Supporting Document: 1.3.2

Experiential learning through project work/field work/internship during last five years

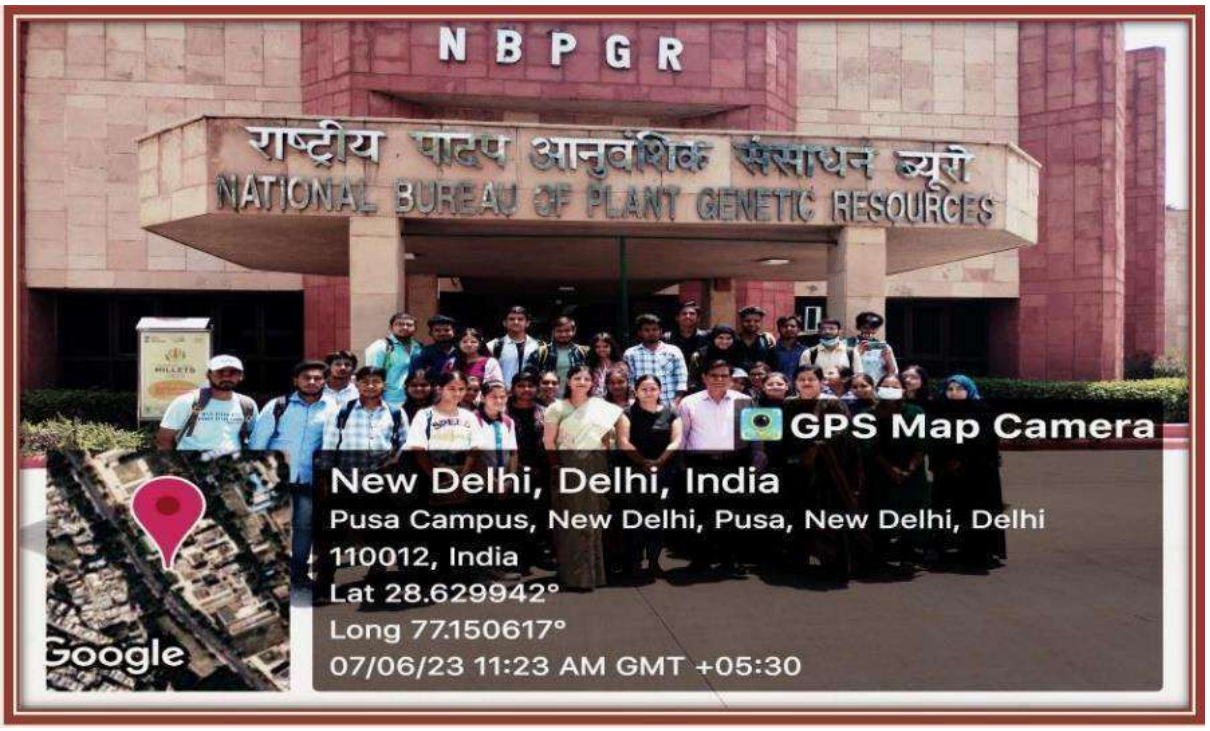
Life Science visit to IVF Centre, July 2022

Botanical Field Trip and Institute visit to Dharamshala and McLeodGanj, Himachal Pradesh, September 2019

Botanical Field Trip and Institute visit to Srinagar, Uttarakhand, October 2018

Department of Botany, Industrial Visit to Mother Dairy Plant, Delhi on March, 2023

Botany Department Organised Field Trip to NBPGR on 7 June, 2023



Educational field visit to Indian Agricultural Research Institute, Pusa, New Delhi

