INDEX

Key Indicator-2.3 Teaching-Learning Process

Metric No. 2.3.1	***Student centric methods , such as experimental learning , participative learning and problem solving methodologies are used for enhancing learning experiences ICT tools .***

SL.NO.	EVIDENCES	WEB LINK
1	Experimental Learning	
2	Assignment Submitted	
3	Participative Learning	
4	Industrial and Hospital Training	
5	Conference and Seminar Attended	
6	Project for B.Pharm & M.Pharm Students	

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Ref No.: Date:

STUDENTS CENTRIC LEARNING METHODS

EXPERIMENTAL LEARNING

B.Pharm and M.Pharm Students gain knowledge practically by Various labs of institutes. Faculties have designed various experiments according to the PCI syllabus.

Experiment No. 1

Aim: To prepare and submit Sulphanilamide from Acetanilide.

Requirements:

Apparatus:

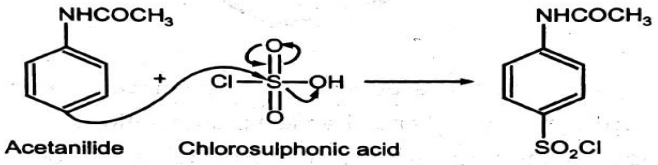
Round bottom flask (RBF), Reflux condenser, Measuring cylinder, Beaker, Water bath, Buchner funnel.

Chemicals:

Acetanilide, Chlorosulphonic acid, concentrated ammonia, Dilute sulphuric acid, Sodium bicarbonate, concentrated hydrochloric acid.

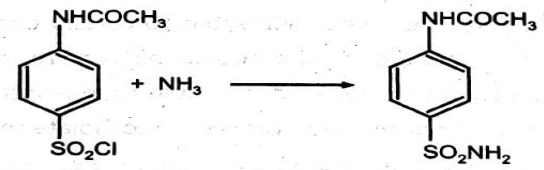
Reactions:

Step 1:



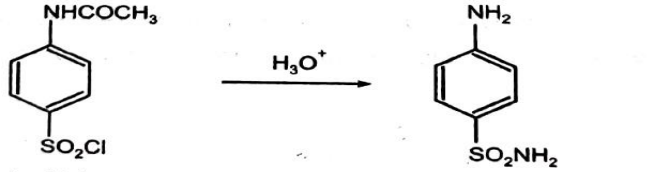
Acetanilide — Chlorosulphonic acid — p-acetamidobenzene sulphonyl chloride

Step 2:



p-acetamidobenzene sulphonyl chloride — p-acetamidobenzene sulphonamide

Step 3:



p-acetamidobenzene sulphonamide — p-aminobenzene sulphonamide (Sulphanilamide)

Rondapalli, Jeypore, Dist. Koraput-764 002, Odisha

Ph: (06854) 291221, Admission Cell: 7978484794, 7978494262

Visit us:www.jcp.ac.inE-mail: jcpprincipal2001@gmail.com

Principle:

Sulphanilamide can be synthesized by taking acetanilide and react it with excess of chlorosulphonic acid, result in formation of p-acetamidobenzene sulphonyl chloride which readily converted into corresponding p-acetamidobenzene sulphonamides upon reaction with ammonia or ammonium carbonate. The acetamido groups undergo acid catalyzed hydrolysis reaction to form p-aminobenzene sulphonamide.

Procedure:

Step 1: Synthesis of p-acetamidobenzene sulphonyl chloride:

- Attach a double necked flask with a dropping funnel and a reflux condenser.
- Take 20 g of acetanilide in the flask and a chlorosulphonic acid, 50 ml (90 g) in the dropping funnel.
- Add the chlorosulphonic acid in small portions and shake the flask time to time to ensure thorough mixing. Heat the reaction mixture on a water bath for 1 hr.
- Keep it for some time for cooling and then pour the oily mixture into 300 g of crushed ice with stirring, contained in a 1 litre beaker.
- Carry out this operation in the fume cupboard since the excess of chlorosulphonic acid reacts vigorously with the water.
- Break up the lumps of solid material and mix the content by stirring for several min. in order to obtain an even suspension of the granular white solid.
- Filter off the p-acetamidobenzene sulphonyl chloride at the pump and wash it with a little cold water.
- Use the crude product in the next stage.

Step 2: Synthesis of p-acetamidobenzene sulphonamide:

- Transfer the crude p-acetamidobenzene sulphonyl chloride to the reaction flask and add a mixture of 70 ml of concentrated ammonia solution and 70 ml of water.
- Mix well the contents of the flask and heat the reaction mixture to just below the boiling point for about 15 minutes.
- The sulphonyl chloride will be converted into a pasty suspension of the corresponding sulphonamide.
- Cool the suspension product in ice, and then add dilute sulphuric acid until the mixture is just acidic to congo red paper.
- Collect the product on a Buchner funnel and wash with a little cold water.
- Dry the crude p-acetamidobenzene-sulphonamide at 100°C, the yield is about 18 g.

Step 3: Synthesis of p-aminobenzene sulphonamide:

- Transfer the crude p-acetamidobenzene sulphonamide to a 500 ml flask; mix 10 ml of concentrated hydrochloric acid 30 ml of water.
- Boil the mixture under reflux for 30-45 minutes.
- Then cool the solution to room temperature, if a solid separates, heat for a further some time.

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- Treat the cooled solution with 2 g of charcoal, heat the mixture to boil and filter with suction.
- Place the filtrate of the mixture i.e. a solution of sulphanilamide hydrochloride in a one litre beaker and carefully add 16 g of solid sodium bicarbonate in some portions with constant stirring.
- After the evolution of gas, the suspension is test with litmus paper and if it is still acid, add more sodium bicarbonate until neutral. Cool in ice, filter off the sulphanilamide with suction.
- The yield is 15 g, m.p. 161-163°C. A pure product, m.p. 163-164°C, recrystallisation from water or from alcohol.

