ANALYSIS OF FERTILIZER FROM THE RESIDUE OF HUMAN EXCRATA

Internship Project Report

Submitted for the partial fulfillment of the degree of

Bachelor of Technology

In

Chemical Engineering

Submitted By

Hanshal Vashistha

0901CM201017

UNDER THE SUPERVISION AND GUIDANCE OF

Prof. Shivangi Sharma

Assistant Professor

Department of Chemical Engineering

माधव प्रौद्योगिकी एवं विज्ञान संस्थान, ग्वालियर (म.प्र.), भारत
MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR (M.P.), INDIA
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Jan 2024 – May 2024

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I hereby declare that the work entitled **Fertlizer From Human Excrata** is my work, conducted under the supervision of **Prof Shivangi Sharma, Assistant Professor,** during the session Jan-Apr 2024. The report submitted by me is a record of bonafide work carried out by me.

I further declare that the work reported in this report has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

Hanshal Vashistha

0901CM201017

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Place: Gwalior

This is to certify that the above statement made by the candidates is correct to the best of my knowledge and belief.

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ABSTRACT

The utilization of biodigester residue as a precursor for fertilizer production has garnered significant interest as a sustainable wst Mngmt solution with potential agri benefits. Biodigesters, widely employed in diverse settings, efficiently convert organic wst into biogas, leaving behind a nutrient-rich residue. In this project .i did analysis on production of fertilizer from human exreta and its method to achieve the results . I had written down the applications of fertilize from human excreta and its societal relevance

This residue, characterized by its organic matter content and diverse nutrient profile, represents a promising resource for fertilizer production, contributing to circular economy principles and reducing reliance on conventional synthetic fertilizers.

Keywords- Digestive System, Composting, Fertilizer, Market Condition, Soil Fertility

ACKNOWLEDGEMENT

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I would sincerey like to thank my department, **Department of Chemical Engineering,** for allowing me to explore this project.

I am sincerely thankful to my faculty mentors. I am grateful to the guidance of **Prof. Shivangi Sharma,** Assistat Professor, Department of Chemical Engineering , for her continued support and guidance. I am also very thanful to the faculty and staff of the department.

Hanshal Vashistha

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Agricultural- agri

Mngmt- Mngmt

Maximizing- mzng

Wst – wst

Nutrient- nutrnt

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CHAPTER 1: INTRODUCTION

In the pursuit of sustainable agriculture and wst Mngmt, the utilization of biodigester residue for fertilizer production stands as a promising innovation. Biodigesters have emerged as integral components of organic wst Mngmt systems, efficiently converting biomass into biogas while leaving behind a nutrient-rich residue. This residue, often overlooked as a wst product, presents an opportunity for value addition through its transformation into fertilizers, contributing to the circular economy and sustainable agri practices.The pressing global challenges of food security, environmental degradation, and climate change necessitate innovative approaches to nutrient Mngmt and wst utilization in agriculture. Conventional fertilizer production methods reliant on finite resources and energy-intensive processes pose environmental risks and economic challenges. In contrast, harnessing biodigester residue for fertilizer production offers a sustainable alternative, aligning with principles of resource efficiency, environmental stewardship, and agri resilience This report explores the potential of biodigester residue as a feedstock for fertilizer production, delving into methodologies, innovations, challenges, and opportunities associated with its valorization. Through a comprehensive review of existing literature and case studies[1].

This aim to elucidate the scientific, economic, and environmental dimensions of this innovative approach. By synthesizing current knowledge and identifying gaps in research and practice, this report aims to inform policymakers, researchers, practitioners, and stakeholders about the potential of biodigester residue-based fertilizers in advancing sustainable agriculture and wst Mngmt agendas. As a result, the nutrients and the organic matter create a burden to the receiving environments, while they are lost to soils and food production. The increasing demand for food production, coupled with the limitations of the production and supply of mineral fertilizers, drives a demand towards more sustainable and circular alternatives.[1]

The following sections will delve into various aspects of biodigester residue utilization, including its nutrient composition, conversion processes, agri benefits, environmental implications, economic considerations, and future prospects. By examining the synergies ;between wst Mngmt and agri sustainability, this report seeks to advocate for the widespread adoption of biodigester residue valorization as a key strategy for building resilient, resource-efficient agri systems in the 21st century. [1]

1.1 Fertilizer

A fertilizer is a substance, either natural or synthetic, that is added to soil or plant tissues to provide essential nutrients necessary for plant growth. It typically contains key macronutrients like nitrogen (N), phosphorus (P), and potassium (K), which are vital for various physiological functions in plants. Fertilizers can also include secondary nutrients and micronutrients such as calcium, magnesium, sulfur, iron, and zinc, which support overall plant health and development.[2]

1.2 Why We Use Fertilizer

Fertilizers are used in agriculture and gardening for several key reasons, all aimed at promoting healthy plant growth and maximizing crop yields. Here are the main purposes and benefits of using fertilizers:

1. Nutrient Supply:

- Essential Nutrients: Plants require various essential nutrients to grow, including macronutrients like nitrogen (N), phosphorus (P), and potassium (K), as well as micronutrients like iron, manganese, zinc, copper, molybdenum, boron, and chlorine. Fertilizers supply these nutrients in forms that plants can easily absorb.

- Soil Nutrient Deficiency: Over time, soils can become depleted of nutrients due to continuous cropping and natural processes. Fertilizers replenish these nutrients, ensuring that plants have the necessary elements for their growth.[3]

2. Improved Plant Growth:

- Enhanced Photosynthesis: Nutrients like nitrogen are vital for chlorophyll production, which is essential for photosynthesis. Improved photosynthesis leads to better plant growth and higher yields.

- Root Development: Phosphorus is crucial for root development. Strong root systems help plants absorb water and nutrients more efficiently, improving overall plant health and resistance to drought.[3]

3. Increased Crop Yields:

- Higher Productivity: Fertilizers are fundamental to achieving high crop yields, which is particularly important for feeding a growing global population. By providing the necessary nutrients, fertilizers help farmers produce more food per unit area.

- Consistent Production: Fertilizers help maintain consistent and predictable crop production, reducing the variability caused by nutrient deficiencies.[3]

1.3 From What Materials We Can Make Fertilizer

Fertilizers can be made from a variety of materials, both organic and inorganic. Here's an overview of the main sources and types of materials used to produce fertilizers:

Organic Fertilizers:

1. **Animal Manure:** Cow, Poultry, and Horse Manure: Rich in nitrogen, phosphorus, and potassium. Manure also adds organic matter to the soil, improving its structure and water-holding capacity.

2. **Compost:** Decomposed Organic Matter: Made from kitchen scraps, yard wst, and other organic materials. Compost provides a balanced supply of nutrients and improves soil health.[4]

Inorganic (Synthetic) Fertilizers:

1. **Nitrogen Fertilizers:** Ammonium Nitrate, Urea, Ammonium Sulfate: Provide readily available nitrogen to plants, which is essential for vegetative growth.
   Phosphorus Fertilizers:

2. **Superphosphate, Triple Superphosphate, Diammonium Phosphate (DAP):** Supply phosphorus for root development, flowering, and fruiting.[4]

1.4 How We Can Make Fertilizer From Human Excreta

Making fertilizer from human excreta is a process that requires careful Mngmt to ensure it is safe and effective. Human wst can be processed into fertilizer through several methods, with composting and anaerobic digestion being the most common. Here's how each process works[2]:

Composting Human Excreta:

1. Human excreta (urine and feces) should be collected separately, if possible, to manage each wst stream effectively. Urine can be a valuable fertilizer on its own due to its high nitrogen content.

2. Dry Toilets: Use composting toilets or dry toilets that separate liquid and solid wst. These toilets often have a collection system for feces that includes a container with a composting medium like sawdust or straw.[2]

Composting:

1. Initial Treatment: Add a carbon-rich material such as sawdust, straw, or leaves to the feces to balance the carbon-to-nitrogen ratio and reduce odors.

2. Compost Bin: Place the mixture into a compost bin or pile. Ensure it is well-aerated by turning it regularly. This helps the aerobic bacteria break down the wst.

3. Temperature Monitoring: Maintain temperatures between 55 -65°C (131-149°F) for several days to kill pathogens. This is known as thermophilic composting.

4. Curing: After the high-temperature phase, allow the compost to cure for several months. This maturation phase further stabilizes the compost and ensures any remaining pathogens are eliminated.[2]

Anaerobic Digestion:

Input: Feed the human wst into the digester along with other organic material if needed.

Digestion: In the absence of oxygen, anaerobic bacteria break down the wst, producing biogas (a mixture of methane and carbon dioxide) and digestate (a nutrient-rich slurry).

Temperature Control: Maintain a stable temperature within the digester to optimize bacterial activity. Mesophilic digesters operate around 35-40°C (95-104°F), [15]

1.5 Application

1 Crop Production:

- Biodigester residue-based fertilizers are valuable inputs for crop production systems, providing essential nutrients such as nitrogen (N), phosphorus (P), and potassium (K) for plant growth and development.[5]
- These fertilizers can be applied to a wide range of crops, including cereals, vegetables, fruits, and cash crops, enhancing soil fertility and improving yields.[6]

2. Organic Farming:

- In organic farming systems, where synthetic fertilizers are restricted, biodigester residue-based fertilizers offer a sustainable alternative for replenishing soil nutrients and maintaining soil health.
- Organic farmers can use these fertilizers to meet crop nutrient requirements while adhering to organic certification standards and promoting ecological balance.[6]

3. Soil Amendment and Rehabilitation:

- Biodigester residue-based fertilizers can be used as soil amendments to improve soil structure, water retention, and nutrient cycling in degraded or nutrient-deficient soils.
- These fertilizers help to replenish organic matter, enhance soil microbial activity, and mitigate soil erosion, contributing to long-term soil health and productivity.[6]

CHAPTER 2: LITERATURE SURVEY

Fertilizers from Human Excreta

Human excreta, once regarded solely as wst, has emerged as a valuable resource in the context of sustainable agriculture. This review examines the growing body of literature surrounding the production and utilization of fertilizers derived from human excreta, focusing on the potential benefits, challenges, and advancements in this field.[14]

Nutrient Content and Agri Benefits Human excreta, including urine and feces, contains essential nutrients such as nitrogen, phosphorus, and potassium, which are vital for plant growth and development. Numerous studies have demonstrated the nutrient-rich nature of human wst and its potential to serve as an effective fertilizer for agri purposes (For example, urine, a significant component of human excreta, has been shown to contain high concentrations of nitrogen and other essential nutrients, making it a valuable resource for crop production.[4]

Treatment Technologies and Pathogen Reduction One of the primary challenges associated with using human excreta as fertilizer is the presence of pathogens that can pose risks to human health and the environment. Various treatment technologies, including composting, anaerobic digestion, and urine separation, have been developed to reduce pathogen levels and ensure the safety of human excreta fertilizer, Research has focused on evaluating the effectiveness of these treatment methods in removing pathogens while preserving the nutrient content of the fertilizer [4].