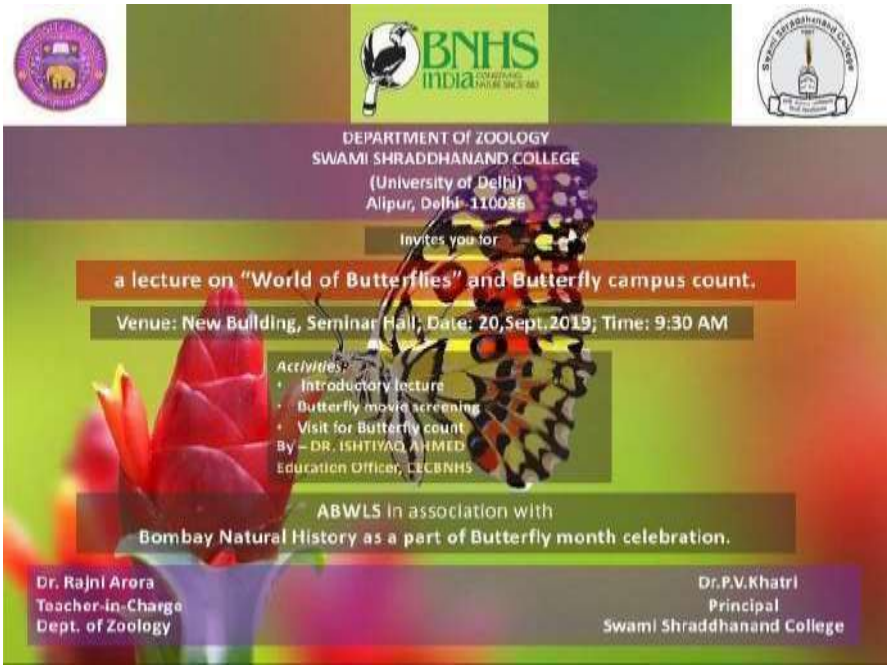
Excursion trip to Purana Qila on 1ST March 2023

EDUCATIONAL TRIP TO „KRISHI UNNATI MELA“ AND „DIVISION OF MICROBIOLOGY“, INDIAN AGRICULTURAL RESEARCH INSTITUTE, PUSA, NEW DELHI

INDUSTRIAL VISIT TO YAKULT DANONE INDIA PVT. LTD. AND NATIONAL INSTITUTE OF FOOD TECHNOLOGY ENTREPRENEURSHIP AND MANAGEMENT (NIFTEM), SONEPAT, HARYANA

LIST OF THE SEMINARS ORGANISED

1. A talk on "World of butterflies"and butterfly campus count was organised by Dr Rajni Arora on 20 September,2019 at 9.30 A.M in the new building of the college with ABWLS in association with Bombay Natural History, as a part of butterfly month celebration. Dr Ishtiyaq Ahmad, Education officer, CECBNHS was the speaker for the programme. The students of BSc Zoology Hon and BSc Life science participated enthusiastically in the talk and in butterfly campus count.


BNHS
India
DEPARTMENT Of ZOOLOGY
SWAMI SHRADDHANAND COLLEGE
(University of Delhi)
Alipur, Delhi-110036
Invites you for
a lecture on "World of Butterflies" and Butterfly campus count.
Venue: New Building, Seminar Hall, Date: 20,Sept.2019; Time: 9:30 AM
Activities:
Introductory lecture
Butterfly movie screening
Visit for Butterfly count
By – DR. ISHTIYAQ AHMED
Education Officer, EECBNHS
ABWLS in association with
Bombay Natural History as a part of Butterfly month celebration.
Dr. Rajni Arora
Teacher-in-Charge
Dept. of Zoology
Dr.P.V.Khatri
Principal
Swami Shraddhanand College

The Life Science department of Swami Shradhhanand College organized a one day workshop to *Aveya IVF* Rajouri Garden for its semester 2 students on the 2nd of June 2023. The workshop aimed to provide students with practical exposure IVF Lab.

Name	Mobile No.	Signature
1) Yuvraj	8808896134	[illegible]
2) Abhishek	8920455582	[illegible]
3) Rupmuesh kr	6206647125	[illegible]
4) chandraveer	9461088352 / ~~9777544432~~	[illegible]
5) Nasiya khatoon	9958361842	Nasiya
6) Aditya	9958527816	[illegible]
7) Aniket Tripathi	8076609754	Aniket
8) Anwesha	8340261477	Anwesha Sakshi
9. Roshni	9628098388	Roshani
10. Nazmin Khan	7836086124	Nazmin Kh
11. Khushboo Sharma	7048973977	Khushboo sharma
12. Arpita Sarkar	8851894641	Arpita
13. Ishita Paruthi	8448843911	Ishita
14. Rohit Raj	7645024115	Rohit Raj
15. Hira Khan	8979321801	Hira Khan.
16. Uttam	9937117439	Uttam
17. ~~Jhanvi~~ Jahnvi	9891063208	Jahnvi
18 Sanjana (3621)	9310652558	Sanjana
19 Anshu Jha	9891997427 / 7303847421	Anshu
20 Vinita Panchal	8950377853	Vinita
21 Falak	9811083272	falak
22 Sunita	6367799365	Sunita
23 Yashasvi	6390335814	Yashasvi
24 Shreya	8920120307	Shreya
25 Sanjana (3636)	9810230821	Sanjana
26 Lara (3653)	9958300795	[illegible]
27 Riya	9810307966	Riya Chauhan
28 Avival	7524089903	Avival
29 Vanshika	8595871299	Vanshika
30 ~~[illegible]~~ Rishika	7838704577	
31 Khushboo	8178331557	[illegible]