Calculation:

Here limiting reagent is acetanilide; hence yield should be calculated from its amount taken.

Molecular formula of acetanilide = C_8H_9NO

Molecular formula of sulphanilamide = $C_6H_8N_2O_2S$

Molecular weight of acetanilide = 135 g/mole

Molecular weight of sulphanilamide = 172 g/mole

Theoretical yield:

135 g acetanilide forms 172 g sulphanilamide

Therefore, 20 g acetanilide will form .....? (X) g sulphanilamide

X = (172 × 20)/135 = 25.48 g

Theoretical yield = 25.48 g

Practical yield = ———— g

% Yield = (Practical Yield/Theoretical Yield) × 100

Result:

Sulphanilamide was synthesized from acetanilide and submitted.

Name of compound	Sulphanilamide
Theoretical yield	..... gm
Practical yield	.....gm
% Practical yield	..... %
Melting point	..... °C

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Ref No.: Date:

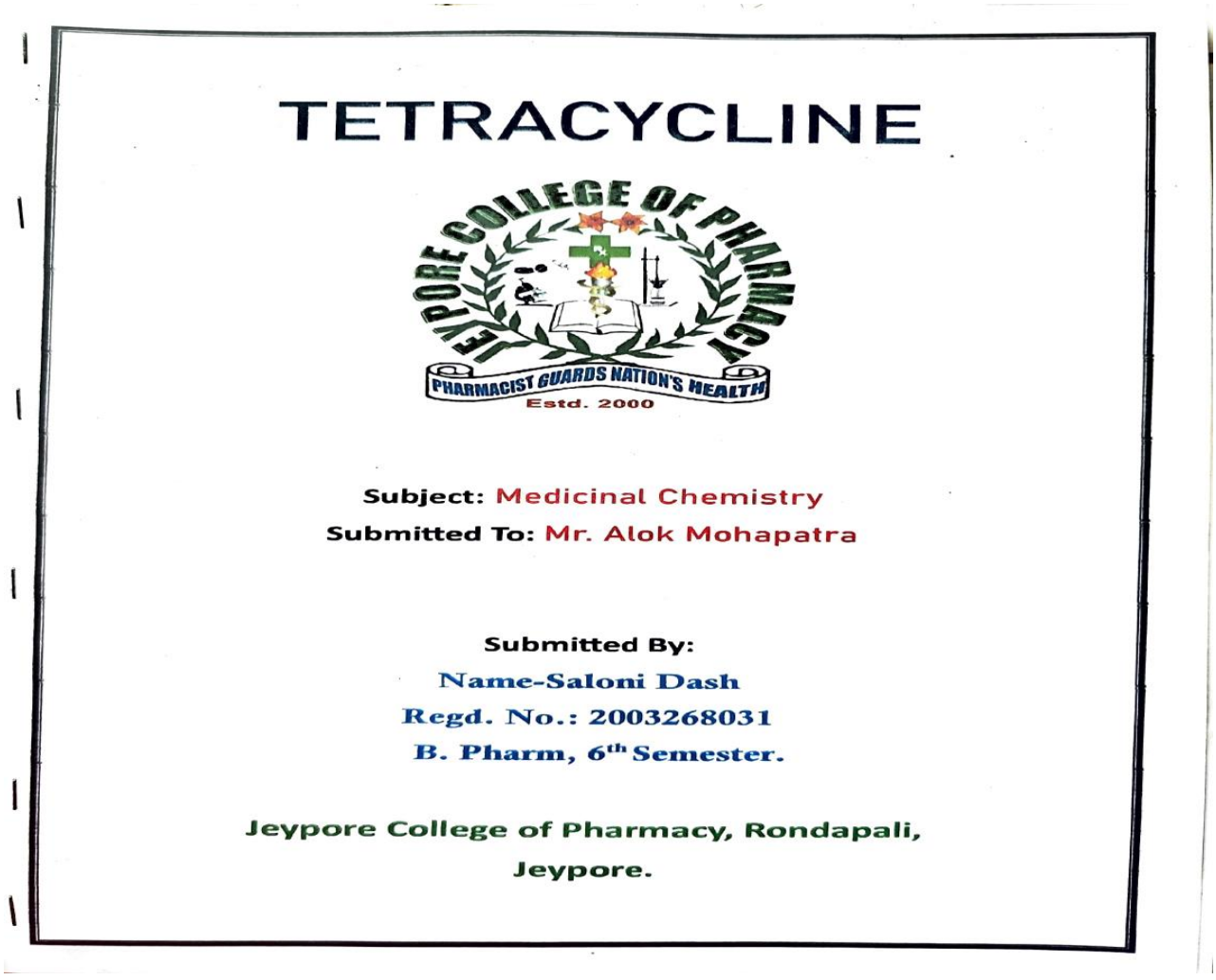
PIC-4:STUDENTS DOING EXPERIMENTS IN CHEMISTRY LAB.

PIC-5:STUDENTS DOING EXPERIMENTS IN CHEMISTRY LAB.

Ref No.: Date:

Assignments

It is a task given to the students by their concerned subject teachers on various topics and instructs them to complete in a define time. Assignments can be in the form of written or practical. It provides opportunity for student to learn, practice and achieve the learning goals. They also gather information about a particular topic and finally report what they have learned or researched.



PIC-1: ASSIGNMENT SUBMITTED BY B.Pharm 6th Sem Student

Ref No.: **Date:**

Tetracycline

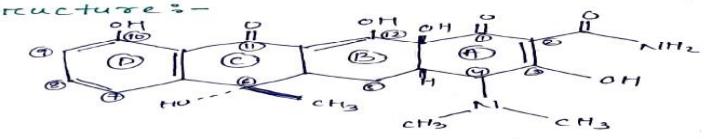
Tetracycline :-

→ Tetracycline is a broad-spectrum antibiotic that belongs to a class of drugs known as tetracylines.