Social Acceptability and Cultural Considerations The acceptance and adoption of human excreta fertilizer within communities are influenced by cultural norms, perceptions, and socio-economic factors. Studies have highlighted the importance of addressing social and cultural barriers to promote the safe and sustainable use of human wst in agriculture (Factors such as odor control, privacy, and gender considerations play a significant role in determining the acceptability of human excreta fertilizer among different populations.[11]

Environmental Impacts and Regulatory Frameworks While human excreta fertilizer offers environmental benefits such as wst reduction and reduced reliance on chemical fertilizers, its implementation raises concerns about potential environmental impacts and regulatory

requirements. Studies have examined the environmental implications of nutrient cycling and the need for robust regulatory frameworks to ensure the safe and responsible use of human wst in agriculture. Efforts are underway to develop guidelines and standards for the production, distribution, and application of human excreta fertilizer to minimize environmental risks and protect public health.[8]

Future Directions and Knowledge Gaps Despite growing interest in human excreta fertilizer as a sustainable agri practice, several knowledge gaps and research priorities remain. Future studies should focus on optimizing treatment technologies, assessing long-term agronomic impacts, and addressing socio-cultural barriers to adoption . Interdisciplinary collaborations between researchers, policymakers, and practitioners are needed to advance understanding and promote the widespread adoption of human excreta fertilizers. [11]

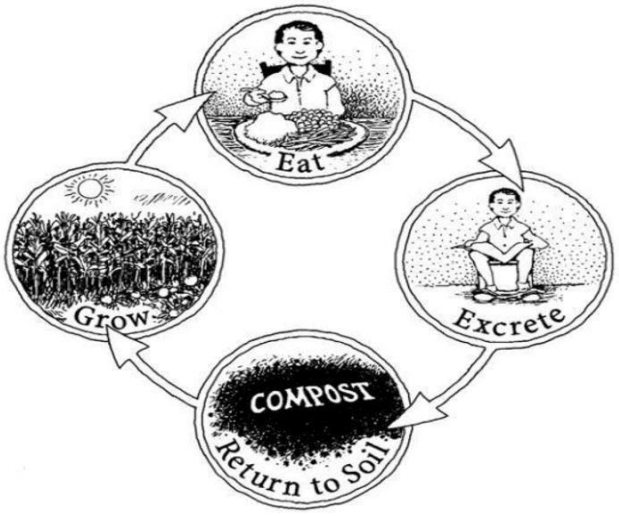

Fig.1 life excretion cycle

CHAPTER 3 : COMPANY PROFILE

Madaan Bio Green Private Limited is a Private incorporated on 19 May 2014. It is classified as Non-govt company and is registered at Registrar of Companies, Gwalior. Its authorized share capital is Rs. 2,000,000 and its paid up capital is Rs. 1,600,000. It is inolved in Sewage and refuse disposal, sanitation and similar activities[12]

Madaan Bio Green Pvt Ltd relies on respect for its Clients: quality therefore begins by listening to their needs. Quality involves Meeting the commitments made, controlling the processes, deadlines and budgets,improving the cost effectiveness in a spirit of partnership, asserting our competitiveness. Quality is a longdrawn- out task that is built by teamwork with sound values: ragout, responsibility and professionalism.[12]

These simple principles are cornerstones of Madaan Bio Green Pvt ltd Quality charter and strengthen its leadership position.

Madaan Bio Green Private Limited's Annual General Meeting (AGM) was last held on N/A and as per records from Ministry of Corporate Affairs (MCA), its balance sheet was last filed on 31 March 2022.[12]

Directors of Madaan Bio Green Private Limited are Karun Madaan and Varun Madaan.

Madaan Bio Green Private Limited's Corporate Identification Number is (CIN) U90000MP2014PTC032687 and its registration number is 32687.Its Email address is madaanbiogreen@gmail.com and its registered address is 201, VIRENDRA VILAS, BEHIND S.P. OFFICE CITY CENTRE GWALIOR Gwalior MP 474011 IN. [12]

We have maximum experience of manufacturing, supplying and installing FRP PRODUCTS, we also manufacture Bio digester tanks, Mobile Toiltes with bio digesters, Community Toilets with bio digesters in very Competetive rates with high quality material. Our recent projects are singhastha kumbh Mela Ujjain, Shravani mela Deoghar & ULB's, Different gram panchayat house toilets, MCD Jabalpur, Gwalior, Bhopal, Dist. Primary Education Morena, Indian Railways etc.[12]

Company's Speciality:-

We are committed to provide cost effective solutions to our clients. Our experts are always available to give you best Services and other solution in residential, commercial and industrial sectors.

CHAPTER 4: PROMBLEM FORMULATION

Human excreta, composed of urine and feces, contains valuable nutrients such as nitrogen, phosphorus, and potassium, which are essential for plant growth. Utilizing human excreta as fertilizer can offer a sustainable solution to enhance soil fertility, reduce reliance on chemical fertilizers, and close the nutrient loop in agri systems. However, the safe and effective use of human excreta in agriculture presents significant challenges that must be addressed to realize its potential benefits.

Problem Statement

The use of human excreta as fertilizer is hindered by various obstacles, including health risks, social acceptance, technological limitations, regulatory issues, and economic feasibility. Addressing these challenges is critical to developing safe, efficient, and socially acceptable methods for converting human excreta into valuable agri inputs.

CHAPTER 5: METHODOLOGY

5.1.1. Collection and Segregation of Biodigester Residue:

- Biodigester residue is collected from the effluent of biodigester systems after the anaerobic digestion process.
- The collected residue may undergo initial segregation to remove any large debris or non-organic materials, ensuring a more homogeneous feedstock for further processing. [9]

5.1.2. Pre-Treatment (Optional):

- Depending on the characteristics of the biodigester residue and the desired end-product, pre-treatment may be employed.
- Pre-treatment methods such as shredding, grinding, or screening may be used to enhance the uniformity and accessibility of organic matter for subsequent processing steps. [13]

5.1.3. Composting:`

- Composting is a widely used method for converting organic wst into stable, nutrient-rich fertilizers.
- Biodigester residue is mixed with bulking agents such as straw, sawdust, or wood chips to optimize the carbon-to-nitrogen ratio and improve aeration.
- The mixture undergoes aerobic decomposition under controlled conditions of temperature, moisture, and oxygen levels.
- Microbial activity breaks down organic matter, converting it into humus-like material rich in nutrients such as nitrogen, phosphorus, and potassium. [9]

5.1.4. Vermicomposting (Optional):

- Vermicomposting involves the use of earthworms to accelerate the decomposition of organic wst.
- Biodigester residue may be mixed with bedding materials like shredded cardboard or newspaper and introduced to a vermicomposting system.

- Earthworms feed on the organic matter, facilitating microbial digestion and nutrient mineralization.
- Vermicompost, or worm castings, is produced as earthworms digest the organic material, enriching it with beneficial microorganisms and nutrients. [7]

5.1.5. Microbial Fermentation (Optional):

- Microbial fermentation processes can further enhance the nutrient content and stability of biodigester residue-based fertilizers.
- Selected microbial inoculants or fermentation starters may be added to the biodigester residue to initiate fermentation.
- Fermentation under anaerobic or aerobic conditions facilitates the breakdown of complex organic compounds and the release of soluble nutrients.
- The resulting fermented product is rich in bioavailable nutrients and beneficial microorganisms, suitable for plant uptake and soil enrichment. [9]

5.1.6. Curing and Maturation:

- Regardless of the processing method employed, the produced fertilizer undergoes a curing and maturation period.
- During this phase, the fertilizer is allowed to stabilize and mature, reducing the risk of phytotoxicity and ensuring optimal nutrient availability.
- Curing may involve periodic turning or mixing to facilitate oxygenation and microbial activity, promoting further decomposition and nutrient transformation.[9]

5.1.7. Quality Assessment and Testing:

- Quality assessment of the produced fertilizer is essential to ensure compliance with regulatory standards and optimal agronomic performance.
- Parameters such as nutrient content, pH, moisture content, and maturity are evaluated through laboratory analysis and on-farm testing.[9]

Quality control measures may include adjusting the fertilizer composition, particle size, and moisture levels to meet specific crop requirements and application methods.

5.1.8. Packaging and Distribution:

- Once the fertilizer has undergone thorough quality assurance, it is packaged into suitable containers or bags for distribution.
- Proper labeling, including nutrient analysis, application rates, and safety precautions, is essential to inform end-users about the product's characteristics and usage guidelines.
- The packaged fertilizer is then distributed through retail outlets, agri cooperatives, or directly to end-users for application in crop production systems.[9]

CHAPTER 6: RESULTS

As the company is in nepmatal stage of development, they has taken undertaking for not disclosing the results in either tabulated or graphical form. Hence the summarised results are concluded here:

The studies reviewed collectively present compelling evidence on the efficacy and safety of using human excreta as a fertilizer. The results can be categorized into nutrient content, treatment efficacy, agri productivity, environmental impact, and health and safety considerations.

Nutrient Content

The nutrient analysis of human excreta consistently demonstrates high levels of essential plant nutrients. human excreta contain approximately 7-8 kg of nitrogen, 2 kg of phosphorus, and 1.5 kg of potassium per person per year. highlighting that the nutrient content of human excreta can meet or exceed the requirements for various crops, potentially reducing reliance on synthetic fertilizers.