	Name	Mobile no	Signature
32	Khushi yadav	8650654157	Khushi
33	Anjali Soni	9599402909	Anjali
34.	Khushi Sharma	8447891636	Khushi
35.	Tanishq	9717568241	Tanishq
36.	Alok	9990488051	Alok.
37.	Hariom	7289033278	Hari
38.	Shubham Bohet	8383844982	Shubham
39.	Ishika	7634015658	Ishika
40.	Farhat	8528878907	Farhat.
41.	Divya Tiwari	9315928514	Divya
42	Shubham Kr.	9810693053	Shubham
43.	Nitika	9871348378	Nitika.
~~44~~	~~Abija Abhijat~~		
44	Abhijat	9871721702	Abhijat
45	Sania	9718391959	Sania
46	Megha	8506890506	Megha
47	Ishleen	8595789280	Ishleen
48	Bhoomi	9891502260	Bhoomi
49	H.Kosaid	8474047543	Kosaid

Project Work of Final year students of Zoology Hons. (Sem VI) for the paper Parasitology was submitted.

Paper: Field Work and Research Methodology

Place: Manali, Himachal Pradesh

Date: 17 to 24 February 2019

Total Teachers: 3 Anand Malik sir, Omjee Ranjan Sir, Atithi Ma'am

Dr. S. K. Sagar and Dr. Manas Kumar Dhal organized One day Lab visit of B. Sc. 6th Semester Applied Life Sciences Students on 8th September, 2018 to **Applied Entomology and Radiation Biology Lab., Department of Zoology**, Delhi University , Delhi-110007.

Dr. Manas Kumar Dhal, Dr. Pushpa Singh and Mrs. Akanksha of Department of Zoology, Swami Shraddhanad College (DU), Alipur, Delhi-110 036 organizied an one day Lab. visit for the students of B.Sc. Life Sciences and Applied Life Sciences 5th Semester on 26th September, 2019 to **Entomology Division and NCIPM of IARI**, Pusa Campus, New Delhi-12

Dr. S. K. Sagar and Dr. Manas Kumar Dhal of Department of Zoology, Swami Shraddhanad College (DU), Alipur, Delhi-110 036 organized an one day Lab. visit for the students of B.Sc. Applied Life Sciences 6th Semester on 4th September, 2019 to **Entomology Division of IARI**, Pusa Campus, New Delhi-12

Dr. Mukesh Kumar and Dr. Manas Kumar Dhal of Department of Zoology, Swami Shraddhanad College (DU), Alipur, organized an one day educational museum visit for the students of B.Sc. Zoology (Hons.) 6th Semester to the **Geology Department, Delhi University,** Delhi-110 007 to study the **Fossils and Fossilization** as part of their evolutionary biology syllabus on 19th February, 2020.


हिमाचल का शुद्ध शहद
AJA APPIARY HONEY BEE
AFFILIATED TO : NATIONAL BEE BOARD
GOVT. OF INDIA, NEW DELHI - 110001
VILLAGE GANDHI NAGAR, GANGOH - SAHARANPUR (U.P.) 247341
RAKAM SINGH
7456814281

B.Sc. Life Sc. Zoology Students Sem I made an Album on the Animal Diversity

1.3.2 Certificates of Experiential learning through <u>internship</u> during last Academic year 2022-2023

सुकून
EK ZARIYA

Internship Certificate

This is to certify that Mr. Saurabh Singh S/O of Mr. Balwant Singh has worked with Sukoon – Ek Zariya Welfare Society as a HEAD OF PUBLIC RELATIONS from FEBRUARY 2021 to APRIL 2022.

During his service, we found him as a hardworking and dedicated person. He showed honesty and sincerity in the work assigned to him. He would be an asset to any organization with whom he may engage in the future.

Devashish Raj
President

Address - Dream Homes Owners Society, Junwani Road, Bhilai

sukoon_ek_zariya
Sukoon – Ek Zariya

NAYEPANKH FOUNDATION

CERTIFICATE

OF PARTICIPATION

PROUDLY PRESENTED TO

Vandana Kumari

For his/her active participation in the One Day, Marketing Collaboration Campaign and for putting their great efforts.