→ These antibiotics are derived from a natural source, specifically from the bacterium streptomyces aureofaciens.

→ Tetracycline and its derivatives have been used for decades to treat a wide variety of bacterial infections.

Structure :-



→ There are derivatives of an octahydro-naphthacene, a hydrocarbon system that compromise four annulated six member rings.

→ Tetracylines are amphoteric compounds i.e. forming salts with either acids or bases.

→ In neutral solution these substances exist mainly as zwitter ions.

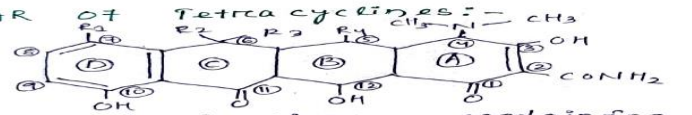
→ The tetracyclines forms stable chelate complex with many metals such as Ca^{2+}, Mg^{2+}, Fe^{2+}, Al.

Stereochemistry :-

→ The stereochemistry of the tetracylines is very complex.

→ Carbon atoms 4, 4a, 5, 5a, 6 and 12a are potentially carbon, depending on substitution.

SAR of Tetracyclines :-



→ All derivatives containing fewer than four rings are inactive or nearly inactive.

→ C_1 & C_3 :- Keto-enol is essential for activity.

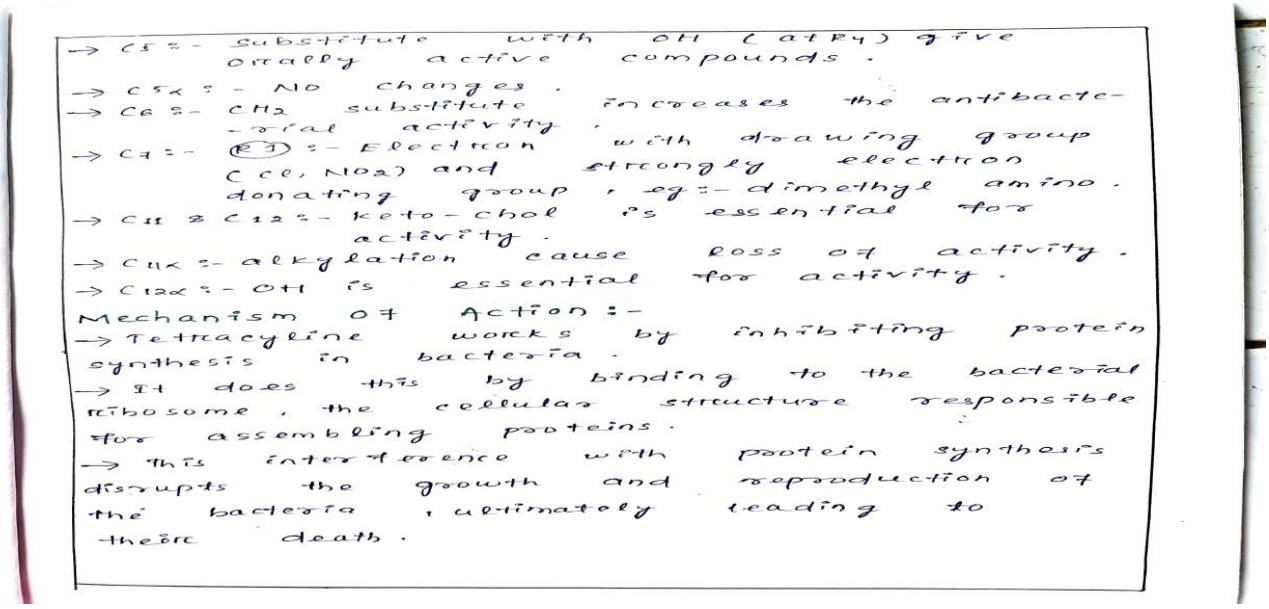
→ C_2 :- Replacement of amide with other (aldehyde / nitrile) reduce activity.

→ C_4 :- Removal of 4-dimethyl amino group reduce activity.

→ C_{4a} :- No changes.

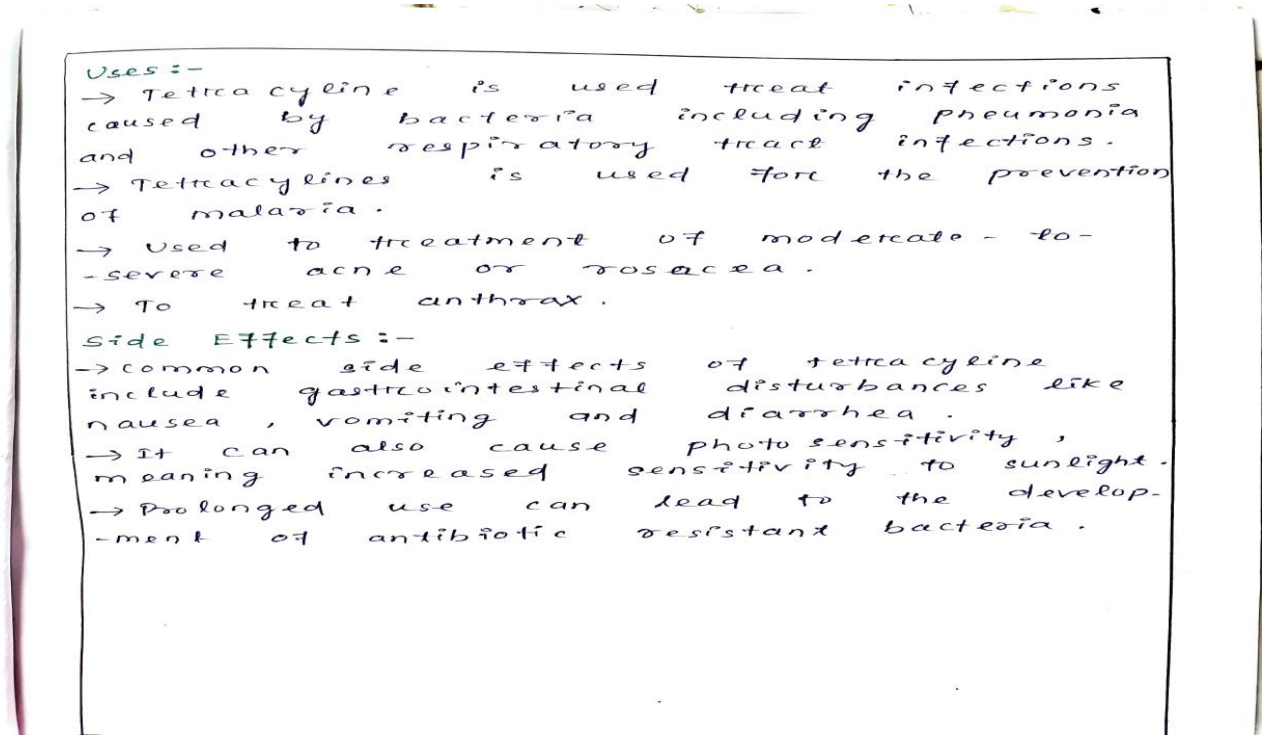
PIC-2 & 3 : ASSIGNMENT OF B. Pharm 6th Sem Student