Agri Productivity

Field trials consistently indicate that fertilizers derived from treated human excreta can significantly enhance crop yields. crops fertilized with treated excreta exhibited higher growth rates and yields compared to those fertilized with conventional synthetic fertilizers. with crops demonstrating improved vigor and productivity, suggesting that the nutrient profile of human excreta is well-suited for agri use.

Environmental Impact

Using human excreta as fertilizer presents numerous environmental benefits. that recycling human excreta reduces the need for chemical fertilizers, thereby lowering the environmental footprint associated with their production and application. that this practice can significantly reduce greenhouse gas emissions from wst treatment processes and synthetic fertilizer production, contributing to climate change mitigation efforts.

CHAPTER 7: CONCLUSION

In Conclusion .The utilization of human excreta as fertilizer presents a promising solution for sustainable agriculture, offering numerous benefits such as enhanced soil fertility, reduced reliance on chemical fertilizers, and a closed-loop nutrient cycle. However, realizing this potential requires addressing several critical challenges.

Health risks associated with pathogens in human excreta must be mitigated through effective treatment processes to ensure safety. Environmental impacts, including potential contamination of water sources and soil degradation, need careful Mngmt to protect ecosystems. Social acceptance is crucial, necessitating community engagement and education to overcome cultural stigmas and promote the benefits of using excreta-based fertilizers.

Technological innovation is essential to develop cost-effective and scalable solutions for treating and converting human excreta into safe agri inputs. Regulatory frameworks must be strengthened to provide clear guidelines and standards for the use of excreta-based fertilizers, ensuring safety and encouraging widespread adoption.

By addressing these multifaceted challenges, human excreta can be transformed from wst into a valuable resource, contributing to improved food security, environmental sustainability, and public health. Continued research, innovation, and collaboration among stakeholders are essential to harness the full potential of human excreta as a sustainable fertilizer solution.

CHAPTER 8: ACHIEVED OUTCOMES & SOCIETAL RELEVANCE

8.1 Achieved Outcome

The successful implementation of using human excreta as fertilizer can yield several significant outcomes, advancing both agri practices and public health while contributing to environmental sustainability:

1. Enhanced Public Health:

Implementation of effective treatment processes will reduce health risks by eliminating pathogens from human excreta, leading to lower incidences of waterborne and sanitation-related diseases.

2. Environmental Protection:

Sustainable use of excreta-based fertilizers will minimize environmental pollution. Properly treated excreta will enrich soils without contaminating water bodies, thus maintaining ecological balance and promoting soil health.

3. Improved Soil Fertility and Crop Yields:

Utilizing human excreta as a fertilizer will provide essential nutrients (nitrogen, phosphorus, potassium) to crops, enhancing soil fertility and increasing agri productivity. This can lead to improved food security and better livelihoods for farmers.

4. Cost Savings and Economic Benefits:

Reducing reliance on chemical fertilizers will lower costs for farmers, promoting economic sustainability. Moreover, the development of excreta-based fertilizer production can create new business opportunities and jobs within the sanitation and agriculture sectors.

8.2 Societal relevance

1. **Wst Reduction:** Recycling human wst as fertilizer reduces the volume of wst entering landfills or polluting water bodies, contributing to wst Mngmt and environmental sustainability efforts.
2. **Cost Savings:** Using human excreta as fertilizer can lower agri input costs by reducing the need for expensive chemical fertilizers, especially in resource- constrained settings where access to conventional fertilizers may be limited or costly.
3. **Improved Soil Health:** Human excreta fertilizer enriches soil with organic matter and nutrients, improving soil structure, water retention, and microbial activity, which enhances overall soil health and fertility.
4. **Food Security:** By providing a low-cost and sustainable source of nutrients for crops, human excreta fertilizer can contribute to increasing food production and improving food security, particularly in regions with poor soil fertility or limited access to conventional fertilizers.
5. **Community Health:** Properly treated human wst reduces the risk of waterborne diseases and contamination of food crops, thereby improving public health and sanitation outcomes in communities where access to safe sanitation facilities is limited.
6. **Climate Change Mitigation:** By promoting sustainable agri practices and reducing reliance on chemical fertilizers, human excreta fertilizer contributes to mitigating greenhouse gas emissions associated with conventional fertilizer production and application.
7. **Local Economic Development:** Implementing systems for collecting, treating, and distributing human excreta as fertilizer can create employment opportunities and stimulate local economies through infrastructure development, technology innovation, and agri productivity gain

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APPENDIX (FPR, DAILY DAIRY, APPLICATION)

23/5/23

Shivangi Sharma

Assistant Professor

Madhva Institute of Technology And Science

Near Gole ka Mandir

Gwalior , Madhya Pradesh , 474001

Respected Shivangi mam,

Subject: Request for Permission for Hanshal Vashitha to Present Poster

This letter is to inform you that Hanshal Vashitha, an intern at Madan Bio Green Pvt Ltd, commenced his internship on January 31, 2024. His internship is scheduled to conclude on May 30, 2024. Hanshal has indicated that he requires an internship certificate to present his poster for his final evaluation.

We regret to inform you that we are currently unable to provide him with a certificate as his internship period has not yet concluded. Additionally, it is against our company policy to issue an internship certificate before the completion of the full internship duration.

Therefore, we kindly request that you grant Hanshal permission to present his poster without the internship certificate at this time. We assure you that upon the successful completion of his internship on May 30, 2024, we will provide him with the necessary certificate.

Thank you for your understanding and cooperation.

With regards

Manish Dantre (Plant Manager)

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FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	Harshal Vashishth		Department	Chemical Engineering	
Industry/Organization	Madan Bio Green Pvt Ltd		Date/Duration	31/01/24 To 9 Feb 24	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work		✓			
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work			✓		
Comment on nature of work done/Area/Topic	Student is a all-rtive slistner Has dudnat Ask Quetion mind Of The Session He Ask dou. Ofeter The Session				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor					
Signature of Industry Mentor					

ADANI BIO GREEN PVT. LTD.

Receiving Date	9/2/24	Name of Faculty Mentor	Shivangi Sharma	Sign	

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FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	Harshal Vashishtha		Department	Chemical Engineering	
Industry/Organization	Madaan Bio Green Pvt Ltd		Date/Duration	09/02/24 to 24/02/24	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work				✓	
Learning capacity/Knowledge up gradation		✓			
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Basic are weak. Student is trying to his best.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Mayank Dantre.				
Signature of Industry Mentor	MADAAN BIO GREEN PVT. LTD.				
Receiving Date	24/2/24	**Name of Faculty Mentor**	Shivangi Sharma	**Sign**	

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FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	Harshal Vashistha	Department	Chemical Engineer
Industry/Organization	Madaan Bioureen Pvt Ltd.	Date/Duration	25/02/24 to 14/03/24

Criterion	Poor	Average	Good	Very Good	Excellent
Punctuality/Timely completion of assigned work		✓			
Learning capacity/Knowledge up gradation		✓			
Performance/Quality of work		✓			
Behaviour/Discipline/Team work		✓			
Sincerity/Hard work		✓			

Comment on nature of work done/Area/Topic	was bitten by dog. So he was not able to come to company for 2 days.
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**
Name of Industry Mentor	Manish Dantre.
Signature of Industry Mentor	MADAAN BIO GREEN PVT. LTD.

Receiving Date	14/3/24	Name of Faculty Mentor	Shivangi Sharma	Sign	

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FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	Harshal Vashishtha		Department	Chemical Engineering	
Industry/Organization	Madaan Bio Green Pvt Ltd.		Date/Duration	15/03/2024 to 30/03/2024	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Doing wood work on digestive machine. Always came on time. Full fill his Responsibilities of Packaging area.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Manish Dambe.				
Signature of Industry Mentor					
Receiving Date	30/3/24	**Name of Faculty Mentor**	Shivangi Sharma	**Sign**	

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FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

Name of student	Harshal Vashistha		Department	Chemical Engineering	
Industry/Organization	Madaan Bio Green Pvt Ltd.		Date/Duration	31/03/2024 to 14/04/2024	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work		✓			
Learning capacity/Knowledge up gradation		✓			
Performance/Quality of work			✓		
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work			✓		
Comment on nature of work done/Area/Topic	Harshal showcased good leadership qualities in Packaging role area started his study on his project now although huge role to cover And fulfilling new role to long entries in company based computer.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Manish Dantre				
Signature of Industry Mentor					