Prashant Shukla
Founder & President,
NayePankh Foundation

24th Jan, 2023
DATE

D S Kothari Centre for Research and Innovation in Science Education

Miranda House, University of Delhi

SUMMER INTERNSHIP PROGRAM 2023

Flavor of Research

Investigative Projects in Multidisciplinary Contexts

06 June to 18 July 2023

This is to certify that Debangshi Dasgupta *of* Swami Shraddhanand College *carried out a project on* In silico characterization of stress genes and proteins *at the summer internship program by DS Kothari Centre for Research and Innovation in Science Education, Miranda House, University of Delhi.*

Professor Monika Tomar
Coordinator
DSKC, Miranda House

Professor Bijayalaxmi Nanda
Principal
Miranda House

MBA HUB

CERTIFICATE

Vandana Kumari

Marketing and Finance Internship

Certificate of Completion

10th September, 2022

Over the period of July and August 2022, Vandana Kumari has completed 30 Day(s) internship in MBA HUB partnered with Angel One and ICICI Direct in :

Marketing and companies case study
finance and stock market fundamentals.

Animesh Kumar
(Founder)

Reference ID : KTO357100W9A7857

Issued By : MBA HUB

MICROBIOLOGISTS SOCIETY, INDIA.

(Regi. No. MAH/4814/SAT)

Microbes for Better Tomorrow

1996

Certificate

This is to certify that Mr./Ms. Rahul

from Microbiology, SSNC, DU is a active Annual/~~Biannual~~

Member of Microbiologists Society, India during 2021 - 2023

Head / ~~Principal~~

MICROBIOLOGISTS SOCIETY 1996

Dr. A.M. Deshmukh
President
Microbiologists Society, India
(www.microbiosociety.org)

80G URN.: AAGAN9381EF20227

NAYEPANKH FOUNDATION

CERTIFICATE OF INTERNSHIP

THIS CERTIFICATE IS AWARDED TO

VANDANA KUMARI

For completing your one Month Human Resource Internship
and handling it all like a Champ!
We wish you well in your future endeavours!

Prashant

PRASHANT SHUKLA
Founder & President,
NayePankh Foundation

10th February , 2023

DATE

Society Reg No.: KAP/04397/2021-2022

100 DAYS SKILL FESTIVAL

Hands-on Workshop on
Python for Physical Science & Its Practical Approach

Organized by

Centre for Innovation in Infectious Disease Research, Education and Training (CIIDRET), University of Delhi South Campus

&

Delhi School of Skill Enhancement and Entrepreneurship (DSSEED), University of Delhi

with Academic partner

Rajdhani College, University of Delhi

This is to certify that *Abhi Raj* has attended and successfully completed the National Workshop on "Python for Physical Sciences & Its Practical Approach" held from January 30- 3 February 2023, at Rajdhani College, University of Delhi.

Professor Amita Gupta
Director, CIIDRET

Dr. Vijay Chaudhary
Director (Hon.), DSSEED-IoE

Prof. Rajesh Giri
Principal, Rajdhani College

CIIDRET

दिल्ली विश्वविद्यालय INSTITUTION OF EMINENCE
University of Delhi प्रतिष्ठित संस्थान

TRAINING & INTERNSHIP PROGRAM
IN ASSOCIATION WITH
ANTARAGNI, IIT Kanpur

DATE: 30th March 2022

TO WHOM IT MAY CONCERN

This is to certify that **Divitrisman Bharali**, an student of **Swami Shraddhanand College, University of Delhi** had registered for **Training and Internship Program 2022** with Ethical Edufabrica Pvt. Ltd. conducted in association with **ANTARAGNI, IIT Kanpur** in the month of **February-March 2022**. As a part of the Training and Internship program, the candidate was required to undertake a project showcasing the aspects of the chosen training program and as criteria towards finishing the internship.

So hereby with this letter, we acknowledge that the student has done the internship on the topic of "**Antibiotic resistance**" in **MEDICAL MICROBIOLOGY & IMMUNOLOGY** as a part of the internship and the project has exhibited the student's ability and skill in adapting the training structure into its practical nature and focusing on the core elements of the training. The Project was satisfactory and had catered to all the key briefs handed to the student as an outline for the project.