Ref No.: Date:



→ C5 :- substitute with OH (alkyl) give orally active compounds.
→ C5α :- No changes.
→ C6 :- CH_2 substitute increases the antibacterial activity.
→ C7 :- (F) :- Electron with drawing group (CCl_3, NO_2) and strongly electron donating group, eg :- dimethyl amino.
→ C11 & C12 :- keto-chol is essential for activity.
→ C11α :- alkylation cause loss of activity.
→ C12α :- OH is essential for activity.

Mechanism of Action :-
→ Tetracycline works by inhibiting protein synthesis in bacteria.
→ It does this by binding to the bacterial ribosome, the cellular structure responsible for assembling proteins.
→ This interference with protein synthesis disrupts the growth and reproduction of the bacteria, ultimately leading to their death.



Uses :-
→ Tetracycline is used treat infections caused by bacteria including pneumonia and other respiratory tract infections.
→ Tetracyclines is used for the prevention of malaria.
→ Used to treatment of moderate-to-severe acne or rosacea.
→ To treat anthrax.

Side Effects :-
→ common side effects of tetracycline include gastrointestinal disturbances like nausea, vomiting and diarrhea.
→ It can also cause photosensitivity, meaning increased sensitivity to sunlight.
→ Prolonged use can lead to the development of antibiotic resistant bacteria.

PIC-4 & 5 : ASSIGNMENT OF B. Pharm 6th Sem Student

Ref No.: Date:

Model Making

Model Making helps students to create a scaled down representation of an object or system. It helps in visualizing ideas, communicates design and gives a details knowledge of a particular object. Teaching learning process practices with the objective of outcome based learning at Jeypore College of Pharmacy to improve the professional competency of teaching learning process.

PIC-1:Student of B. Pharm Demonstrating their model

PIC-2: Student receiving Certificate for presenting their models

Ref No.: **Date:**

Participative Learning

Participative learning is a teaching and learning method that encourages students to be actively involved in the various learning and research processes. It is a student- Centric approach that helps students to learn of their own and showcase themselves better.

Our Students attended various conferences like IPC 2023, National and International Seminars

PIC-1 POSTER PRESENTATION BY STUDENT

Ref No.: **Date:**

C. V. Raman Global University
ODISHA BHUBANESWAR INDIA

Government of India
AERB
Atomic Energy Regulatory Board

CGU-PY-AERB-NS-2023

CERTIFICATE
OF PARTICIPATION

This certificate is proudly presented to

Ms. Rasmita Das

for actively participating/presenting posters during the two-day National Seminar on "Frontiers of Radiopharmaceuticals and Radiological Contrast Agents in Healthcare: Opportunities and Challenges", sponsored by Atomic Energy Regulatory Board (AERB) and organized by Faculty of Pharmacy, C. V. Raman Global University, Bhubaneswar, Odisha on 15th and 16th December, 2023.

Patron Convener Organizing Committee

Certificate No : CGU-PY-AERB-NS-2023-F133

PIC-2 CERTIFICATE OF POSTER PRESENTATION

Ref No.: **Date:**

NATIONAL AND INTERNATIONAL SEMINARS

PIC- 3 & 4: Students attending Seminar at DADHICHA College (YOUTH PHARMA FESTIVAL 2024)