MADAAN BIO GREEN PVT LTD GWALIOR

Receiving Date	14/4/24	**Name of Faculty Mentor**	Shivangi Sharma	**Sign**	

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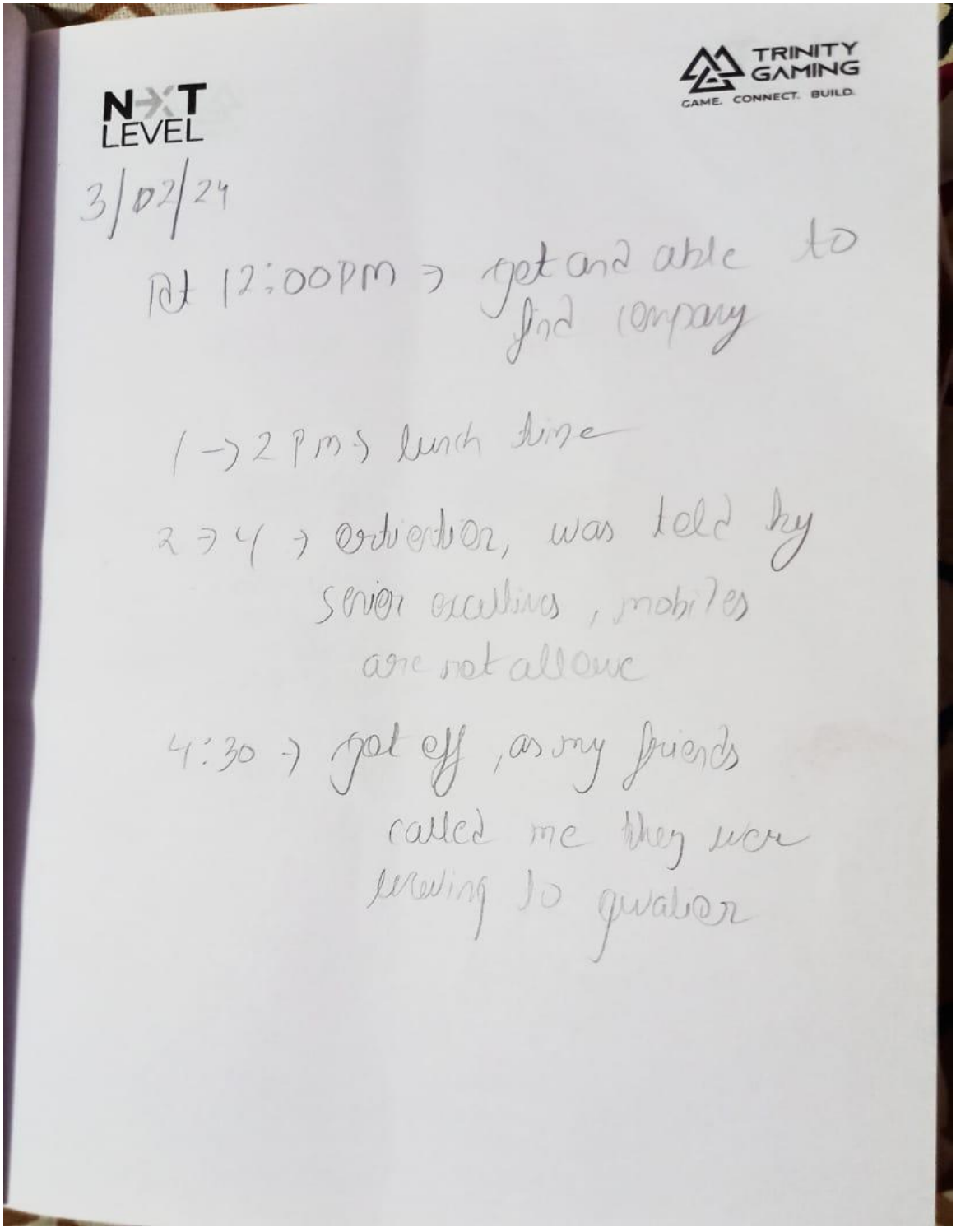
FORTNIGHTLY PROGRESS REPORT (FPR) FROM INDUSTRY MENTOR

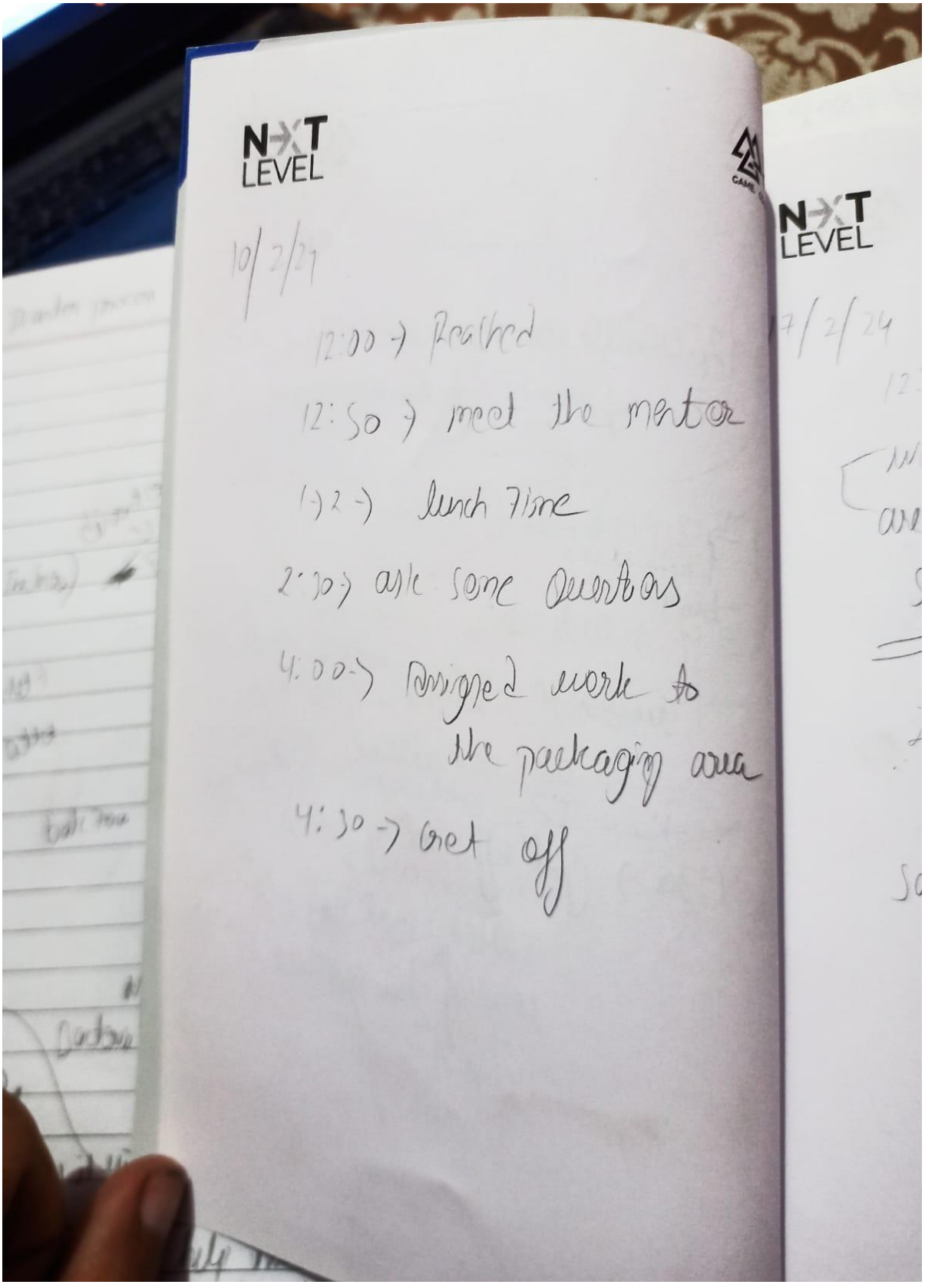
Name of student	Harshal Vashishtha		Department	Chemical Engineering	
Industry/Organization	Madaan Bio Green Pvt. Ltd.		Date/Duration	15/04/24 to 30/04/24	
Criterion	**Poor**	**Average**	**Good**	**Very Good**	**Excellent**
Punctuality/Timely completion of assigned work			✓		
Learning capacity/Knowledge up gradation			✓		
Performance/Quality of work				✓	
Behaviour/Discipline/Team work			✓		
Sincerity/Hard work				✓	
Comment on nature of work done/Area/Topic	Done very good job on new chemical that was tested in company. Always presented him self there to help.				
OVERALL GRADE (Any one)	**POOR/AVERAGE/GOOD/VERY GOOD/EXCELLENT**				
Name of Industry Mentor	Manish Gupta.				
Signature of Industry Mentor					

