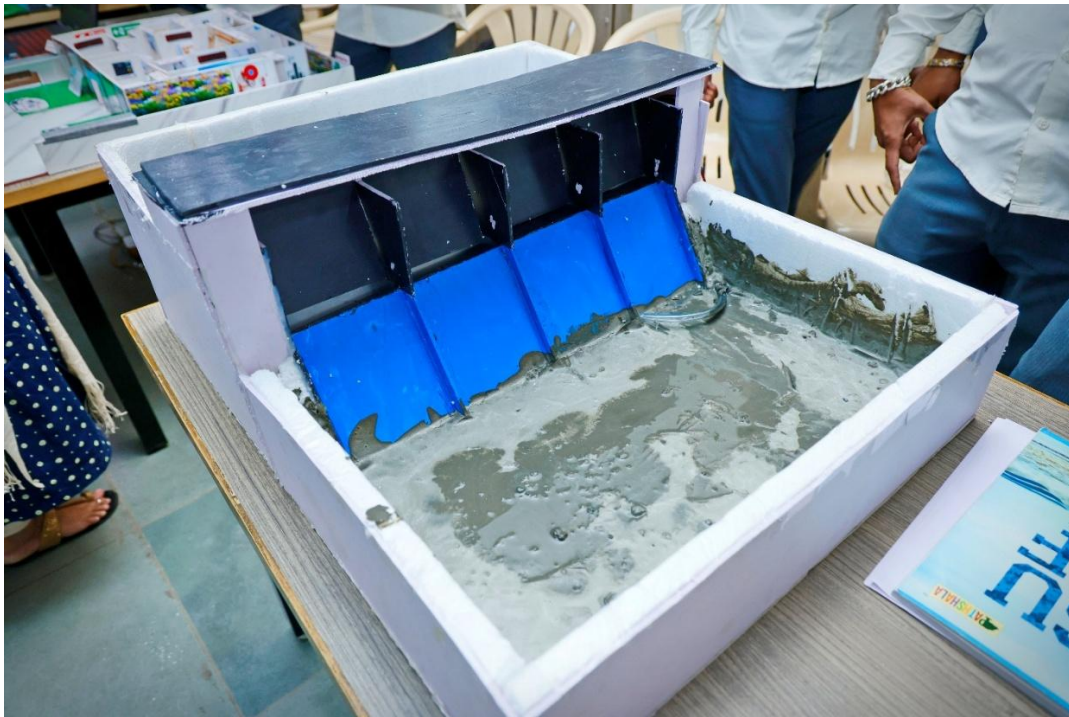
Subject: Industrial Pharmacy


Topic: Layout of Pharmaceutical Industry




The **Layout of a Pharmaceutical Industry model** is an effective teaching tool for students to understand the structural and functional organization of pharmaceutical manufacturing facilities. This model helps visualize the systematic arrangement of various departments, such as raw material storage, production areas, quality control, packaging, and warehousing, in compliance with regulatory requirements like Good Manufacturing Practices (GMP). By studying the model, students can learn how the design minimizes contamination risks, ensures efficient workflow, and adheres to safety and cleanliness standards. The model also provides insights into the integration of utilities like HVAC systems, water systems, and waste management within the layout. This hands-on approach enhances the learning experience by bridging theoretical knowledge with practical applications in pharmaceutical manufacturing.

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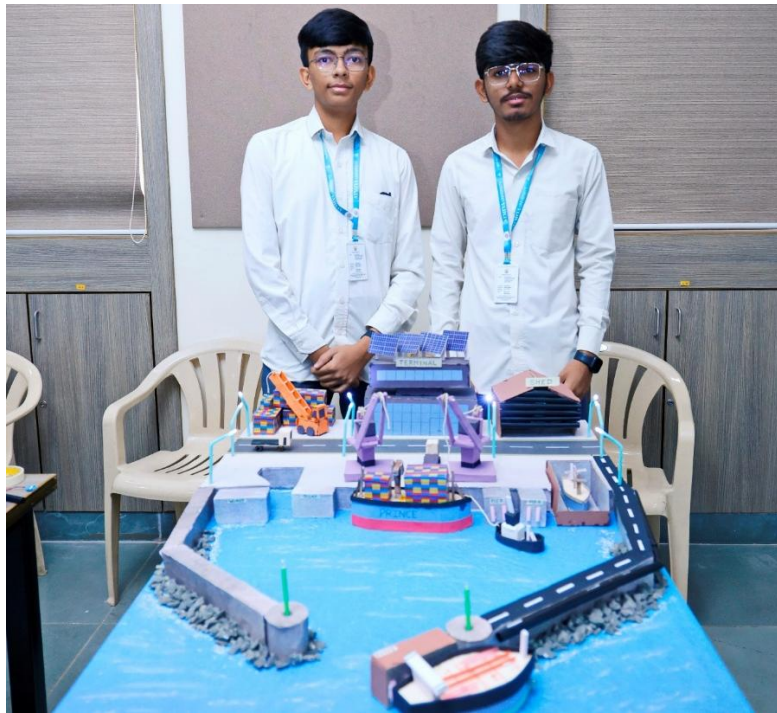
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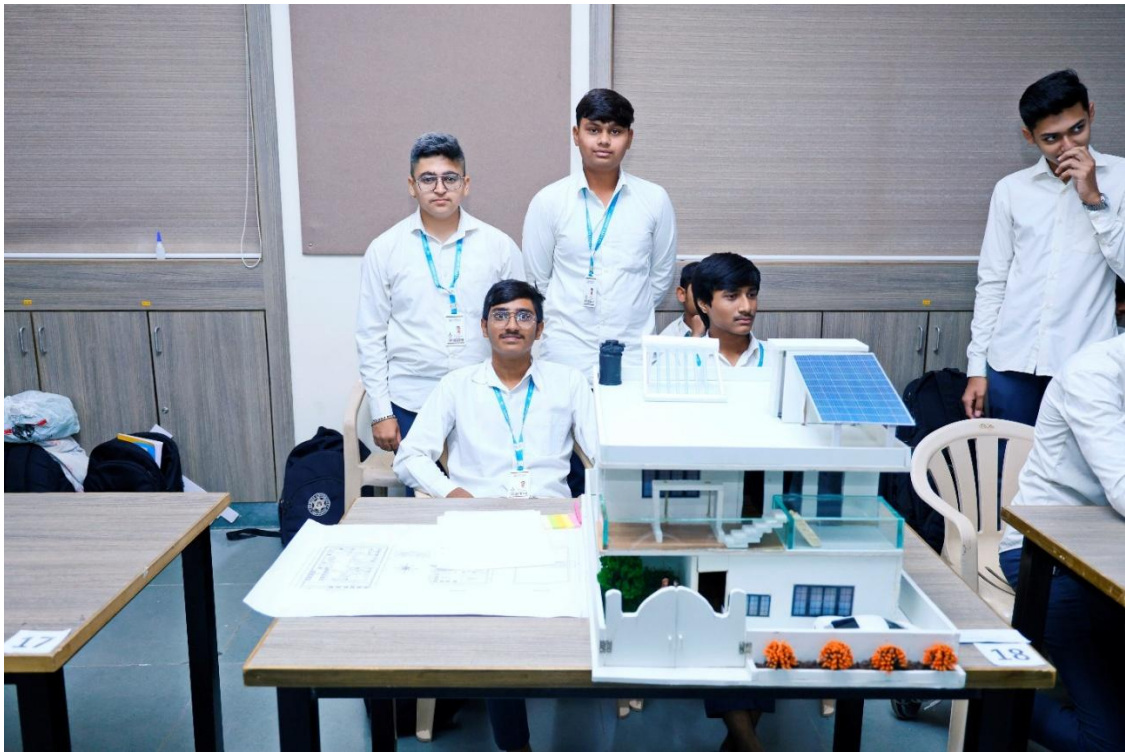
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3. Continuous Internal Assessment

At Atmiya University, we practice Continuous Internal Assessment (CIA) to ensure consistent evaluation and learning throughout the academic term. Through regular tests, assignments, projects, and presentations, we encourage active engagement, provide timely feedback, and reduce exam pressure. A few examples of question papers and activities are recorded here to showcase our commitment to this approach.

ATMIYA UNIVERSITY

Faculty of Science
Department of Chemistry

Class Activity
Name reaction & rearrangement

Name : Dhruv H. Facharya


Program : M.Sc. Chemistry

Semester : II

Enrollment no. : 210721029

Course Name : Organic Reactions & Rearrangements

Course Code : 21MCHC206


 Signature of faculty

26/05/2022
 Date of submission



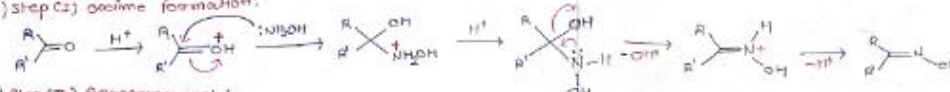
Carbocation

Beckmann Rearrangement:

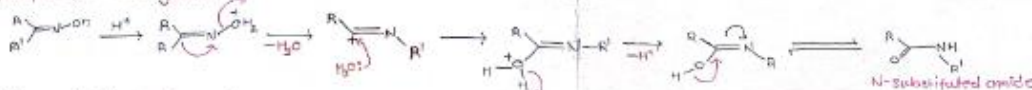
Principle: It is an acid catalyzed conversion / isomerization of oxime to α -substituted amides usually called the Beckmann rearrangement.