The candidate during internship with us has shown diligence and perseverance adhering to the internship protocols set by the company and made sure that the given tasks were handled and performed with great outcome.

We wish the candidate all the very best for the future.

Shivani Chetia
Business Head
Ethical Edufabrica Pvt. Ltd.

CERTIFICATE OF APPRECIATION

This certificate is being presented to

(DU 2020-NSS-SSNC-236)

Tejasri Ranjan

In acknowledgement of his/~~her~~ successful participation in

3-Days Project work (World Earth Day),

organized by the NSS Unit of Swami Shraddhanand College,

held on 22-04-2022 to 24-04-2022. We recognise the efforts put by him/~~her~~ and wish him/~~her~~ all the best for the future endeavours.

Prof. Parveen Garg (Principal)

Pradeep Kumar (IQAC Convenor)

Mr. JK Pandey (Programme Officer)

CERTIFICATE OF BRILLIANCE

Eduonix Learning Solutions Congratulates

Vandana Kumari

On Successfully Completing the

"Complete Beginners Course to Master Microsoft Excel"

on August 23, 2022.

Upskill With Eduonix

SIGNATURE

www.eduonix.com/certificate/8618fccb7b

1.3.2 -Experiential learning (2018-23)

Department of Microbiology

Educational Trip Report

on 30th January 2020

One day educational trip was organized by the department of microbiology to visit the National Institute of Food Technology Entrepreneurship and Management, HSIIDC Industrial Estate Kundli, Sonipat. The trip comprised of third and second year students of B.Sc. (Hons.) Microbiology, accompanied by Dr. A. Archana, Dr. Parvinder Kaur, Dr. Lakshna Mahajan and Dr. Sweta Yadav on 30th January, 2020. This was quite useful towards making the students understand the basic aspects of Food Technology and its applications.

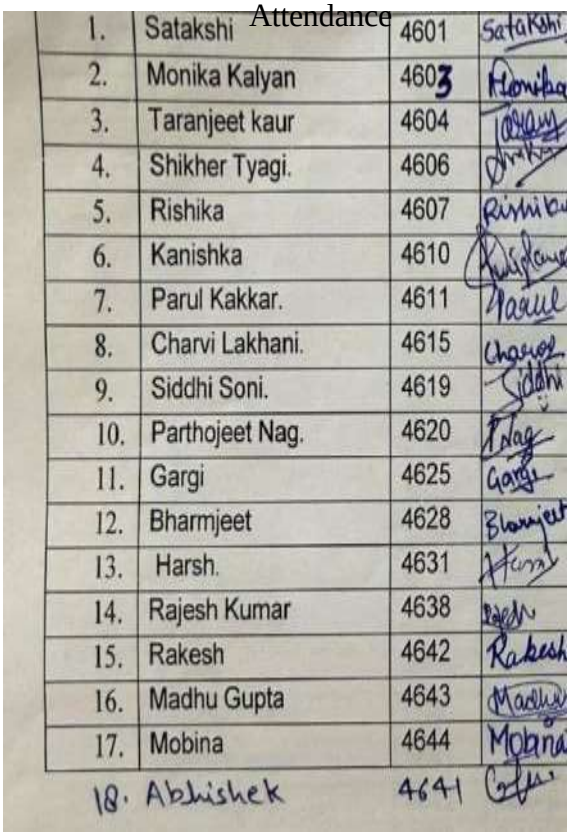
NIFTEM is the brainchild of the Ministry of Food Processing Industries (MoFPI)Government of India. MoFPI in its Vision document-2015, envisaged creation of a world-class institution to cater to the various stakeholders such as entrepreneurs, food processing industry, exporters, policy makers, government and existing institution. NIFTEM is a prime academic institution in the areas of food technology, entrepreneurship and management, it also offer courses and training programmes of global standards with optimal mix of inputs on food technology, management and entrepreneurship.

Students along with the faculty members visited the Food Science and Technology Department. The visit started with a presentation explaining innovation in food sector and the growth of food processing industry in India in global context. They explained that a part from imparting world – class education in the field of food science and technology, the department has research programmes in frontline areas of Food Science and Technology. The department was also involved in skill development of the farmers and industry personnel. Unlike the existing food science institutes in India, NIFTEM function as a center for integrated education, research, enterprise incubation and outreach in the area of food science, technology and business. After presentation the students visited the state-of-the-art laboratories, incubation centers, and pilot plants followed by food engineering lab, food packaging lab, microbiology lab and central instrumentation lab. The library was adequately furnished with contemporary tools and materials, including printed books, journals, online databases, e-books, e-journals, and many more.