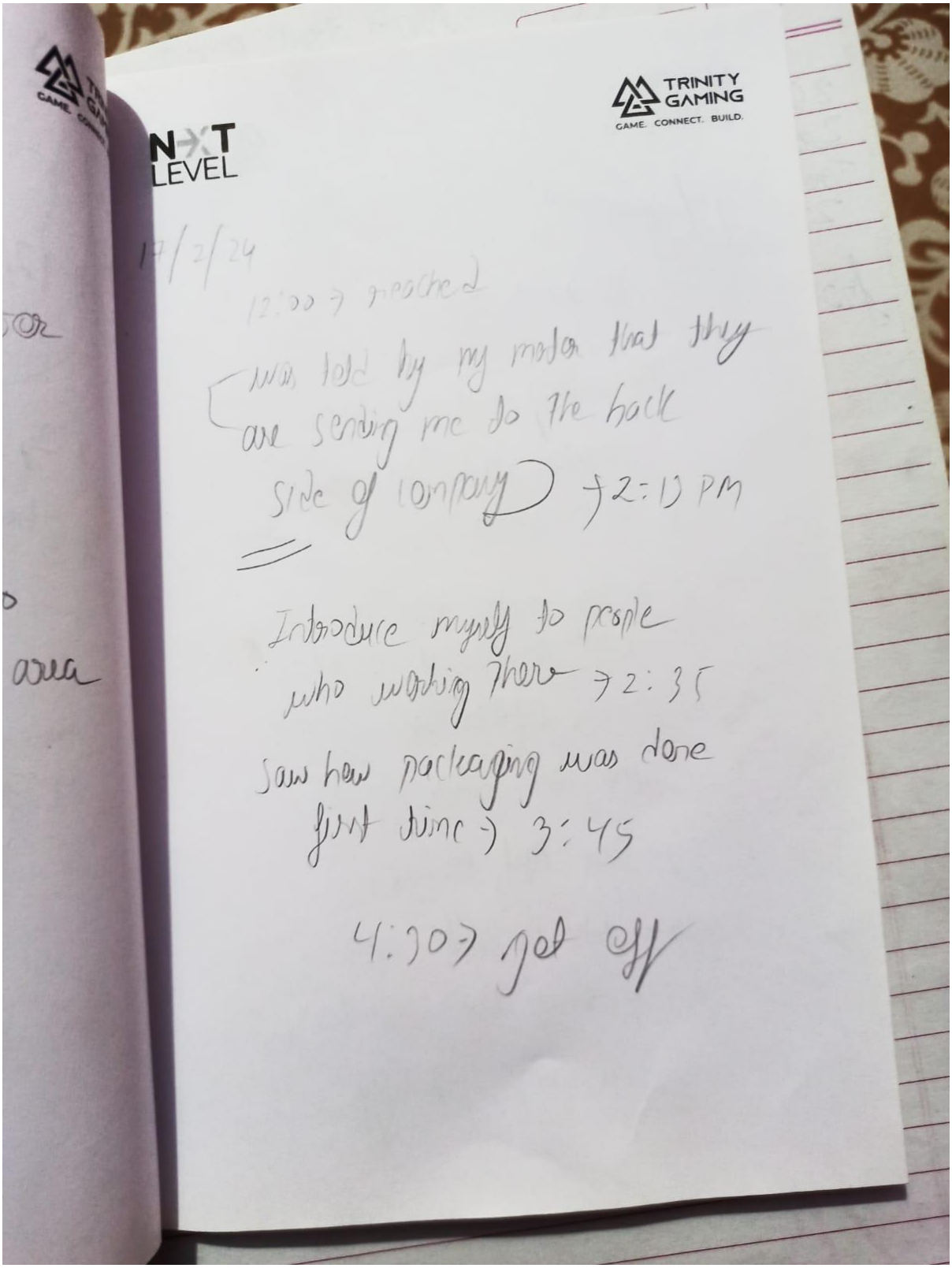
MADAAN BIO GREEN PVT. LTD. GWALIOR

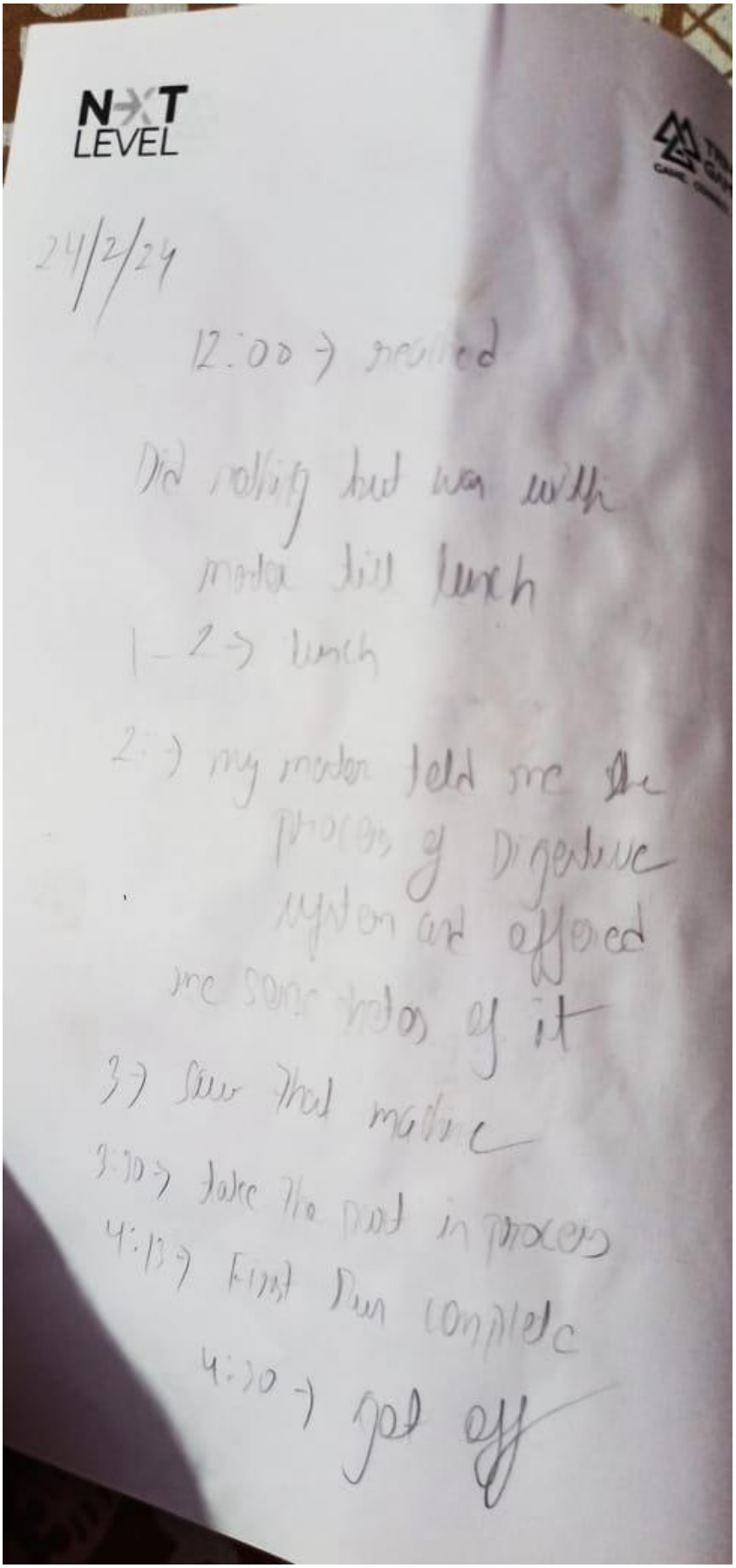
Receiving Date	30/4/24	Name of Faculty Mentor	Shivangi Sharma	Sign	