Reaction Mechanism:

i) Step (I) oxime formation:



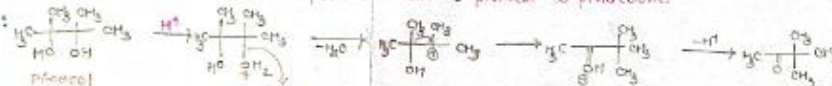
ii) Step (II) Rearrangement:



Pinacol-Pinacolone Rearrangement:

Principle: It is an acid catalyzed organic chemical reaction in which 1,2-diols are converted to carbonyl compounds. The name comes from the substrate and product that is pinical to pinacolone.

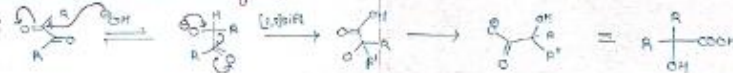
Reaction Mechanism:



Benzil-Benzilic acid Rearrangement:

Principle: Upon treatment with base (eg, NaOH), α -diketones rearrange to give salts of α -hydroxy acids. This process is called the benzilic acid rearrangement.

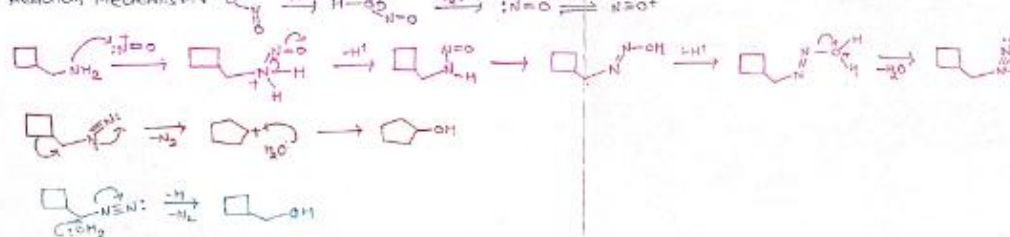
Reaction Mechanism:



Demjanov Rearrangement:

Principle: Carbocation rearrangement of primary amines via diazotization give alcohols

Reaction Mechanism:





Carbanion

Aldol Condensation:

Principle: The hydroxyl aldehyde formed from acetaldehyde is originally called an aldol and the reaction is known as aldol condensation.

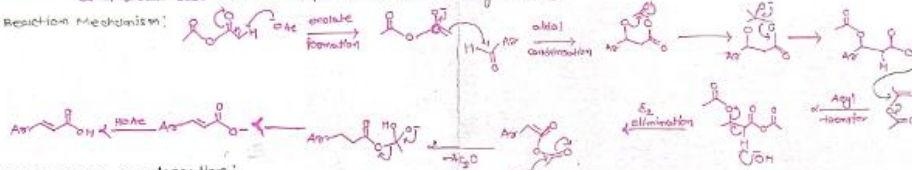
Reaction Mechanism:



Perkin reaction:

Principle: The condensation of aromatic aldehyde with the anhydrides of aliphatic carboxylic acids in the presence of an alkali base to afford α,β -unsaturated carboxylic acids.

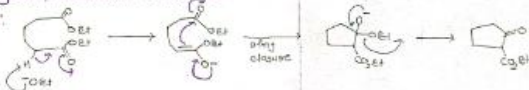
Reaction Mechanism:



Dieckmann condensation:

Principle: When the two reacting ester functional groups are tethered the reaction is called the condensation and a cyclic β -keto ester is formed.

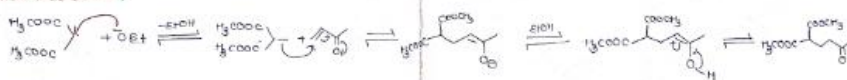
Reaction mechanism:



Michael addition:

Principle: [1,4]-addition of stabilized carban nucleophile to an activated unsaturated system is known as Michael addition.

Reaction mechanism:

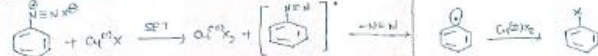


Free Radicals

Sandmeyer reaction:

Principle: Careful examination of the reaction conditions revealed the copper (I) chloride was formed in situ and it catalyzed the replacement of the diazonium group with a chlorine atom.

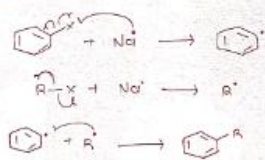
Reaction Mechanism:



Wurtz-Fittig reaction:

Principle: The coupling of an alkyl and aryl halide in the presence of sodium metal to get the corresponding alkylated aromatic compound is known as the Wurtz-Fittig reaction.

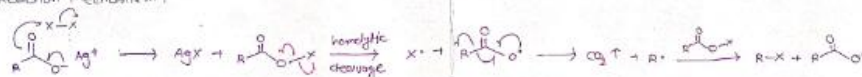
Reaction Mechanism:



Hunsdiecker reaction:

Principle: The halogenative decarboxylation of aliphatic α,β -unsaturated, and certain aromatic carboxylic acid to replace the one carbon starter alkyl halides is referred to as the Hunsdiecker reaction.

Reaction Mechanism:





Mechanism **Principle**

Sonogashira Principle
Pd-catalyzed coupling reaction of terminal alkyne with aryl or vinyl halides using an amine base and CuI as cocatalyst...

Mechanism **Principle**

Suzuki Principle
C-C bond forming reaction between organoboronic acid/esters and halides on palladium catalyzed by Pd-complex...

Mechanism **Principle**

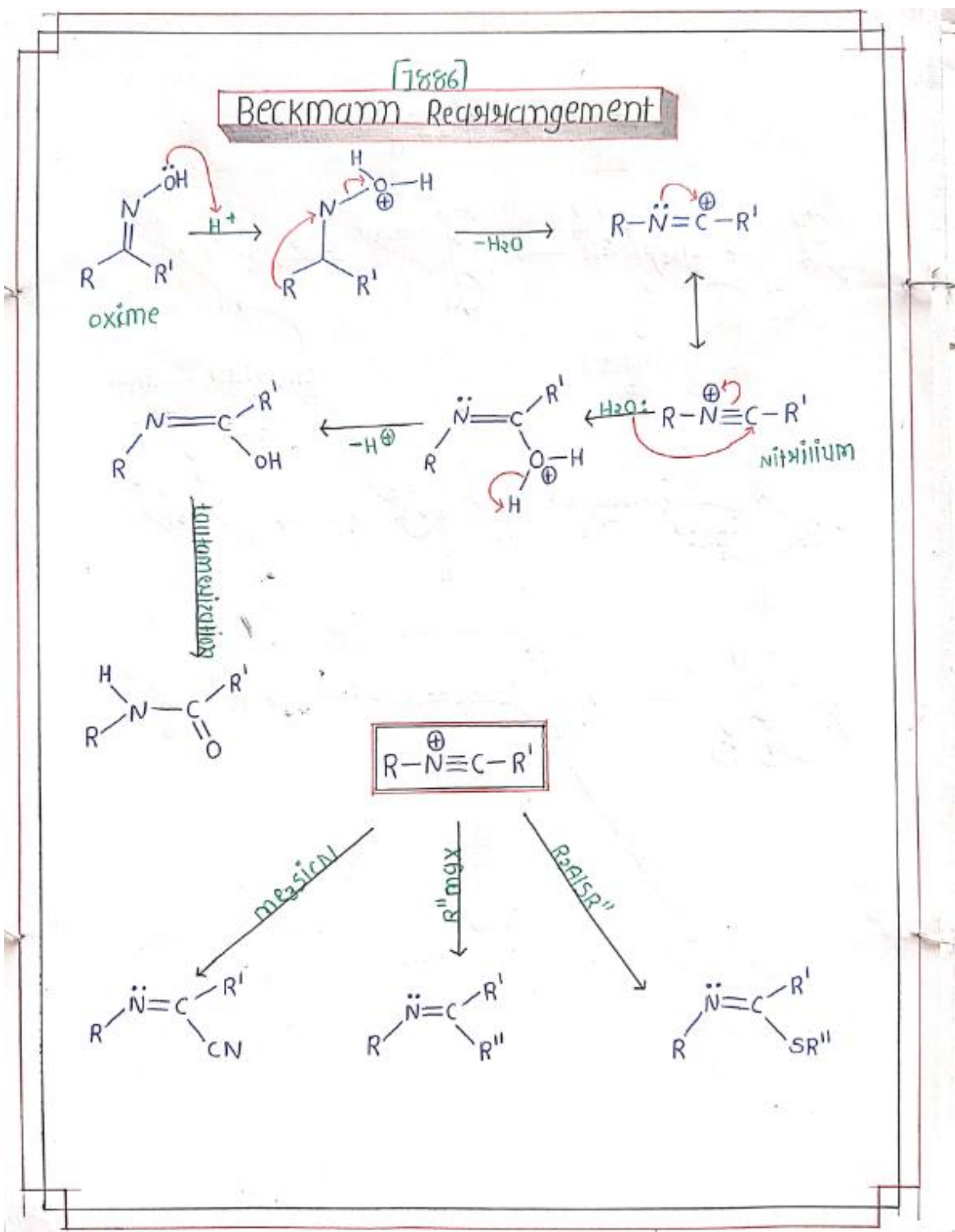
Stille Principle
Pd or Ni catalyzed cross-coupling C-C bond forming reaction between aryl/vinyl-halonic acid and aryl- or vinyl-halides...