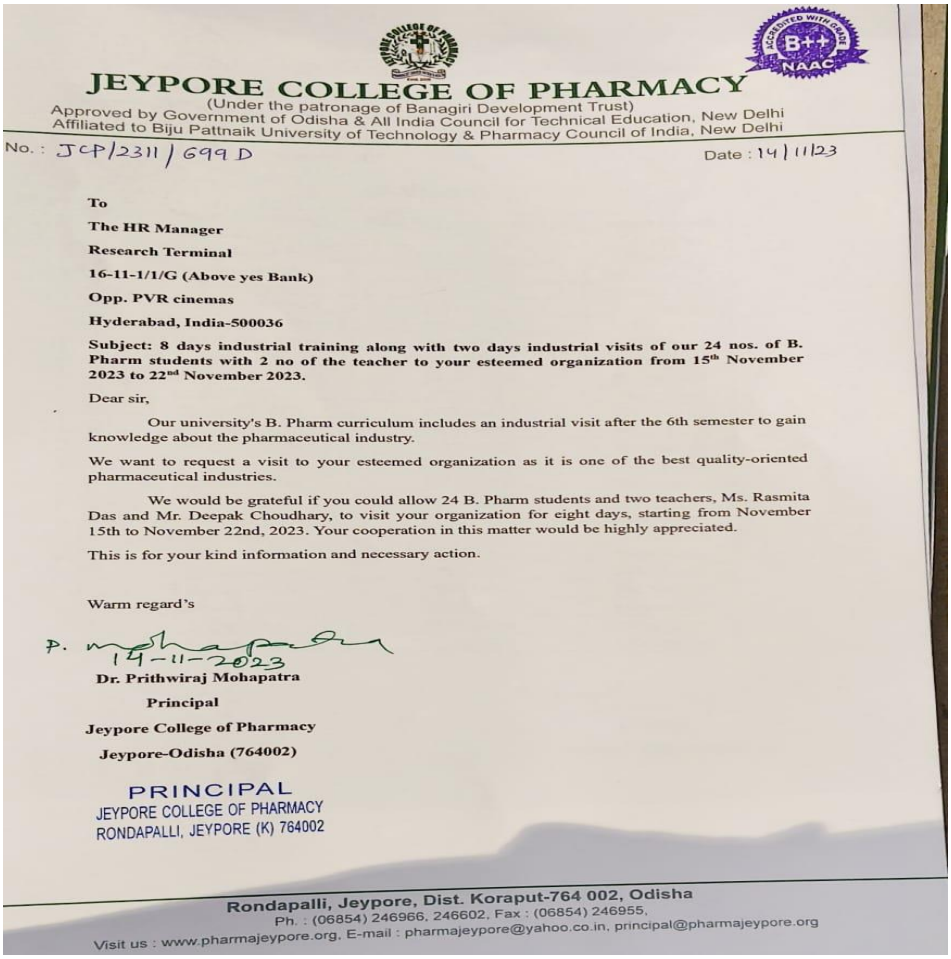
Ref No.: **Date:**

PIC-5 & 6 : STUDENTS PRESENTING THEIR POSTER AT SEMINAR

Ref No.: **Date:**

INDUSTRIAL VISIT & TRAINING

Industrial training program is considered one of the most practical methods of learning and teaching. It provides students to learn practically and grab the knowledge through practice in the industries. According to PCI syllabus students have to undergo practical training for a period of 10days.



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No. : JCP/2311/699 D Date : 14/11/23

To
The HR Manager
Research Terminal
16-11-1/1/G (Above yes Bank)
Opp. PVR cinemas
Hyderabad, India-500036

Subject: 8 days industrial training along with two days industrial visits of our 24 nos. of B. Pharm students with 2 no of the teacher to your esteemed organization from 15th November 2023 to 22nd November 2023.

Dear sir,

Our university's B. Pharm curriculum includes an industrial visit after the 6th semester to gain knowledge about the pharmaceutical industry.

We want to request a visit to your esteemed organization as it is one of the best quality-oriented pharmaceutical industries.

We would be grateful if you could allow 24 B. Pharm students and two teachers, Ms. Rasmita Das and Mr. Deepak Choudhary, to visit your organization for eight days, starting from November 15th to November 22nd, 2023. Your cooperation in this matter would be highly appreciated.

This is for your kind information and necessary action.

Warm regard's

P. Mohapatra
14-11-2023
Dr. Prithwiraj Mohapatra
Principal
Jeypore College of Pharmacy
Jeypore-Odisha (764002)

PRINCIPAL
JEYPORE COLLEGE OF PHARMACY
RONDAPALLI, JEYPORE (K) 764002

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PIC-1 LETTER FOR INDUSTRIAL TRAINNING

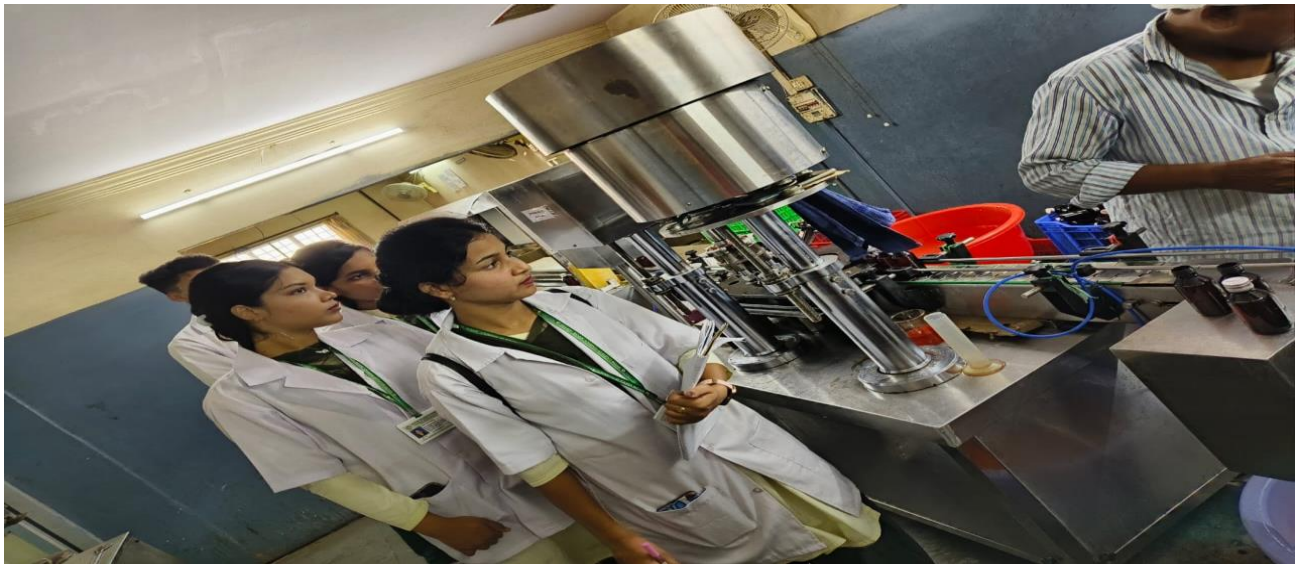
Ref No.: **Date:**

PIC-2 STUDENTS 1st DAY OF INDUSTRIAL VISIT

PIC-3 STUDENTS WITH THEIR INDUSTRIAL TRAINING CERTIFICATES

Ref No.: **Date:**

PIC-4 : Students getting knowledge about the instrument during industrial training



PIC-5 : Students getting knowledge about the instrument during industrial training

Ref No.: **Date:**

HOSPITAL TRAINING

Hospital training program allows the students to relate theoretical knowledge along with its practical application in the hospital. According to PCI syllabus students have to undergo hospital training for a period of 4 weeks.