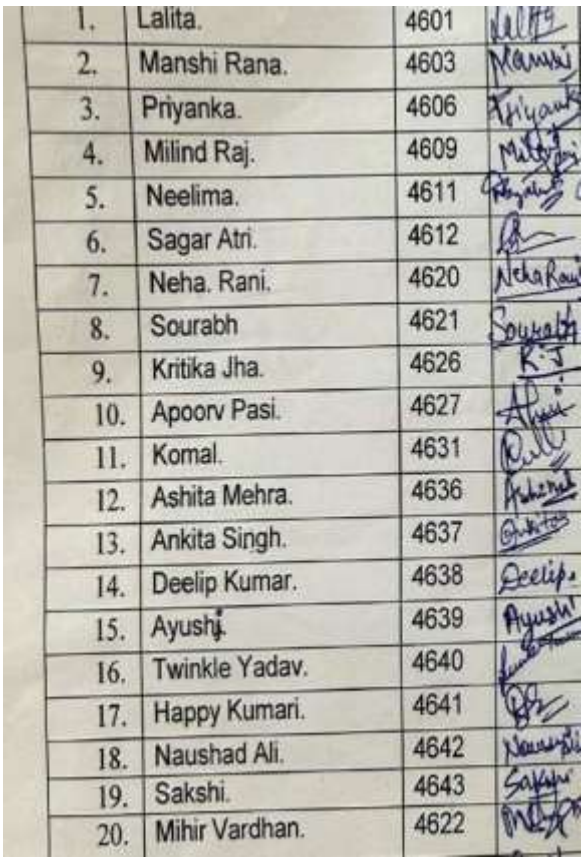
This visit was very beneficial for the students as they learnt the important aspects of Skill and Entrepreneurship Development in food technology. Business Incubation Services to conduct Frontier Area Research and foster Innovation for development of the sector.


mu-Control

Attendance



1.	Satakshi	4601	
2.	Monika Kalyan	4603	
3.	Taranjeet kaur	4604	
4.	Shikher Tyagi.	4606	
5.	Rishika	4607	
6.	Kanishka	4610	
7.	Parul Kakkar.	4611	
8.	Charvi Lakhani.	4615	
9.	Siddhi Soni.	4619	
10.	Parthojeet Nag.	4620	
11.	Gargi	4625	
12.	Bharmjeet	4628	
13.	Harsh.	4631	
14.	Rajesh Kumar	4638	
15.	Rakesh	4642	
16.	Madhu Gupta	4643	
17.	Mobina	4644	
18.	Abhishek	4641	



1.	Lalita.	4601	
2.	Manshi Rana.	4603	
3.	Priyanka.	4606	
4.	Milind Raj.	4609	
5.	Neelima.	4611	
6.	Sagar Atri.	4612	
7.	Neha. Rani.	4620	
8.	Sourabh	4621	
9.	Kritika Jha.	4626	
10.	Apoorv Pasi.	4627	
11.	Komal.	4631	
12.	Ashita Mehra.	4636	
13.	Ankita Singh.	4637	
14.	Deelip Kumar.	4638	
15.	Ayushi.	4639	
16.	Twinkle Yadav.	4640	
17.	Happy Kumari.	4641	
18.	Naushad Ali.	4642	
19.	Sakshi.	4643	
20.	Mihir Vardhan.	4622	

FEEDBACK FORM

Educational trip to National Institute of Food Technology Entrepreneurship and Management, HSIIDC, Industrial Estate, Kundli, Sonipat, Haryana 131028

By Department of Microbiology, Swami Shraddhanand College, University of Delhi

Date: 30.01.2020

Name of the participant: Kanishka.

Student/Faculty/Others: Student

Course and Semester: B.Sc. (Hons.) Microbiology, IInd year

Email: _____

Contact: 8267093864 Signature: _____

	(Tick Mark) Yes	No
1. The trip was appropriate, informative and interesting.	✓	
2. The program was well paced within the allotted time	✓	
3. Did the visit meet the purpose?	✓	
4. Did the instructor engage the pupil's attention?	✓	
5. Were lectures and demonstrations presented in an organized manner	✓	
6. Did you learn something new?	✓	
7. Did you feel free to ask questions during the tour	✓	
8. The arrangements were satisfactory (Time and Venue)	✓	
9. I would be interested in attending future events	✓	

10. How did this trip support enhanced your learning and understanding of the subject?
It was great experience to visit NIFTEM. They explained the process very well followed by visit to manufacturing units.