Mechanism **Principle**

Kumada Principle
Pd or Ni catalyzed cross-coupling of Grignard reagent with aryl, vinyl halide. Direction of stereoselectivity on alkyl halides on tosylate...

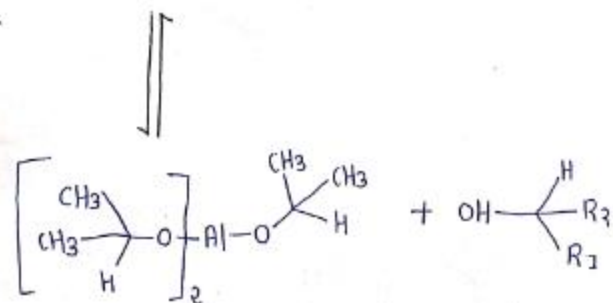
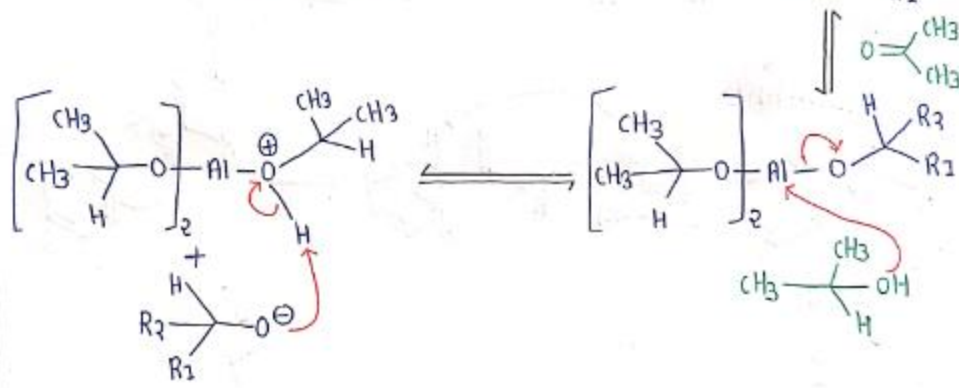
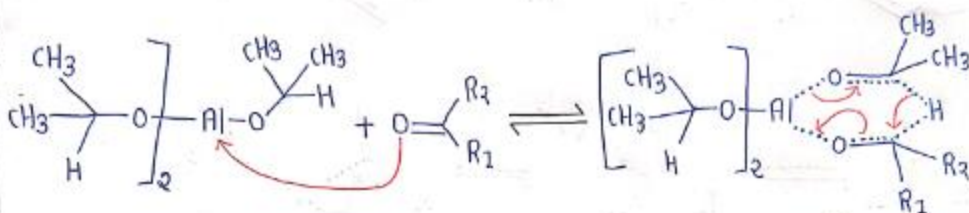
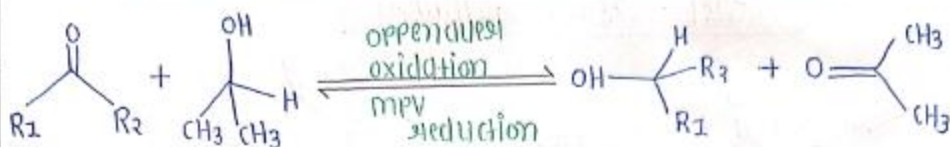
Notes:
 1. **Sonogashira Cross Coupling**
 $R-C\equiv C-H + R'-X \xrightarrow{PdCl_2(PPh_3)_2, CuI, NEt_3} R-C\equiv C-R'$
 2. **Suzuki Cross Coupling**
 $R-C_6H_4-X + R'-C_6H_4-B(OH)_2 \xrightarrow{Pd(PPh_3)_4, NEt_3} R-C_6H_4-R'-C_6H_4$
 3. **Stille Cross Coupling**
 $R-C_6H_4-X + R'-C_6H_4-SiMe_3 \xrightarrow{Pd(PPh_3)_4, NEt_3} R-C_6H_4-R'-C_6H_4$
 4. **Kumada Cross Coupling**
 $R-C_6H_4-X + R'-MgBr \xrightarrow{NiCl_2(PPh_3)_2} R-C_6H_4-R'-C_6H_4$

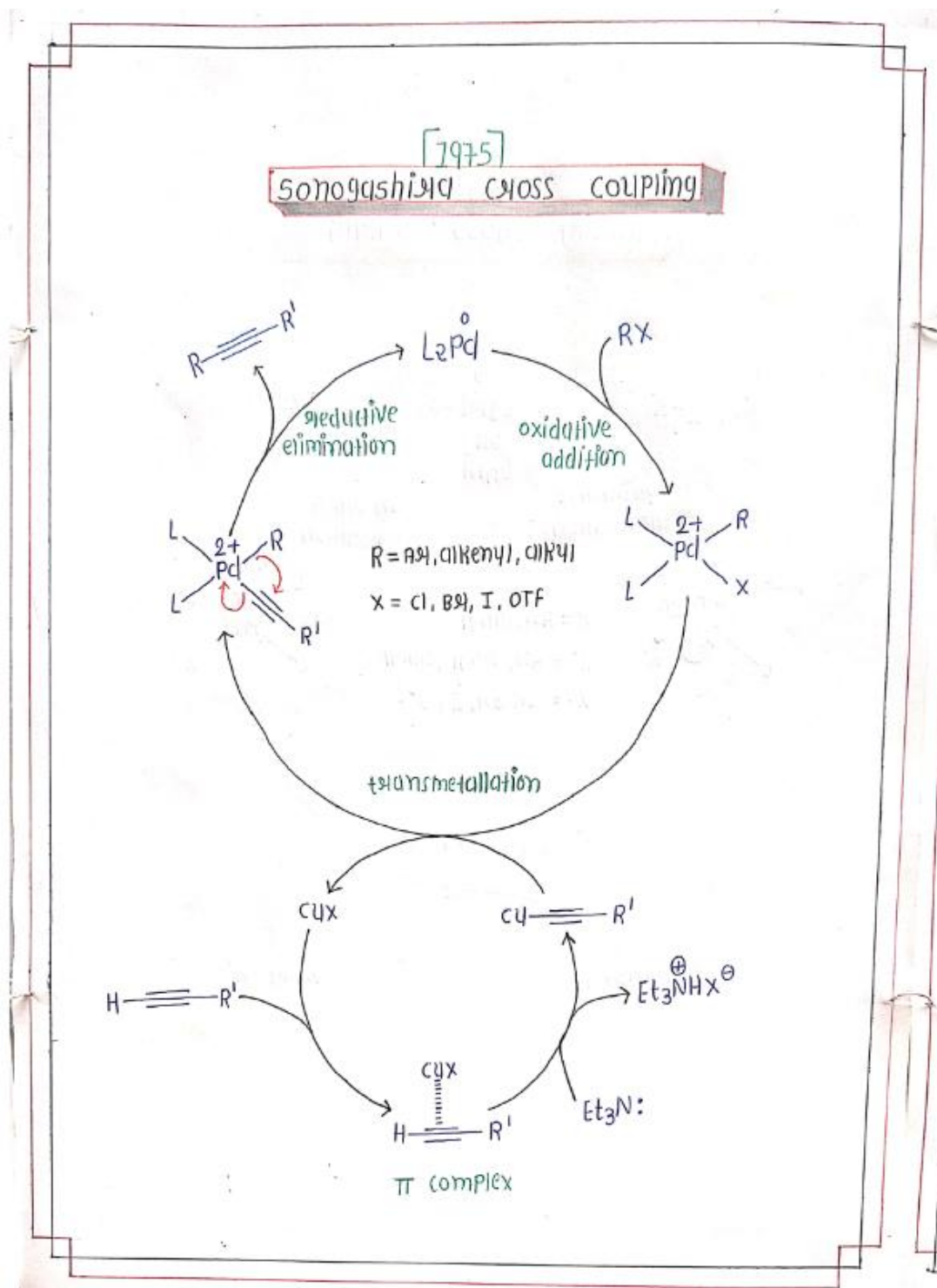
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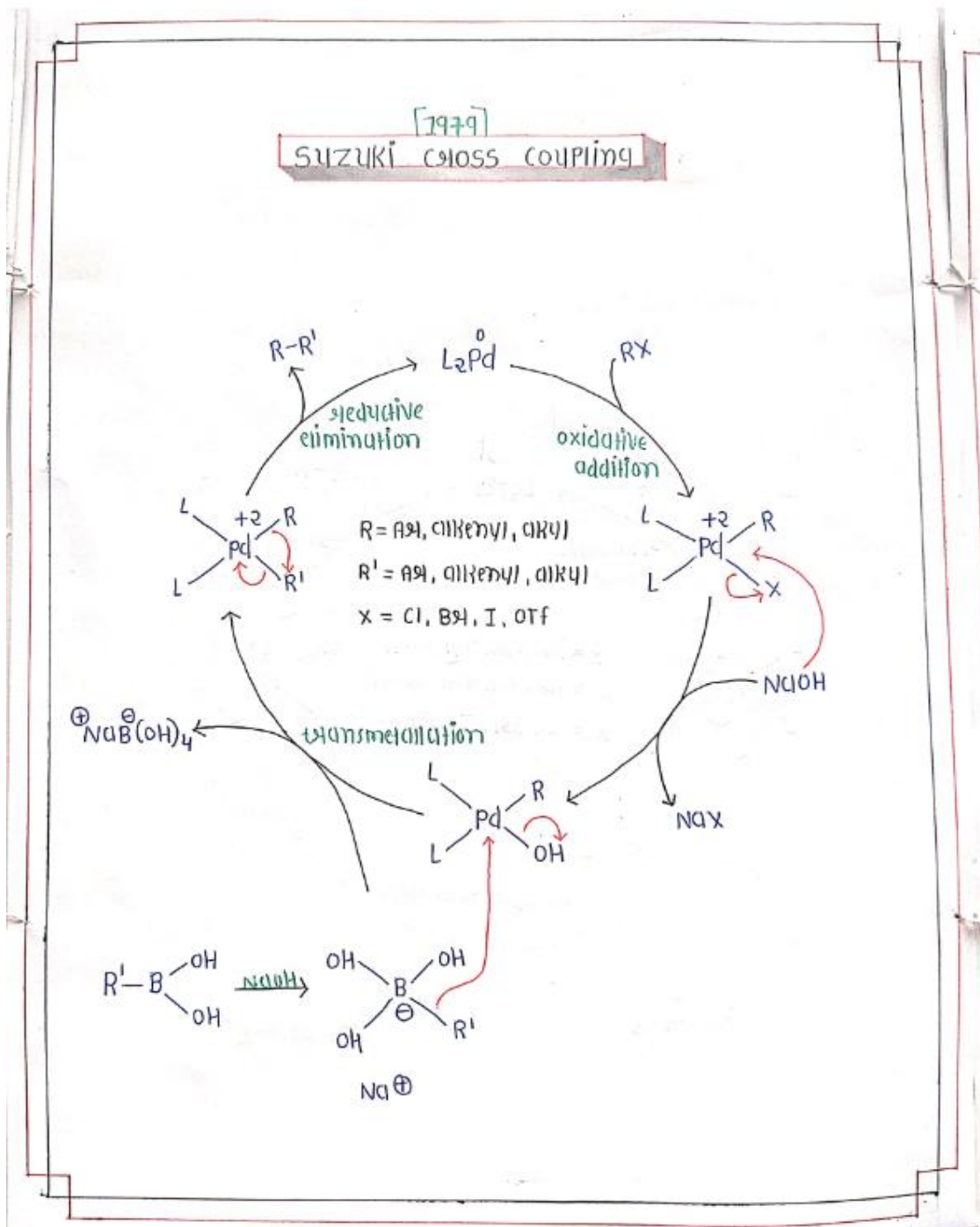