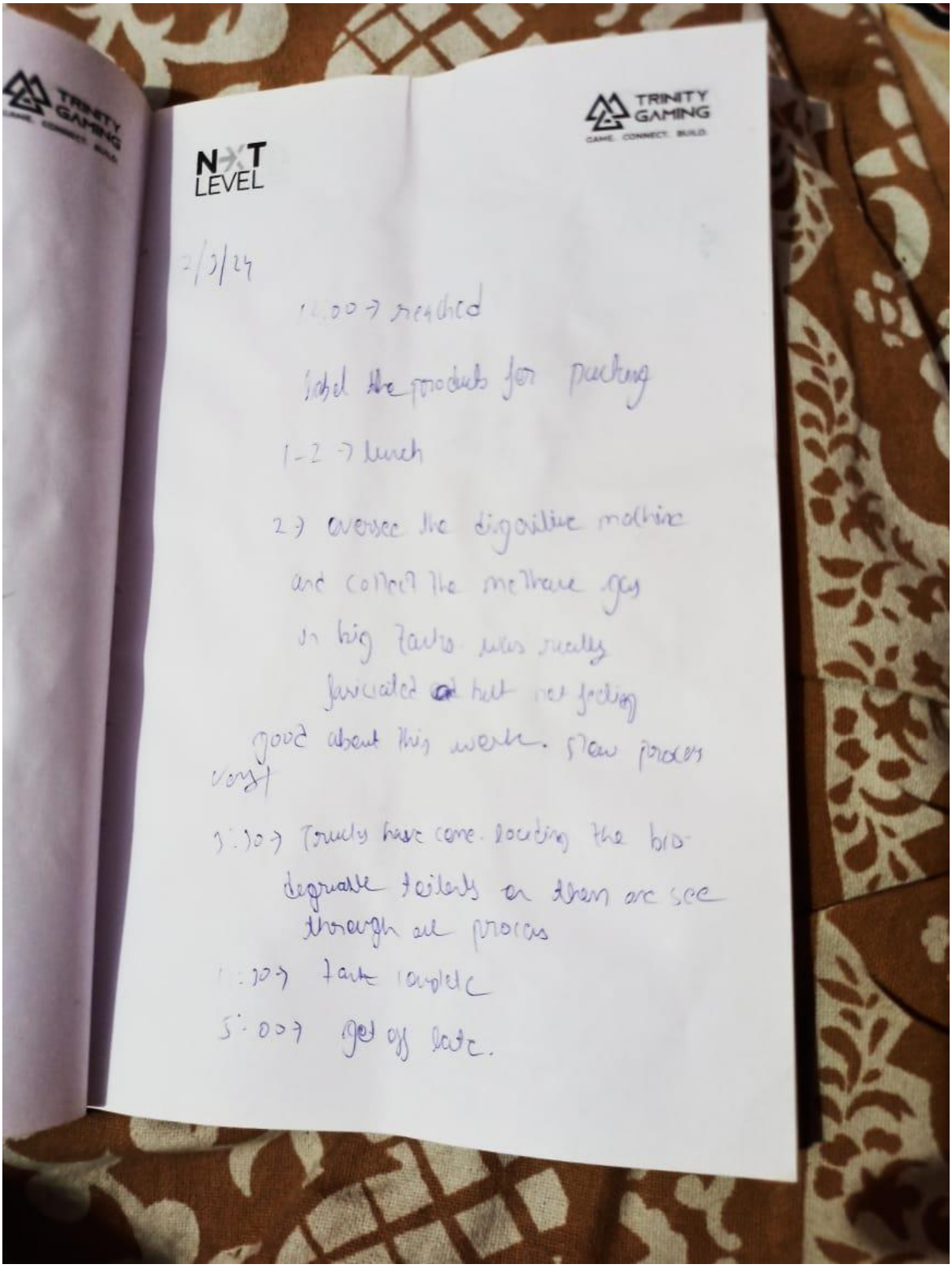
DAILY DIARY

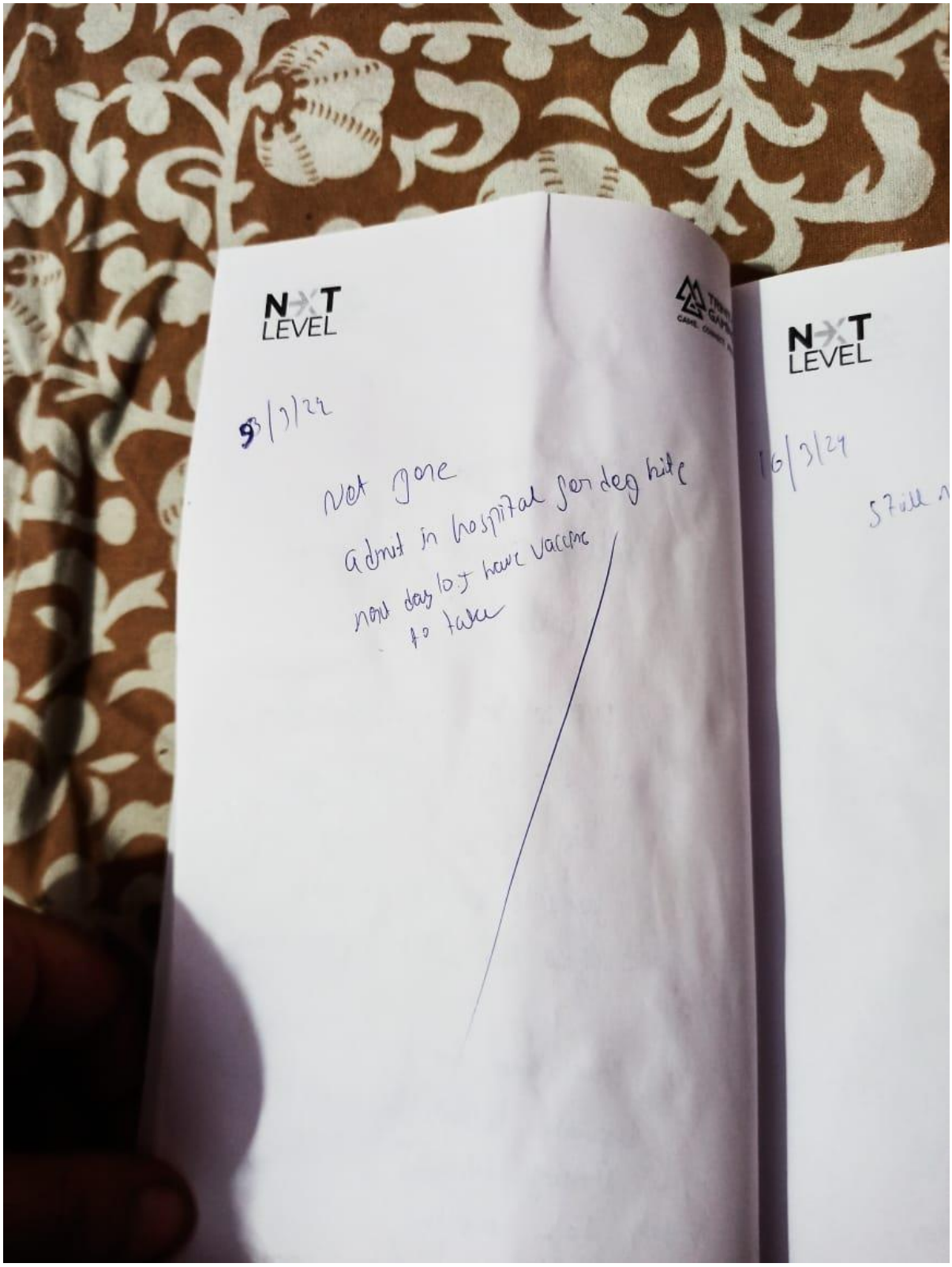

NEXT LEVEL
TRINITY GAMING
GAME. CONNECT. BUILD.
3/02/24
At 12:00PM → get and able to find company
1 → 2 PM's lunch time
2 → 4 → orientation, was told by senior excelius, mobiles are not allowe
4:30 → got off, as my friends called me they were leaving to qwaber

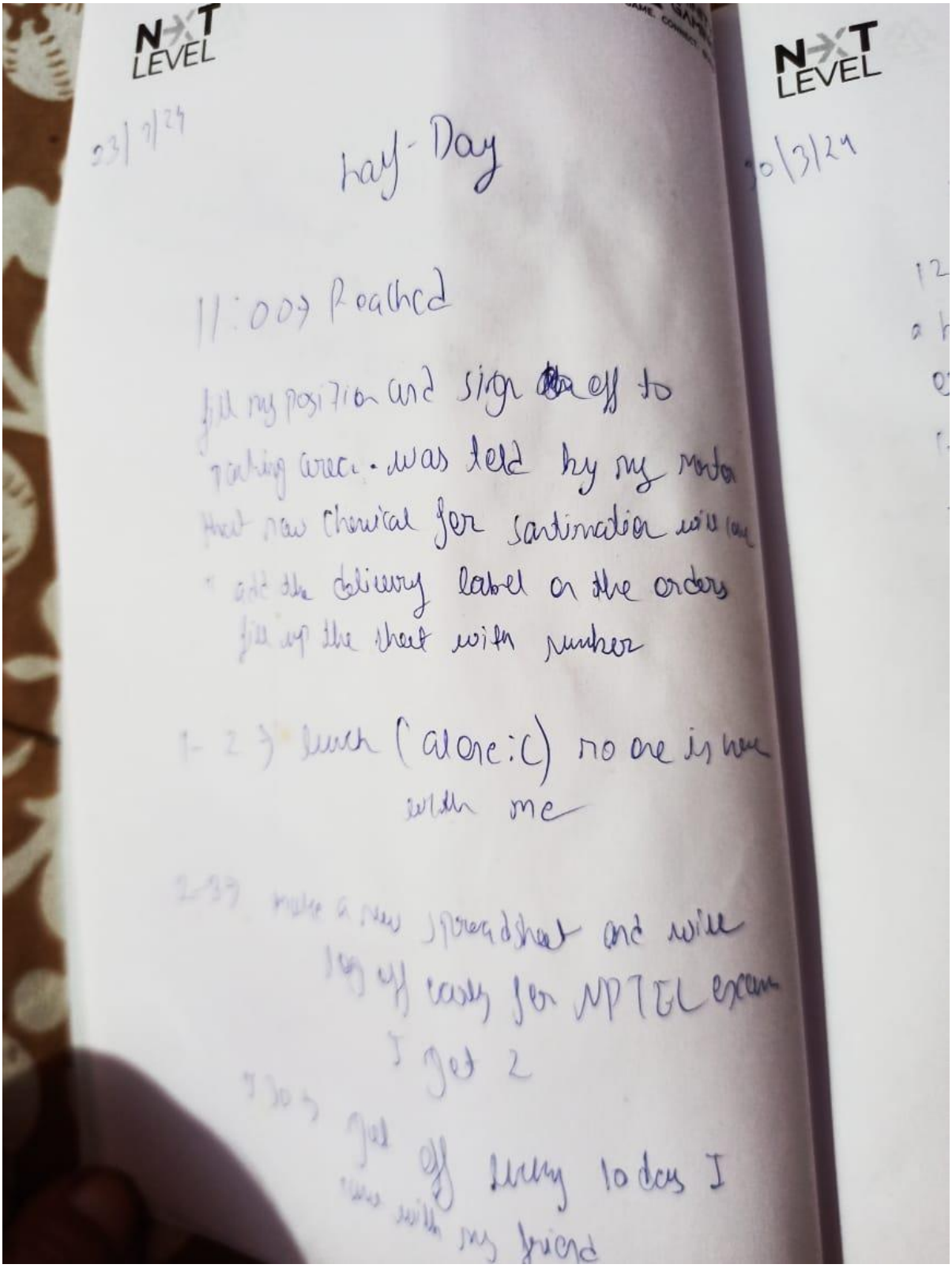

NXT LEVEL
10/2/24
12:00 → Reached
12:30 → meet the mentor
1→2 → lunch Time
2:30 → ask some Questions
4:00 → Assigned work to the packaging area
4:30 → Get off
NXT LEVEL
17/2/24

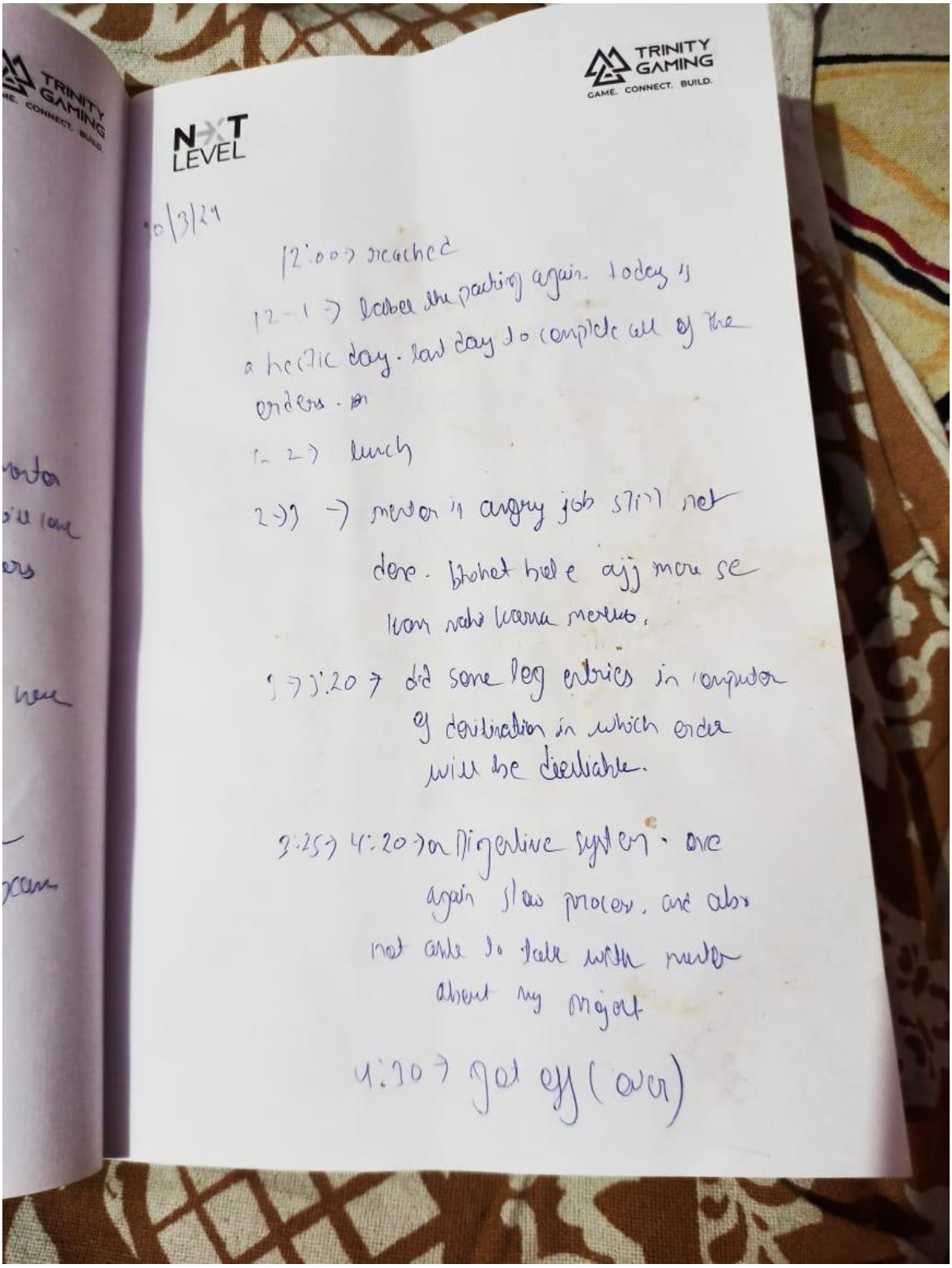

TRINITY GAMING
GAME. CONNECT. BUILD.
NEXT LEVEL
19/2/24
12:00 → reached
was told by my mentor that they are sending me to the back side of company → 2:15 PM
Introduce myself to people who working there → 2:35
saw how packaging was done first time → 3:45
4:30 → got off