11. Any other suggestions _____

FEEDBACK FORM

Educational trip to National Institute of Food Technology Entrepreneurship and Management, HSIIDC, Industrial Estate, Kundli, Sonipat, Haryana 131028

By Department of Microbiology, Swami Shraddhanand College, University of Delhi

Date: 30.01.2020

Name of the participant: Rakesh

Student/Faculty/Others: Student

Course and Semester: B.Sc (Hons) Microbiology II year

Email: _____

Contact: 9671125046 Signature: _____

	(Tick Mark) Yes	No
1. The trip was appropriate, informative and interesting.	✓	
2. The program was well paced within the allotted time	✓	
3. Did the visit meet the purpose?	✓	
4. Did the instructor engage the pupil's attention?	✓	
5. Were lectures and demonstrations presented in an organized manner	✓	
6. Did you learn something new?	✓	
7. Did you feel free to ask questions during the tour	✓	
8. The arrangements were satisfactory (Time and Venue)	✓	
9. I would be interested in attending future events	✓	

10. How did this trip support enhanced your learning and understanding of the subject?
महो का बौद्धिक भ्रमण बेहद ही ज्ञानशाल था। फर्मेंटर डीप फ्रीजर, ऑटोक्लेव, ब्लीचिंग मशीन, इत्यादि वास्तविकता में देखने को मिला और इनके बारे में बारीकी से जानने को मिला। साथ ही छोटी बड़ी खाद्य चीजें बनती देखी।

11. Any other suggestions

No.

Educational Trip Report

Organized by

The Department of Microbiology on 30th January 2020

One day educational trip was organized by the department of microbiology to visit the factory of Yakult Danone India Ltd. at Rai, Sonipat. The trip comprised of the third and second year students of B.Sc. (Hons.) Microbiology, accompanied by Dr. A. Archana, Dr. Parvinder Kaur, Dr. Lakshna Mahajan and Dr. Sweta Yadav on 30th January, 2020. This was quite useful towards making the students understand the basic and industrial aspects of Food Microbiology.

As a pioneer in probiotics, Yakult has formidable research capabilities and technological advances in the field of probiotics. It is backed by more than 80 years of research, and more than 100 human studies have been conducted in the world including India, on Yakult's probiotic bacteria, *Lactobacillus casei* strain *Shirota* (LcS). The studies have indicated that regular consumption of Yakult helps improve digestion and helps build immunity.

The journey was started at 9:00 am in the morning and everyone reached at the location at 10:00 am. Mr. Aadish, Executive, Public Relation department, Yakult Danone India Pvt. Ltd. warmly

welcomed everyone. Yakult (a probiotic fermented milk drink) were served to all students and teachers.

Mr. Aadish explained through a PowerPoint presentation about the origin of the company, the importance of the Probiotic Drink, the Production Process, Marketing and Distribution of the Product. During the visit, the students visited various Production and Manufacturing Units like Seed Room, Culture & Mixing Room, Quality Control, Bottle Molding, Machine Room, Packaging Room and Quality Checking. After that all students along with faculty members were taken to the site, where the plant to produce Yakult was installed.

The visit was a fruitful experience for the students as they learned the processing stages and the latest technology in producing processed products. It also provided them an opportunity to familiarize themselves with the industrial environment. Students got insight about the Operations & Production at Yakult. It was a worthwhile learning experience for the students as they gained an understanding of how an industry operates.

List of Students

1.	Lalita.	4601	
2.	Manshi Rana.	4603	
3.	Priyanka.	4606	
4.	Milind Raj.	4609	
5.	Neelima.	4611	
6.	Sagar Atri.	4612	
7.	Neha. Rani.	4620	
8.	Sourabh	4621	
9.	Kritika Jha.	4626	
10.	Apoorv Pasi.	4627	
11.	Komal.	4631	
12.	Ashita Mehra.	4636	
13.	Ankita Singh.	4637	
14.	Deelip Kumar.	4638	
15.	Ayushi	4639	
16.	Twinkle Yadav.	4640	
17.	Happy Kumari.	4641	
18.	Naushad Ali.	4642	
19.	Sakshi.	4643	
20.	Mihir Vardhan.	4622	