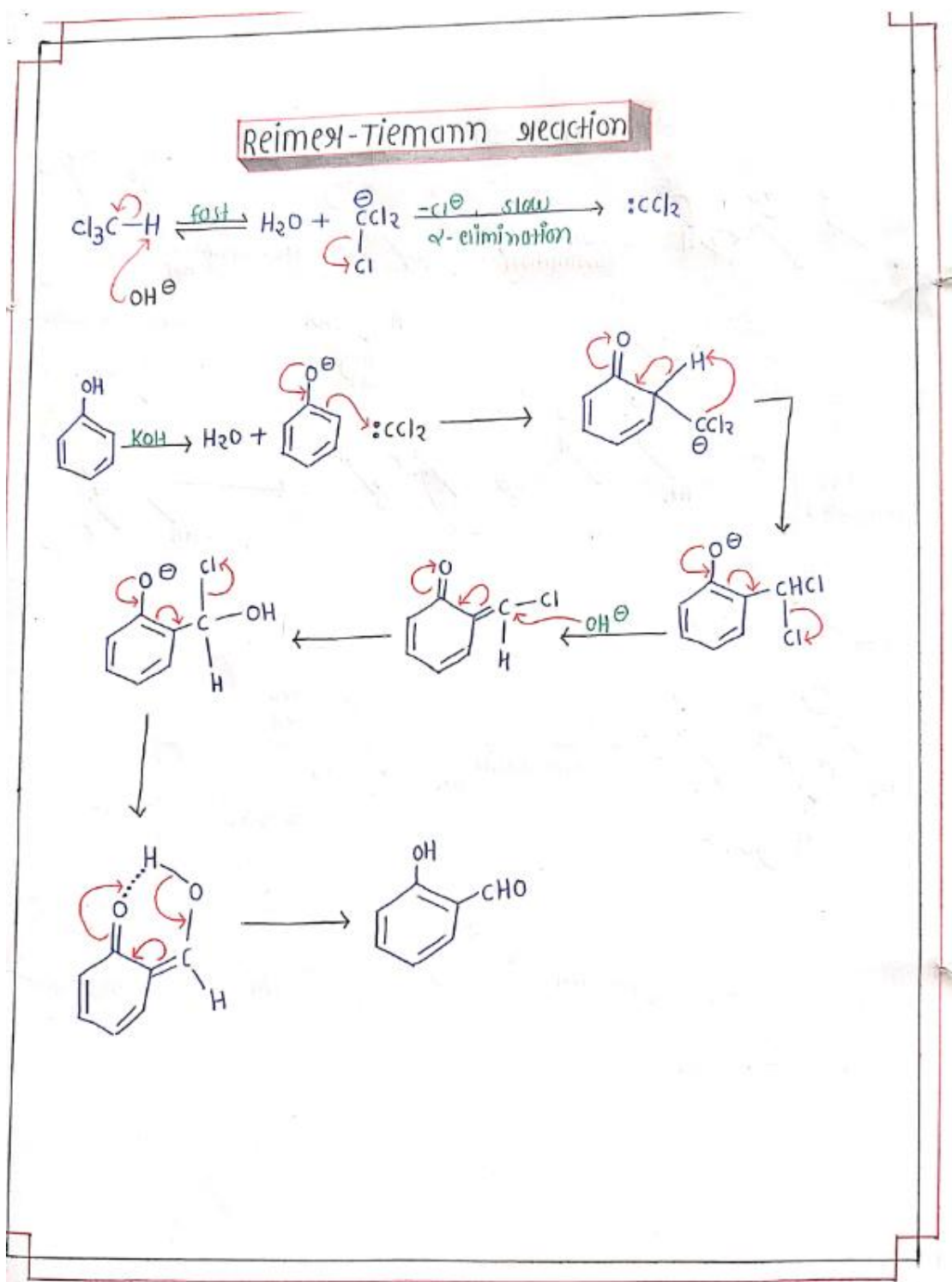


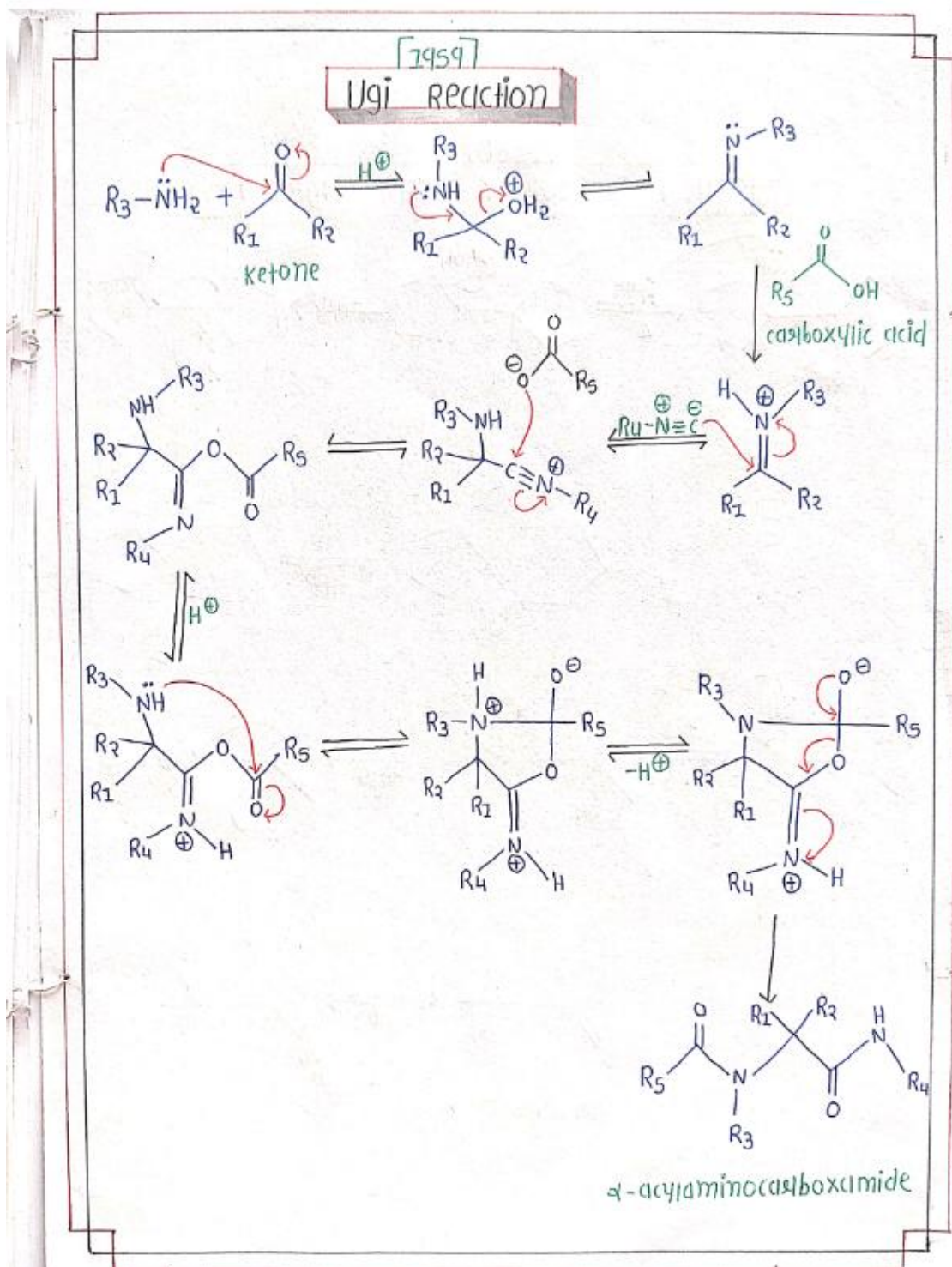
Meeswein-Ponndorf-Vessly reduction

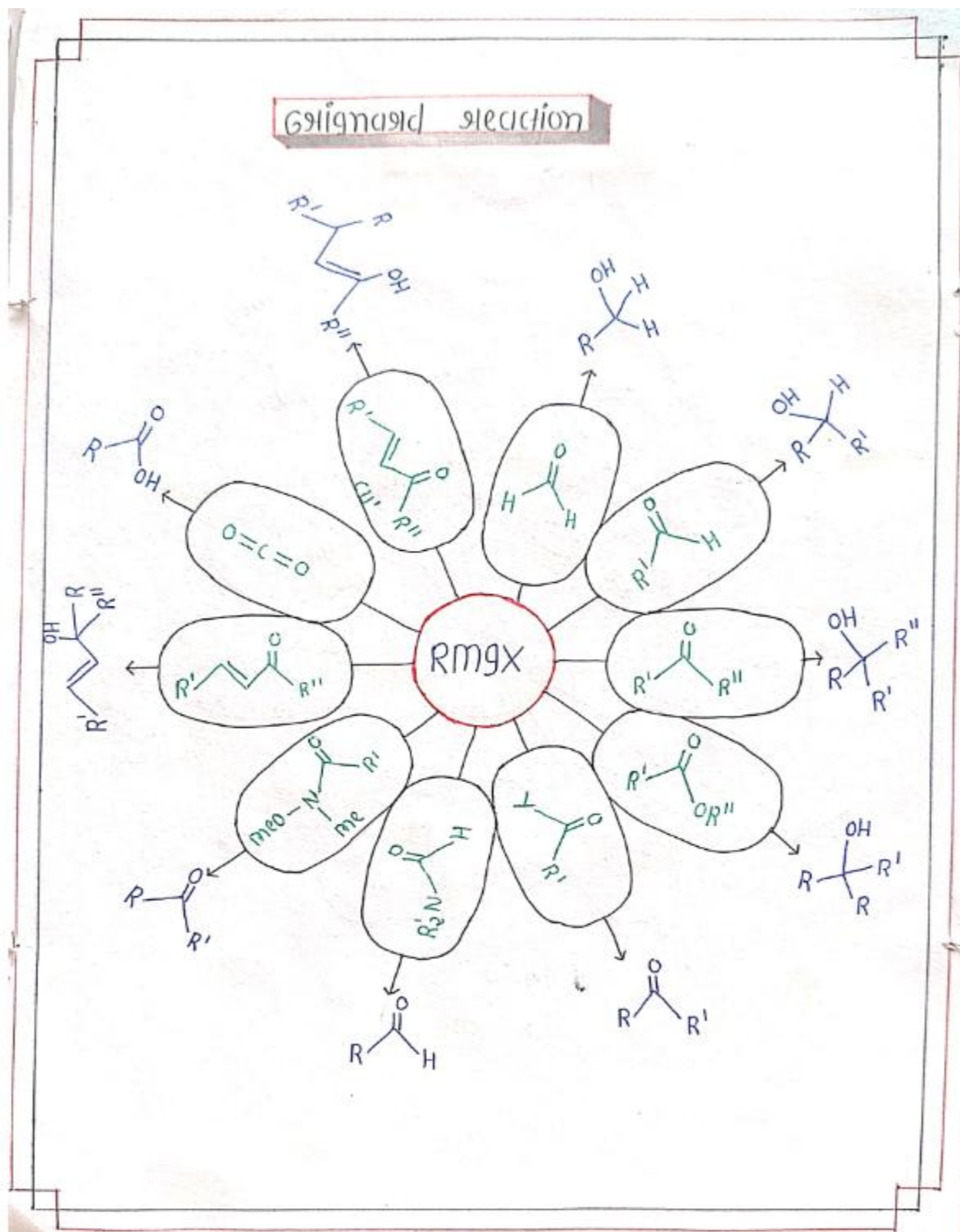


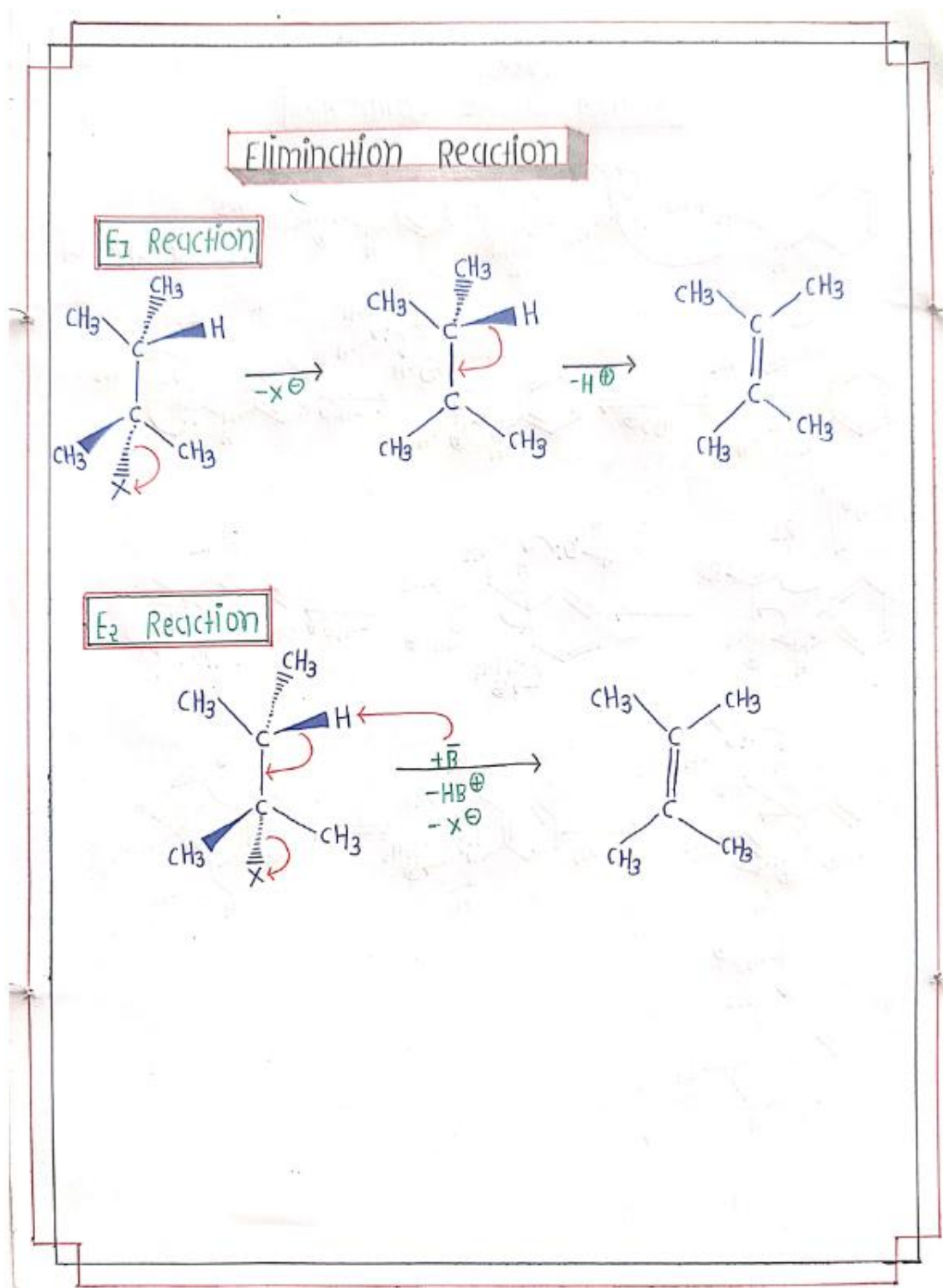


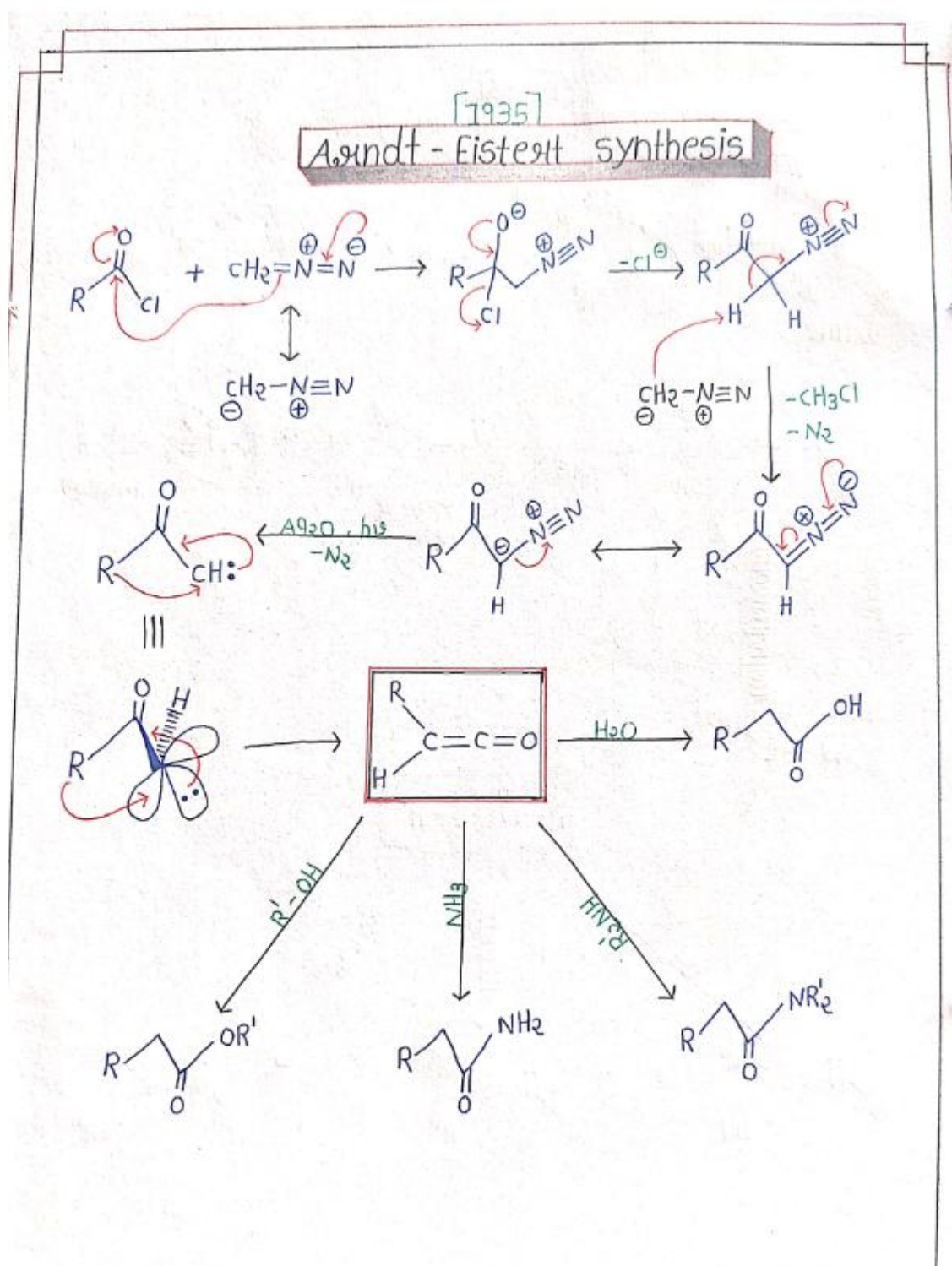


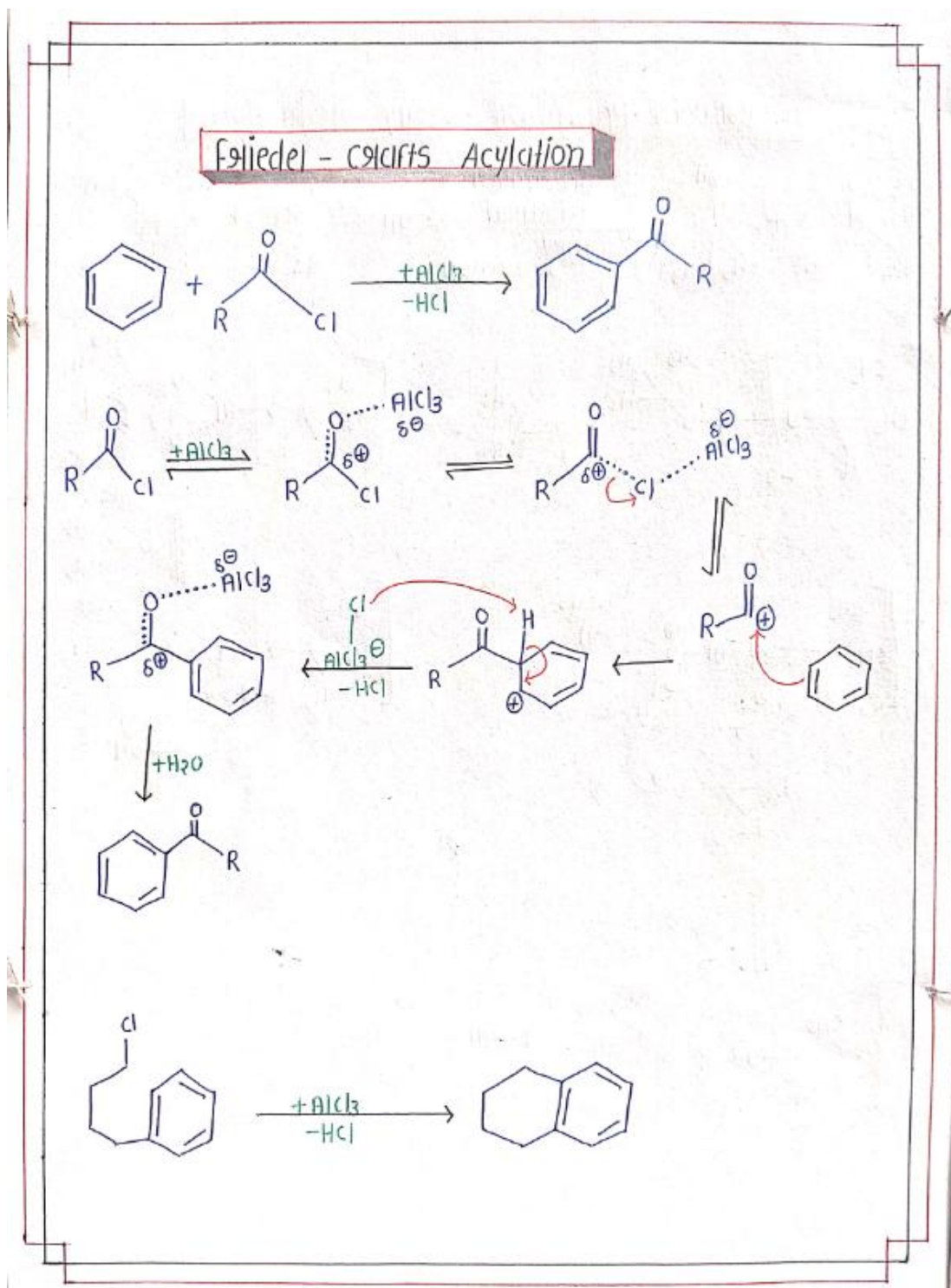


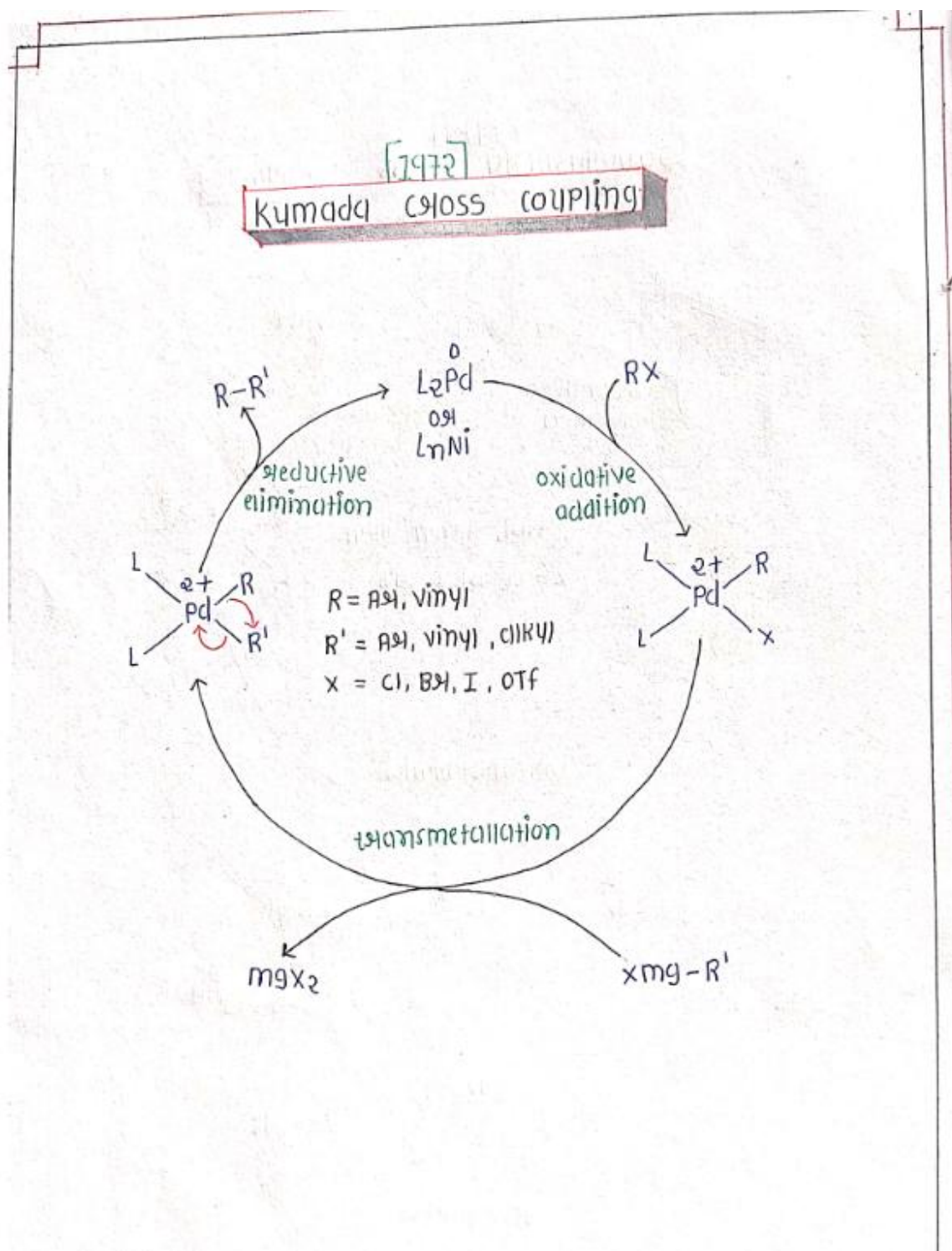


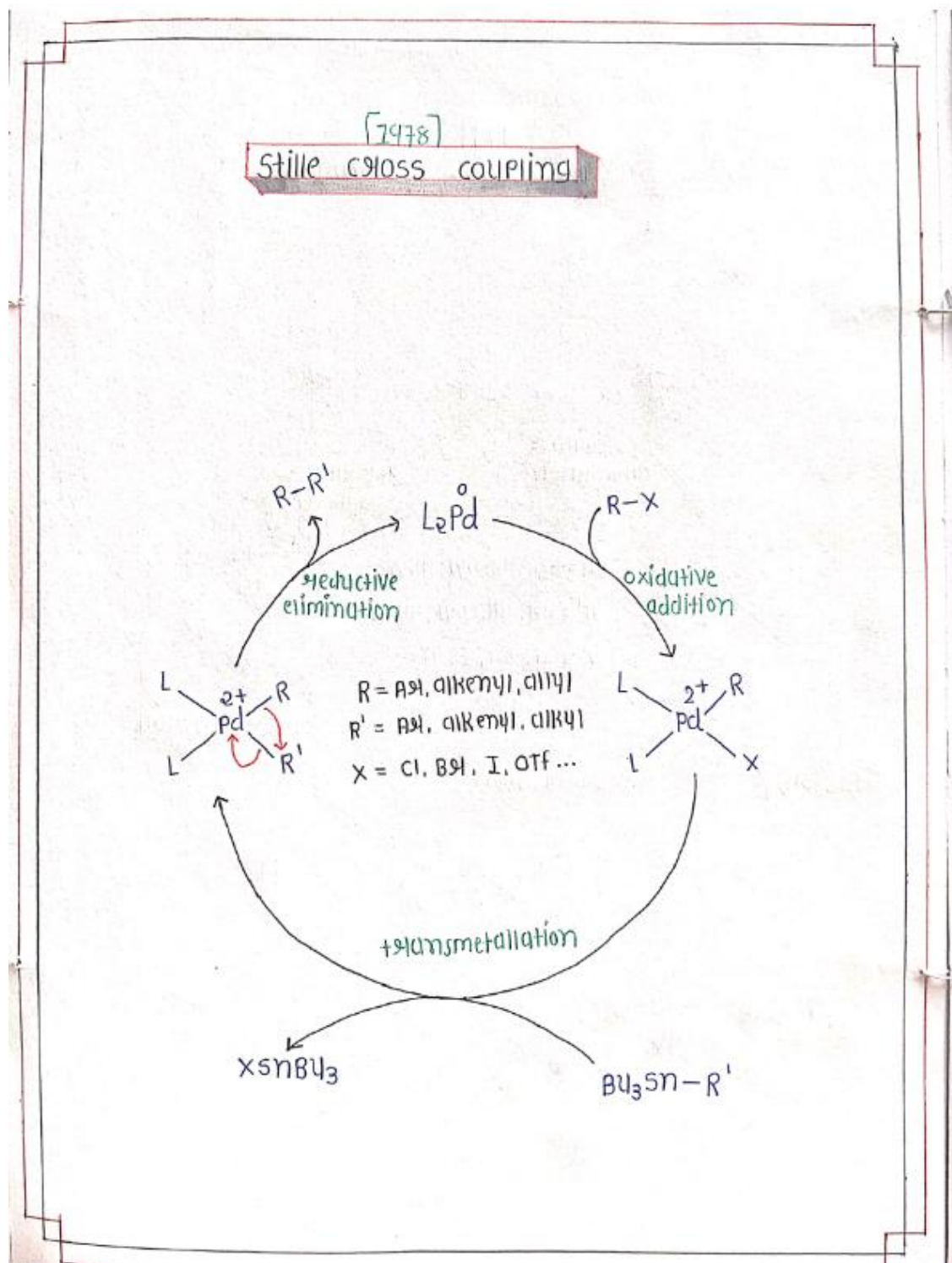


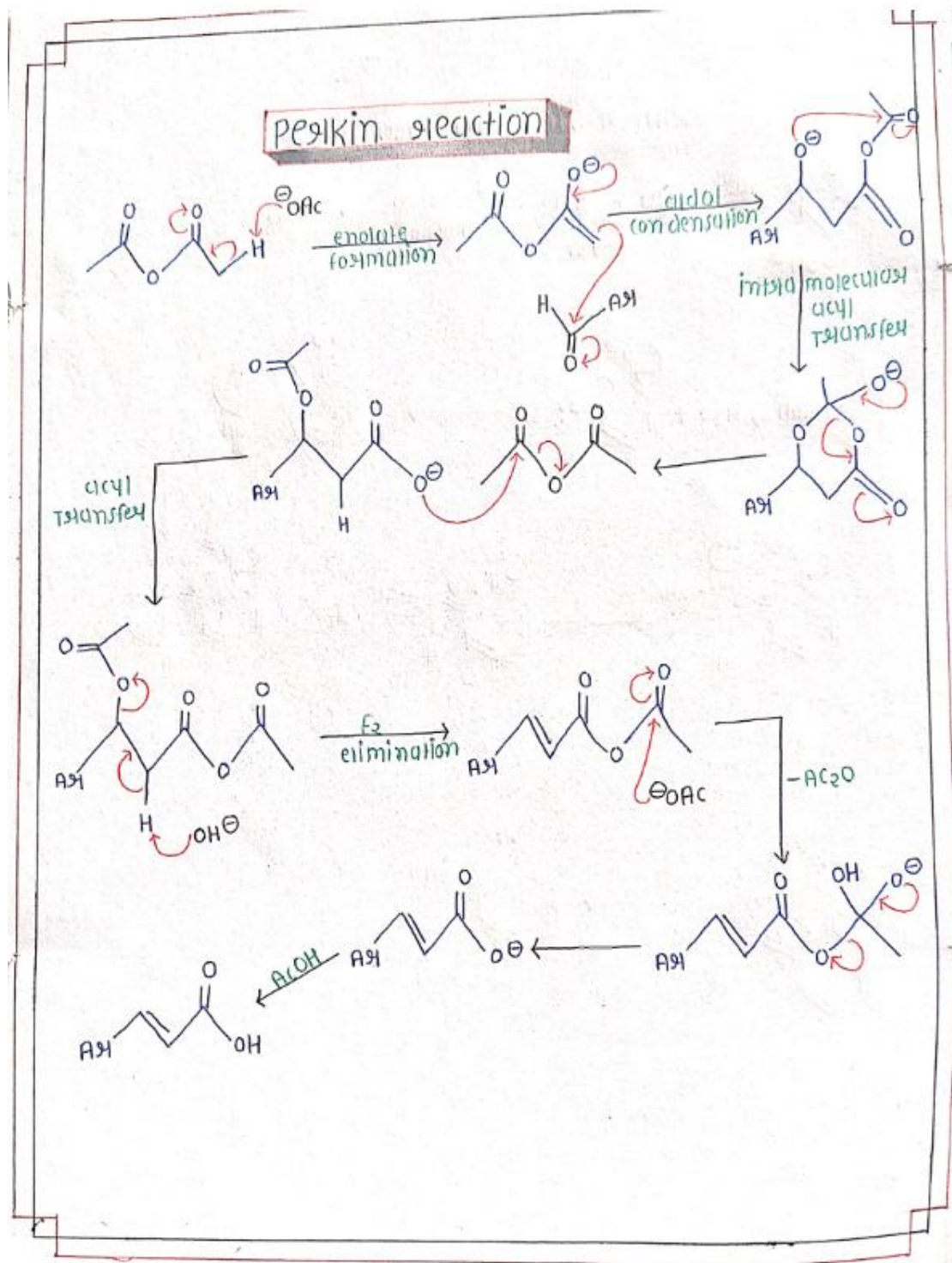


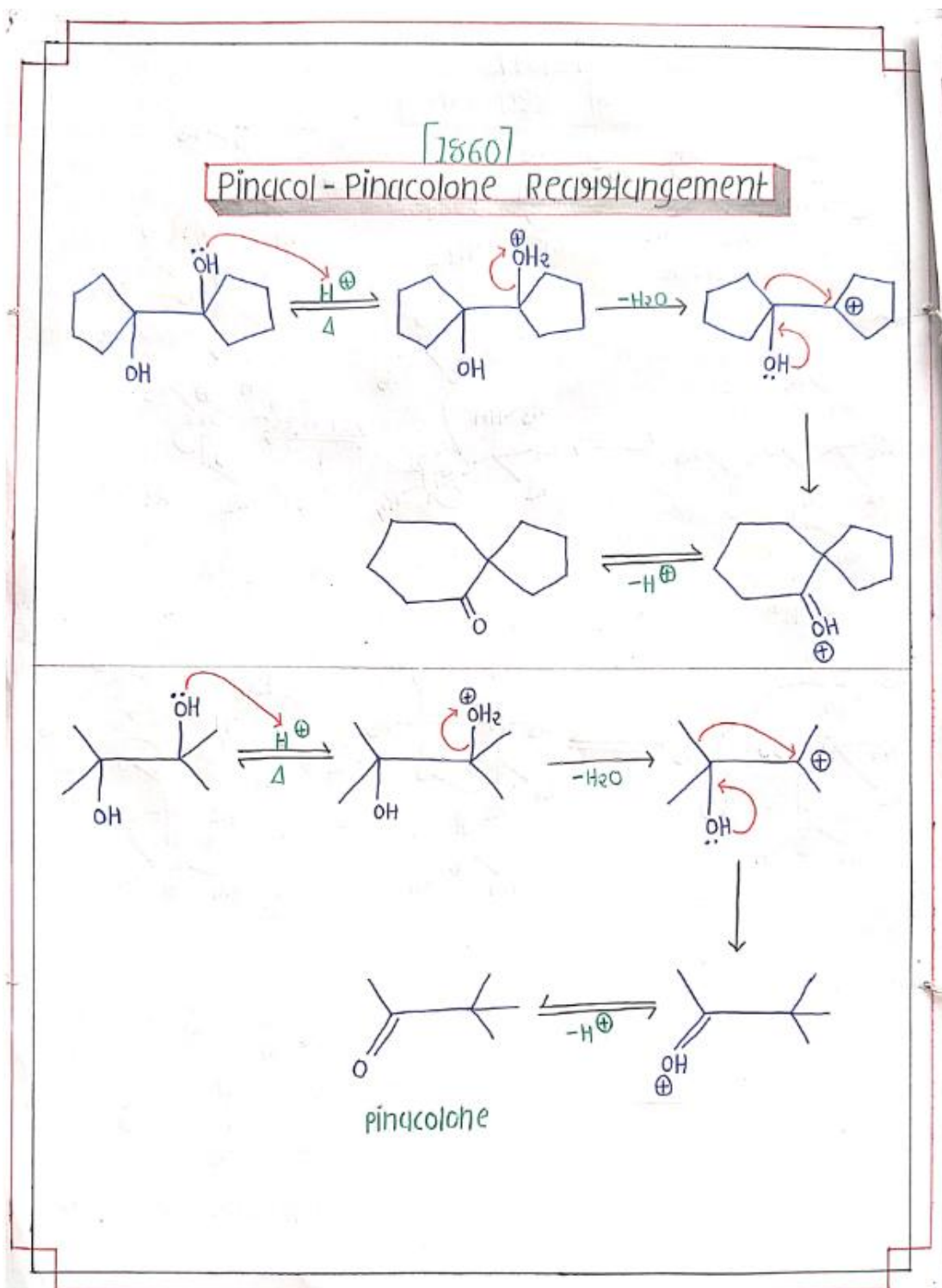










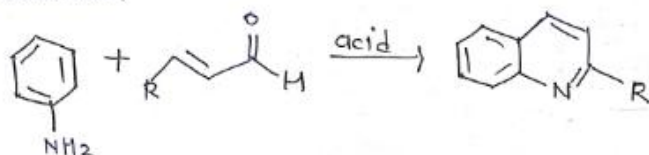




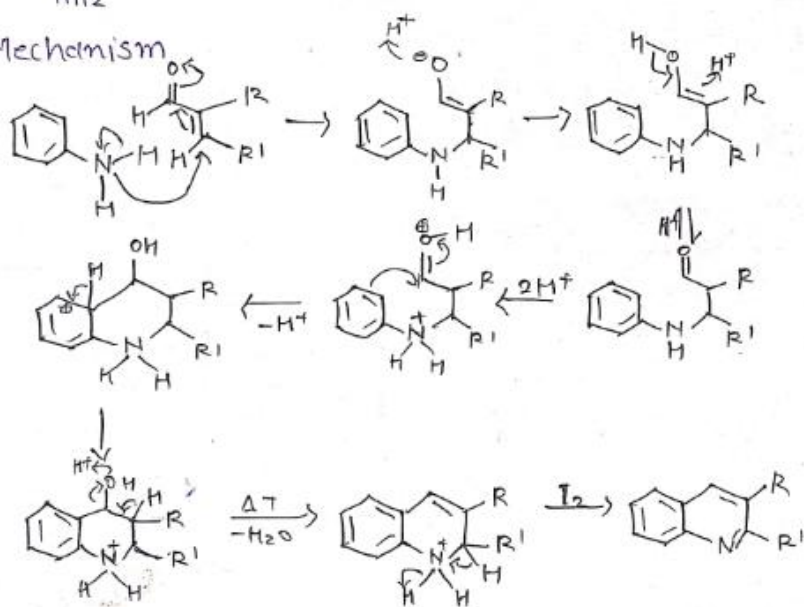
(ii) **Beyer Method For Quinolines:**

→ Acid-catalyzed synthesis of quinolines from primary aromatic amines and in situ generated α,β -unsaturated carbonyl compounds

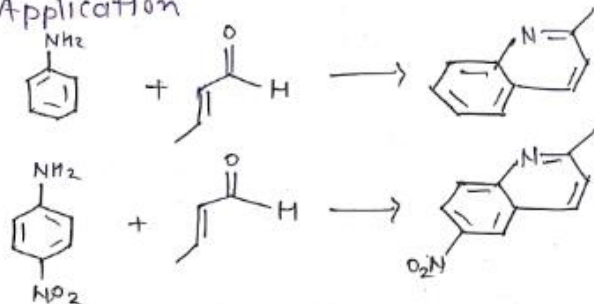
⇒ Reaction




⇒ Mechanism



⇒ Application