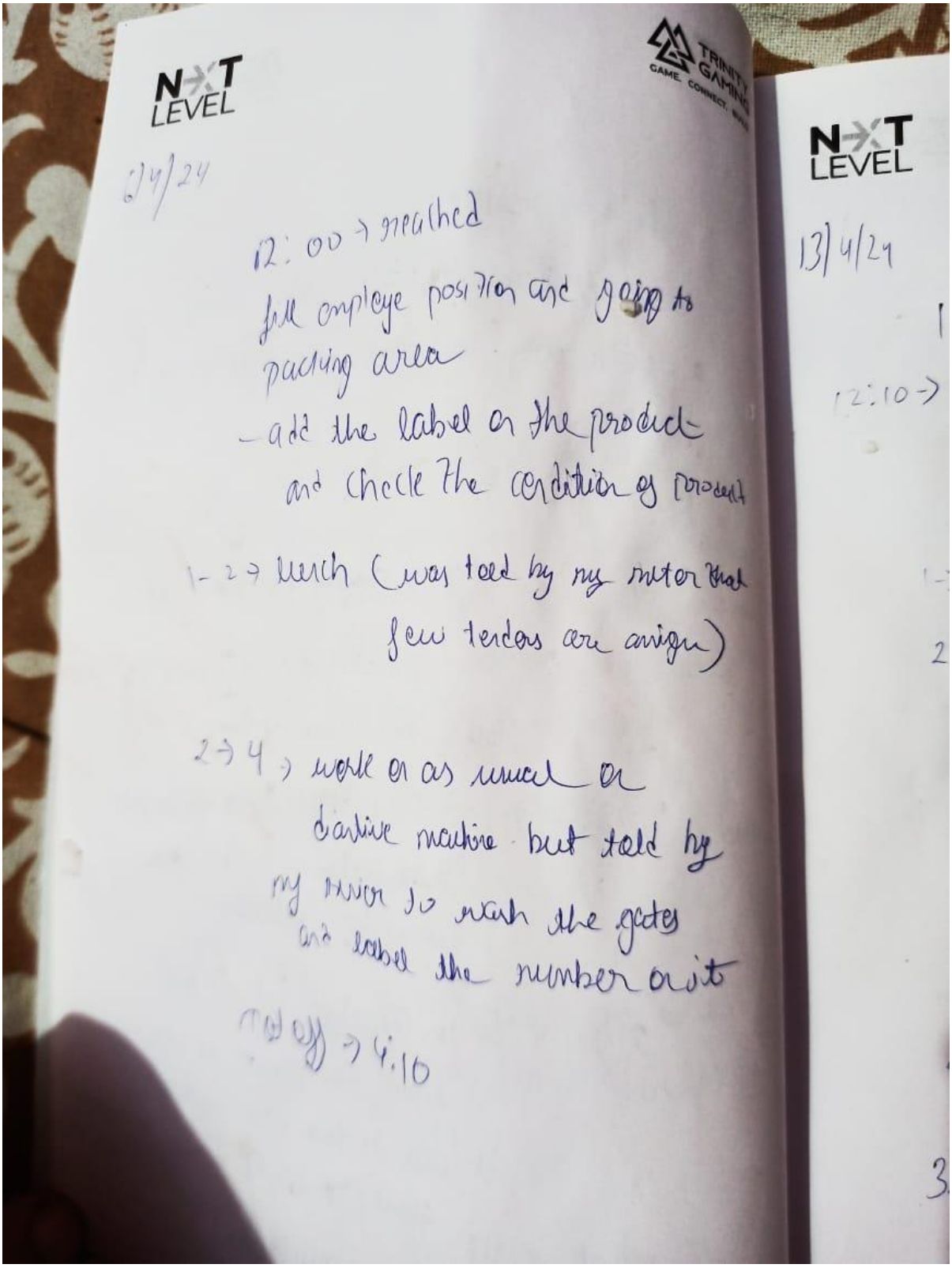

NEXT LEVEL
24/2/24
12:00 → reached
Did rolling but was with
mota till lunch
1-2 → lunch
2:→ my mentor told me the
process of Digestive
system and offered
me some photos of it
3→ Saw that machine
3:30→ Take the part in process
4:13→ First Run Complete
4:30→ get off


TRINITY GAMING
GAME. CONNECT. BUILD.
NEXT LEVEL
TRINITY GAMING
GAME. CONNECT. BUILD.
2/3/24
1:00 → reached
label the products for packing
1-2 → lunch
2 → oversee the digestive machine
and collect the methane gas
in big tanks. was really
fascinated but not feeling
good about this work. slow process
very!
3:30 → Truely have come. locating the bio-
degradable toilets in them are see
through all process
4:30 → task complete
5:00 → get off back.


NXT
LEVEL
9/3/22
Not gone
Admit in hospital for dog bite
now day to get have vaccine
to take
NXT
LEVEL
16/3/24


NXT LEVEL
NXT LEVEL
23/7/24
30/3/24
Half-Day
11:00 Reached
fill my position and sign off to
working area. was told by my mentor
that new chemical for sanitation will
add the delivery label on the orders
fill up the sheet with number
1-2) lunch (alone:C) no one is here
with me
make a new spreadsheet and will
log off early for NPTEL exam
I get 2
Get off early today I
with my friend


TRINITY GAMING
GAME. CONNECT. BUILD.
NEXT LEVEL
30/3/24
12:00 → reached
12-1 → Babes the packing again. Today is a hectic day. Last day to complete all of the orders.
1-2 → lunch
2:00 → mentor is angry job still not done. Bhohot hi le ajj mere se kam nahi karna mentor.
3:20 → did some log entries in computer of destination in which order will be dispatchable.
3:25 → 4:20 → on digestive system. once again slow process. and also not able to talk with mentor about my project
4:30 → got off (over)



NEXT LEVEL

TRINITY GAMING
GAME. CONNECT. BUILD

24/24

12:00 → reached
full employe position and going to
packing area
- add the label on the product
and checke the condition of product

1-2 → work (was told by my mentor that
few tenders are avign)

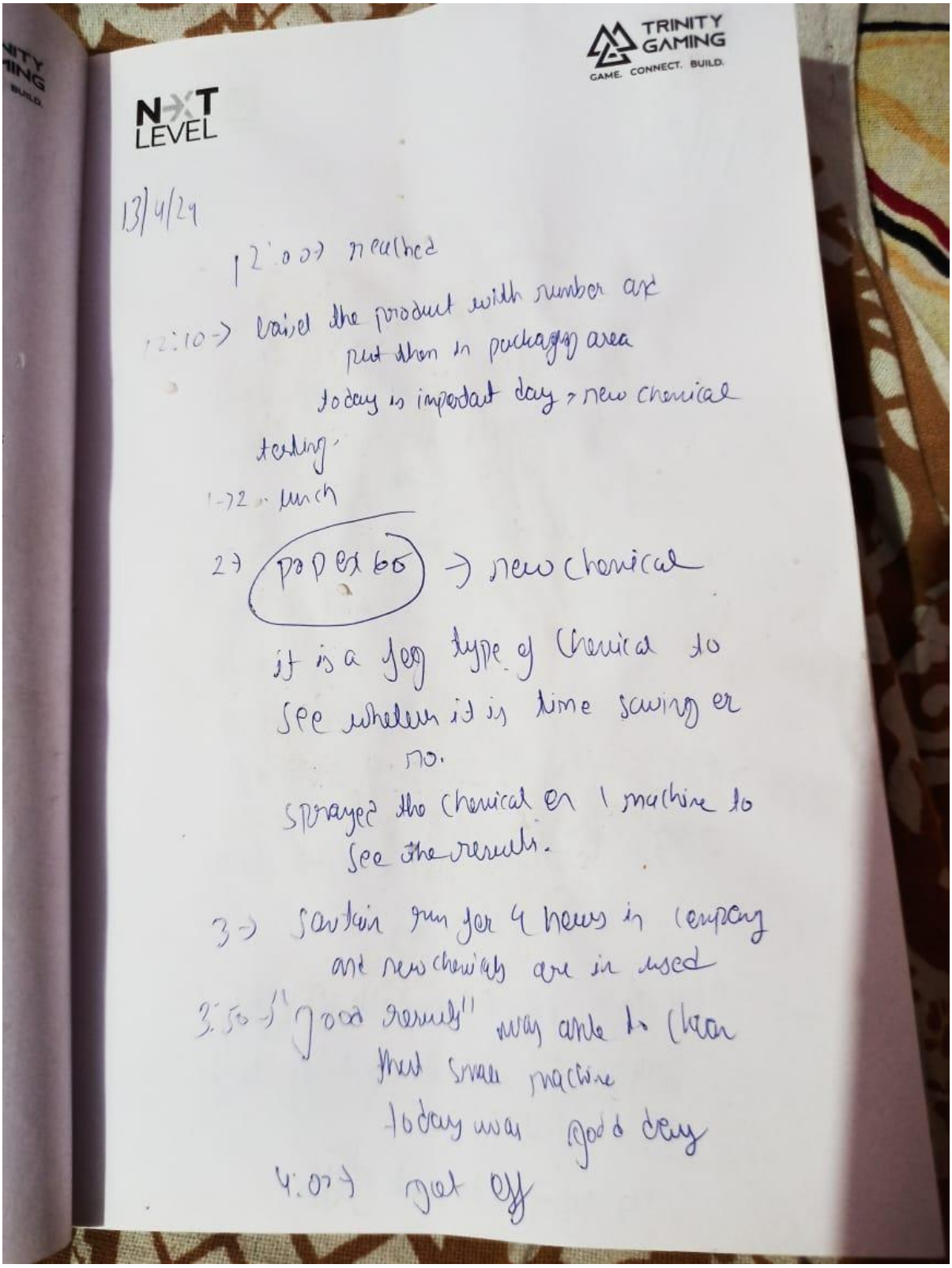
2→4 → work on as much as
digitive machine but told by
my mentor to wash the gates
and label the number on it