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Ref. No. : JCP/2408/3945 Date : 21/06/2024

To
The Superintendent
MKCG, Medical College & Hospital
Berhampur

Sub: One Month Practical Training of B.Pharm students.

Madam,

With reference to the subject cited above, I am to intimate that the following student of our college after appearing the B.Pharm course examination conducted by the BPUT during the month of May-2024 have applied to undergo practical training in your esteemed institution.

Sl.No.	Name of the Student	Regd. No.	Choice of Training Centre
01	Sudhansu Sekhar Mishra	2003268092	MKCG,MCH,Berhampur
02	S.Hari Prasad	2003268084	-Do-
03	Patra Sonali Bhimsen Bhai	2003268024	-Do-
04	Amrut Mohan Prasad Sahu	2003268005	-Do-
05	S Bikash Reddy	2003268083	-Do-
06	Sankar Prasad Nayak	2003268032	-Do-

I would, therefore request you to kindly allow the students on obligatory basis to take their practical training in your institution and after completion of the training successfully, a certificate may please be awarded to him/her/them with intimation to our college.

Your kind co-operation is requested.

Thanking you.
Yours faithfully,

21/06/2024
Principal

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JEYPORE COLLEGE OF PHARMACY
RONDAPALLI, JEYPORE (K) 764002

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Visit us : www.pharmajeypore.org, E-mail : pharmajeypore@yahoo.co.in, principal@pharmajeypore.org

PIC-1 HOSPITAL TRAINING LETTER

Ref No.: **Date:**

JEYPORI COLLEGE OF PHARMACY

Kanavihar, Rondapalli, Jeypore, Dist: Koraput Pin 764002, Odisha

Phone: (06854) 246966, 246602

PRACTICAL TRAINING CONTACT FORM FOR PHARMACISTS

(See Regulation 21 (1) 1991 farmed under Section 10 of the pharmacy Act. 1948)

SECTION-I

This form has been issued to Sarita Maharana (Name of Student Pharmacist)

S/o,D/o Subash chandra Maharana residing at _____ Who has produced evidence before me that he / she is entitled toreceive the Practical Training under Education Regulation farmed under section 10 of the pharmacy Act. 1948

Place: Jeypore

Date: 24.6.24

Head of the Teaching Institution

PRINCIPAL
JEYPORE COLLEGE OF PHARMACY
RONDAPALLI, JEYPORE (K) 764002

SECTION II

Sarita Maharana (Name of Student Pharmacist) Accept SANJEEB KUMAR SUBUDHI (Name of Apprentice Master)

Of DHH-Koraput, Jeypore Hospital as my Apprentice Master for the above training and agree to obey & respect him/her during the entire period of my training

Place: Jeypore

Date: 26.6.24

Sarita Maharana
Student Pharmacist

SECTION III

SANJEEB KUMAR SUBUDHI (Name of Apprentice Master) accept Sarita Maharana (Name of Student Pharmacist)

As a trainee & agree to given him/her Training facilities in my organization so that during his/her Training he/she may acquire

1. Working knowledge of keeping of records required by various Acts affecting the profession of pharmacy &
2. Practical Experience in :
   (A) The manipulation of Pharmaceutical Apparatus in common use.
   (B) The reading. Translation & Copying of Prescription including the checking of Doses.
   (C) The Dispensing of Prescriptions illustrating the commoner methods of administrating medicament &
   (D) The storage of Drugs &Medicinal preparations.

Place: Jeypore

Date: 26.6.24

PHARMACY OFFICER
SUB STORE
DHH JEYPORE KORAPUT

(Apprentice Master)
(Name of the Address of the Institution)

SECTION-IV

I certify that Sarita Maharana has undergone more than 150 Hours. -Training spread over 1 months (Form 26.6.24 to 28.7.24) in accordance with the details enurnerated in CECTION-III