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At Atmiya University, **Continuous Internal Assessment (CIA) Exams** are a vital part of our evaluation process. These exams are conducted periodically to assess students' understanding of the subject matter and ensure consistent academic progress. Some sample questions papers are given below:

Enrollment No. _____

ATMIYA UNIVERSITY, RAJKOT

Faculty of Science
 Continuous Internal Assessment
 Component: Test -I – February 2024

Program : B.Sc. Biotechnology	Semester : VI	Batch : 2023-24
Course : 21BBTCC601 – Cell culture Technology		
Duration of Examination : 1½ Hrs.	Max. Marks : 30	Date : 05/02/24

Part A (4 Questions X 1 Mark = 4 Marks)


Answer ALL questions

1.	Bacterial infected cultures appear
2.	Which one is an example of biological contaminants? a) Mycoplasma b) Water c) Sera d) Detergent
3.	Write the full form of HEPA and ULPA.
4.	Define the term contact inhibition.

Part B (3 Questions X 4 Marks = 12 Marks)

Answer ALL questions

5a.	Explain the principle of haemocytometer cell counting.
OR	
5b.	Write a short notes on history of Animal cell culture.
6a.	The total number of cells in a culture is counted using the trypan blue exclusion assay and is found to be 6.8×10^6 cells/ml. Each well in a 6 well plate requires 2×10^5 cells. How should the solution be diluted so that 1ml can be added to each well?
OR	
6b.	In one cell culture experiment, HKE293T cell were grown in T-25 flask for MTT assay and reached the 70-80% confluency after 24 hours. Cells were harvested after trypsinization and made it into single cell suspension for 5 ml. 50 microlitres of cell suspension from this stock was diluted with 100 microlitre of PBS and 50 microlitres of Trypan blue dye. Total 300 cells were counted in four corner square of a hemocytometer, where 15 % of them appear blue when the chamber of