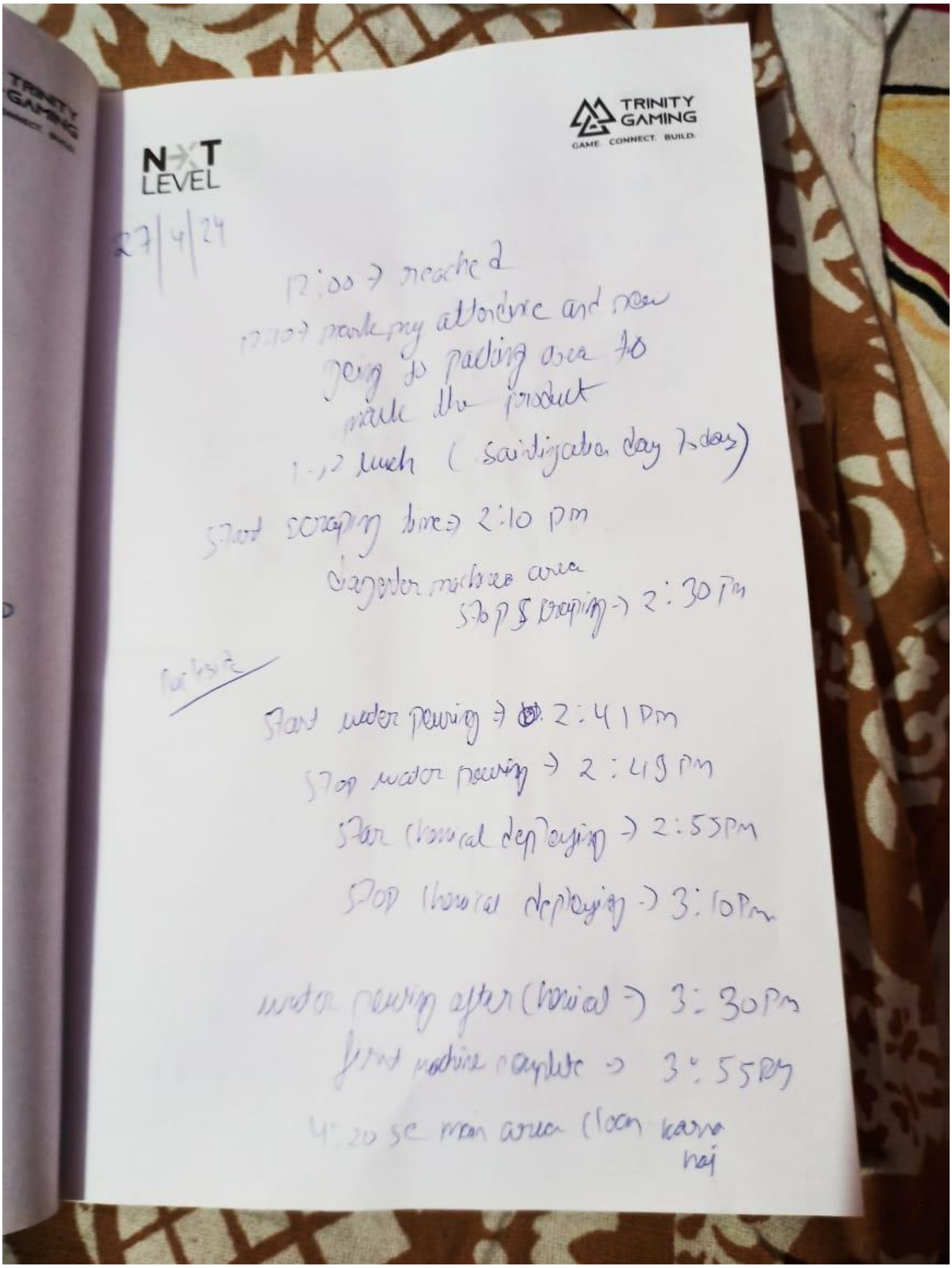
(Tea off) → 4:10

NEXT LEVEL

13/4/24

12:10 →


TRINITY GAMING
GAME. CONNECT. BUILD.
NEXT LEVEL
13/4/24
12:00 → reached
12:10 → raised the product with number and put them in packaging area
today is important day → new chemical testing.
1→2 → lunch
2→ paper 60 → new chemical
it is a jeg type of chemical to see whether it is time saving or no.
sprayed the chemical on 1 machine to see the results.
3→ sanitation run for 4 hours in company and new chemicals are in used
3:50 → "good results" may able to clean that small machine
today was good day
4:00 → get off



TRINITY GAMING
GAME. CONNECT. BUILD.

NEXT LEVEL

27/4/24

12:00 → reached

12:10 → mark my attendance and now going to packing area to mark the product

1-1:30 lunch (sanitization day 7 days)

Start scraping time ⇒ 2:10 pm

degerder machine area

Stop scraping → 2:30 Pm

for 1st site

Start water pouring → 2:41 Pm

Stop water pouring → 2:49 Pm

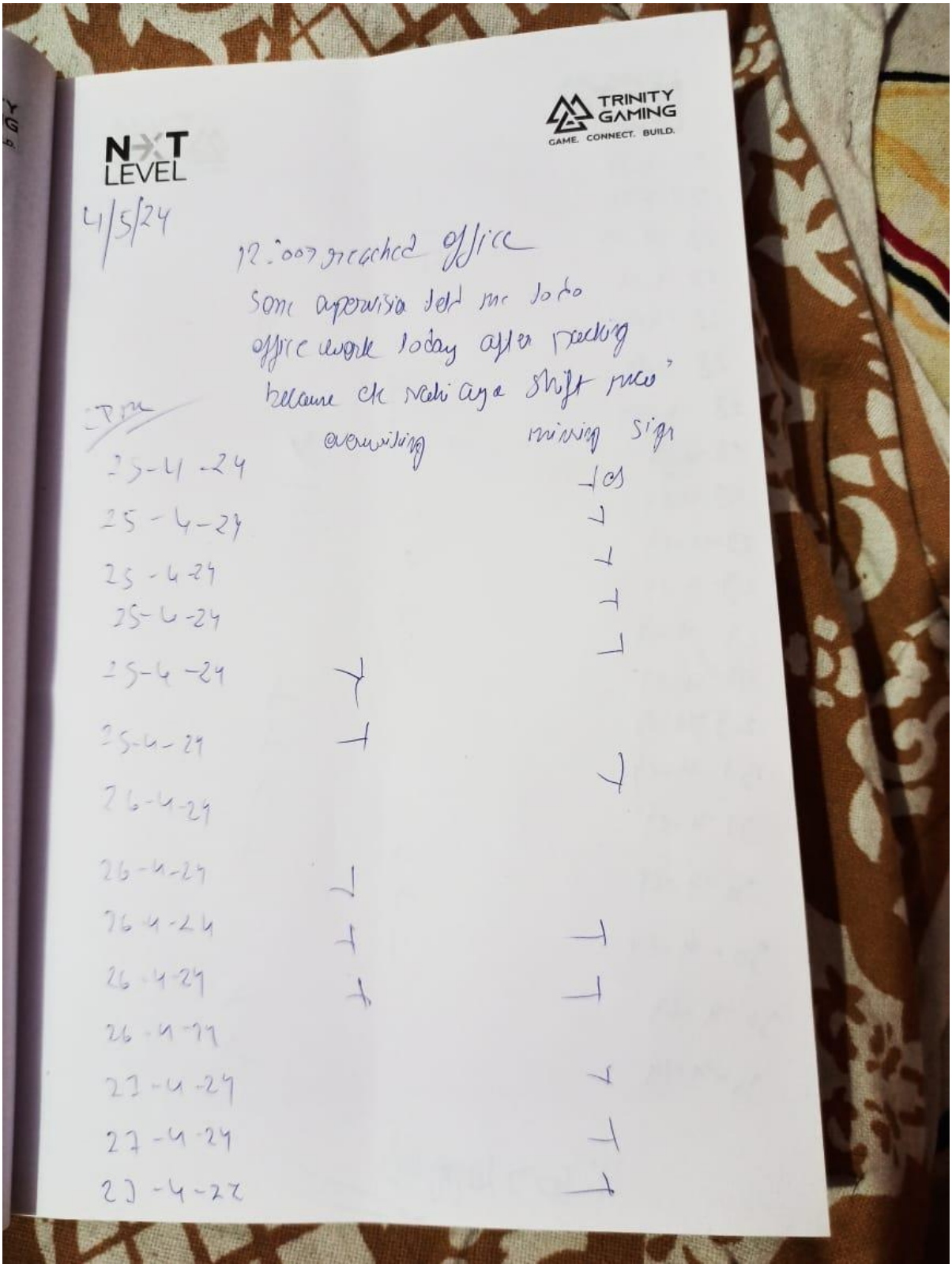
Start chemical deploying → 2:55 Pm

Stop chemical deploying → 3:10 Pm

water pouring after chemical → 3:30 Pm

first machine complete → 3:55 Pm

4:20 se main area clean karna hai


TRINITY GAMING
GAME. CONNECT. BUILD.
NEXT LEVEL
4/5/24
12:00 reached office
Sonu apoorva told me to do
office work today after checking
because ek nahi aya shift pura'
evening
morning sign
25-4-24
25-4-24
25-4-24
25-4-24
25-4-24
25-4-24
26-4-24
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