Place: Jeypore

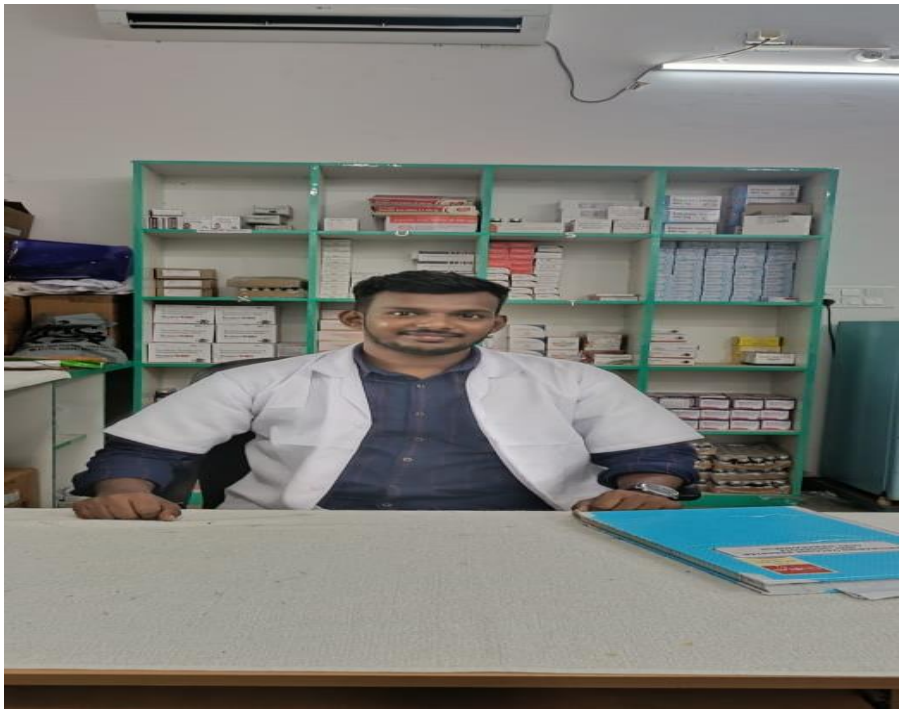
Date: 1.08.24

Head of the Training Organization
With Seal

DMO & Superintendent
D.H.H..KPT,Jeypore

PIC-2 HOSPITAL TRAINING CERTIFICATE

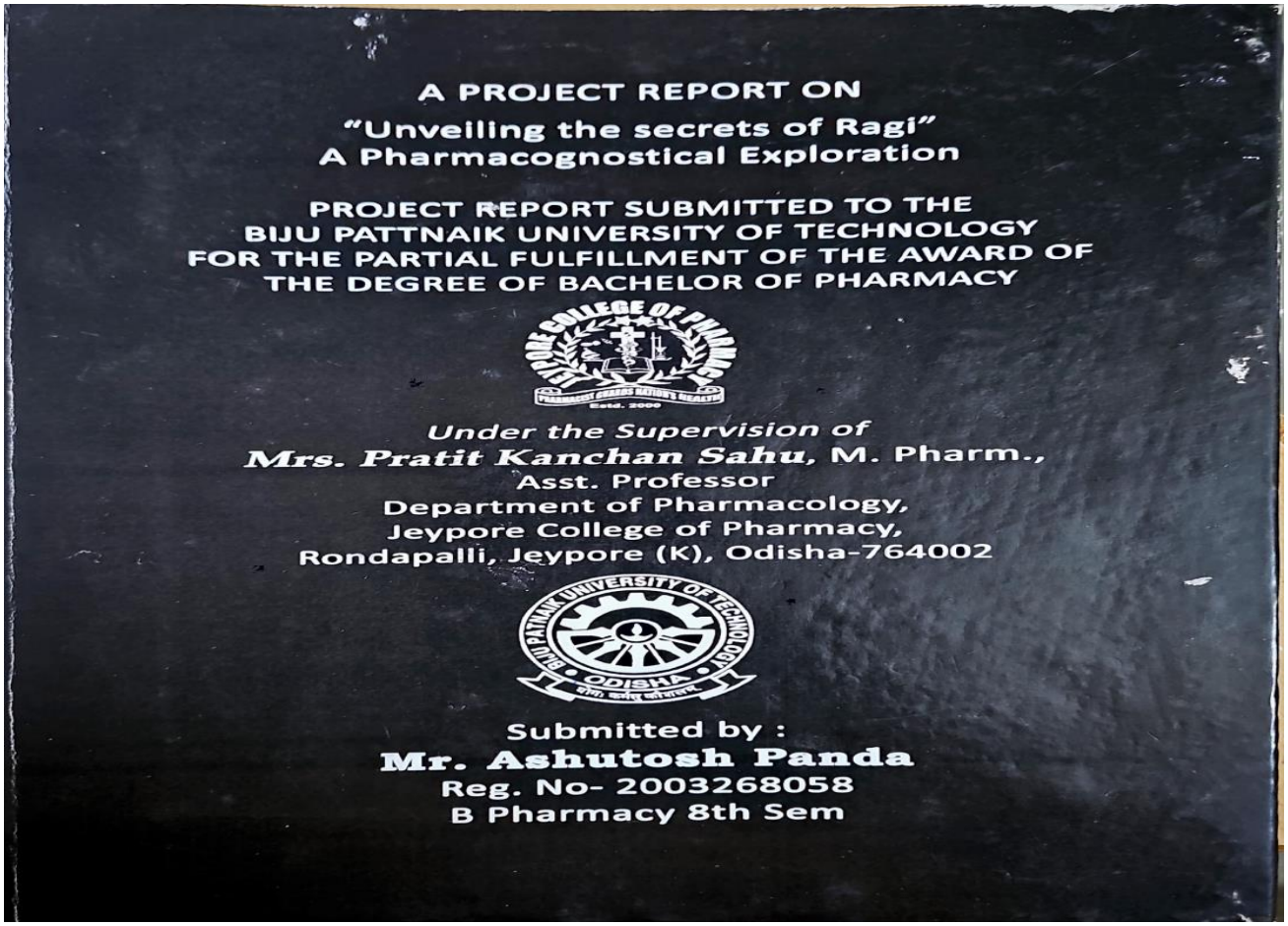
Ref No.: **Date:**



PIC 3 & 4: STUDENTS DOING THEIR HOSPITAL TRAINING

PROJECT BASED LEARNING

In this method students involve together and work in groups to solve real–world problems through projects. Project based learning develops students critical thinking skills problem solving skills decision making skills team work etc… Students gain knowledge and skills by working for an extended period of time. According to PCI syllabus Students B. Pharm 4th year and M. Pharm 2nd year are allotted with a project under the guidance of different faculties. After this marks are allotted for project result, presentation and viva.



PIC-1 : Thesis Submitted By B. Pharm Students

JEYPORE COLLEGE OF PHARMACY

RONDAPALLI, JEYPORE, DIST. KORAPUT -764002, ODISHA

CERTIFICATE FROM THE PRINCIPAL

This is to certify that the project thesis entitled ***"Unveiling the secrete of Ragi, A Pharmacognostical Exploration."*** was carried out by **Mr. ASHUTOSH PANDA**, B. Pharmacy 8th semester bearing the University (BPUT) **Registration No: 2003268058**, at Jeypore College of Pharmacy, Rondapalli, Jeypore – 764002, Dist. Koraput, Odisha, during the academic year 2023 – 2024. This thesis work or part of this work has not been published nor submitted for any degree or diploma of any other university.