the hemocytometer was placed under a microscope. Calculate the concentration (in per ml) and total number of viable cells in original sample volume.
7a	Write a short note on different types of media used in animal cell culture.

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	Criterion- 2	T, L & E
	KI 2.3	M 2.3.1

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 Continuous Internal Assessment
 Component: Test -II - April 2022

Program: **B.Sc. Microbiology** Semester: **VI** Batch: **2021-22**
 Course: **DSE Core 2: Fundamentals of Research Methodology**
 Duration of Examination: **3 Hrs.** Max. Marks: **70** Date: **06/03/2022**

Part A - Answer the following Questions. [10 x 1=10 Marks]

1.	What is research?
2.	Differentiate census and sampling?
3.	What is probability sampling?
4.	Write on research problem?
5.	What is IMRAD?
6.	What is journal impact factor and how it differs from citescore?
7.	Define statistics and its branch.
8.	Write down the full form of ANOVA.
9.	Define median.
10.	Differentiate among exclusive and inclusive class intervals.

Part B – Answer the following Questions [5 x5=25 Marks]

11 a. OR 11 b.	What are the important components of a research report? Write on objectives and motivation in research?
12a. OR 12b.	Differentiate independent and dependent variables in research with an example? Write on data collection methods in research?
13a. OR 13b.	Illustrate using flowchart the different steps involved in publishing a research paper? Write on Plagiarism and how it is affecting research?
14a. OR 14b.	Discuss the methods of data collection. Discuss the modes of presenting scientific data.
15a. OR 15b.	What do you mean by sampling? Discuss its types in detail Use the following grouped data and calculate the sample median and mode.