I wish him all success in life.

P. Mohapatra 11/05/2024

Signature of the principal

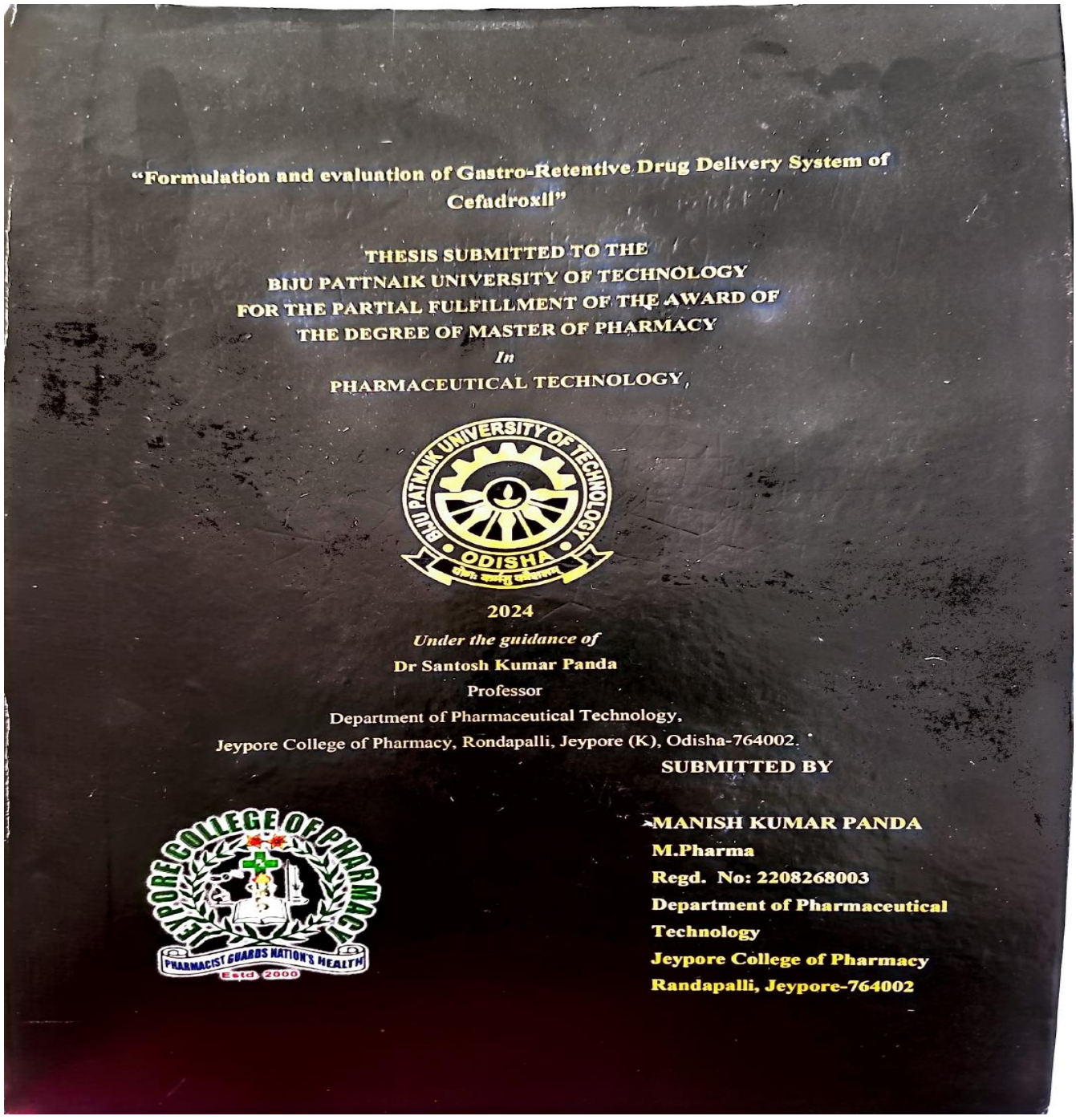
Prof. (Dr.)Prithwiraj Mohapatra,
M. Pharm, Ph.D.
Principal
Jeypore College of Pharmacy,
Rondapalli, Jeypore – 764002,
Dist. Koraput, Orissa, India.

PRINCIPAL
JEYPORE COLLEGE OF PHARMACY
RONDAPALLI, JEYPORE (K) 764002

Place: Jeypore
Date: 04/05/2024

PIC-2 : Thesis Submitted By B. Pharm Students

Ref No.: Date:



PIC-3 : Thesis Submitted By M. Pharm Students

Ref No.: Date:

JEYPORE COLLEGE OF PHARMACY

RONDAPALLI, JEYPORE, KORAPUT -764002, ODISHA

CERTIFICATE FROM THE PRINCIPAL

This is to certify that the project thesis entitled **"Formulation and evaluation of Gastro-Retentive Drug Delivery System of Cefadroxil"** was carried out by Mr. **Manish Kumar Panda** under my co-supervision for M. Pharmacy 4th semester bearing the University (BPUT) **Registration No: 2208268003** at the **Department of Pharmaceutical Technology,** Jeypore College of Pharmacy, Rondapalli, Jeypore – 764002, Dist. Koraput, Odisha, during the academic year 2023-24. This thesis work or part of this work has not been published nor submitted for any degree or diploma for any other university.

I wish her all success in life.

P. Mohapatra

Signature of the principal

Place: Jeypore
Date: 29/08/2023

Dr. Prithwiraj Mohaptra,
M.Pharm., Ph.D.
Principal,
Jeypore College of Pharmacy,
Rondapalli, Jeypore – 764002,
Dist. Koraput, Odisha, India.

PIC-4 : Thesis Submitted By M. Pharm Students