1.	Satakshi	4601	Satakshi
2.	Monika Kalyan	4603	Monika
3.	Taranjeet kaur	4604	
4.	Shikher Tyagi.	4606	
5.	Rishika	4607	Rishika
6.	Kanishka	4610	
7.	Parul Kakkar.	4611	Parul
8.	Charvi Lakhani.	4615	Charvi
9.	Siddhi Soni.	4619	Siddhi
10.	Parthojeet Nag.	4620	Nag
11.	Gargi	4625	Gargi
12.	Bharmjeet	4628	Bharmjeet
13.	Harsh.	4631	Harsh
14.	Rajesh Kumar	4638	Rajesh
15.	Rakesh	4642	Rakesh
16.	Madhu Gupta	4643	Madhu
17.	Mobina	4644	Mobina
18.	Abhishek	4641	

FEEDBACK FORM

Educational trip Yakult Danone India Ltd. at Rai, Sonipat
By Department of Microbiology, Swami Shraddhanand College, University of Delhi
Date: 30.01.2020

Name of the participant: Neelima

Student/Faculty/Others: student

Course and Semester: B.Sc (H) Microbiology II year

Email:

Contact: 9643683561 Signature: Neelima

	(Tick Mark) Yes	No
1. The trip was appropriate, informative and interesting.	✓	
2. The program was well paced within the allotted time	✓	
3. Did the visit meet the purpose?	✓	
4. Did the instructor engage the pupil's attention?	✓	
5. Were lectures and demonstrations presented in an organized manner	✓	
6. Did you learn something new?	✓	
7. Did you feel free to ask questions during the tour	✓	
8. The arrangements were satisfactory (Time and Venue)	✓	
9. I would be interested in attending future events	✓	

10. How did this trip support enhanced your learning and understanding of the subject? ✓

11. Any other suggestions: It was nice to know about the industrial application of food technology.

No

FEEDBACK FORM

Educational trip Yakult Danone India Ltd. at Rai, Sonipat
By Department of Microbiology, Swami Shraddhanand College, University of Delhi
Date: 30.01.2020

Name of the participant: Kobina

Student/Faculty/Others: Student

Course and Semester: B.Sc.(H) Microbiology

Email: _____

Contact: 7903870229 Signature: [signature]

	(Tick Mark) Yes	No
1. The trip was appropriate, informative and interesting.	Yes	
2. The program was well paced within the allotted time	Yes	
3. Did the visit meet the purpose?	Yes	
4. Did the instructor engage the pupil's attention?	Yes	
5. Were lectures and demonstrations presented in an organized manner	Yes	
6. Did you learn something new?	Yes	
7. Did you feel free to ask questions during the tour	Yes	
8. The arrangements were satisfactory (Time and Venue)	Yes	
9. I would be interested in attending future events	Yes	

10. How did this trip support enhanced your learning and understanding of the subject? It sparked my interest in the field of food production & has given me valuable insights that will assist me in my further journey.

11. Any other suggestions No

FEEDBACK FORM

Educational trip Yakult Danone India Ltd. at Rai, Sonipat

By Department of Microbiology, Swami Shraddhanand College, University of Delhi

Date: 30.01.2020

Name of the participant: Bhramjeet

Student/Faculty/Others: Student

Course and Semester: B.Sc. (Hons.) Microbiology, 2nd Year

Email: _____

Contact: 9873278102 Signature: _____

	(Tick Mark) Yes	No
1. The trip was appropriate, informative and interesting.	✓	
2. The program was well paced within the allotted time	✓	
3. Did the visit meet the purpose?	✓	
4. Did the instructor engage the pupil's attention?	✓	
5. Were lectures and demonstrations presented in an organized manner	✓	
6. Did you learn something new?	✓	
7. Did you feel free to ask questions during the tour	✓	
8. The arrangements were satisfactory (Time and Venue)	✓	
9. I would be interested in attending future events	✓	

10. How did this trip support enhanced your learning and understanding of the subject?
It was amazing to learn about the pilot plant facilities for production & application of food industry. It was really Inspiring.

11. Any other suggestions NO

PAGE NO. _____
DATE 2/08/17

Experiment no. - 1 (b)

Aim -
To visit any industry to see an industrial fermenter & other downstream processing operations.

Theory -
According to WHO, "Probiotics are live microorganisms which when administered in adequate amounts confer a health benefit on the host."
Probiotics are effective in maintaining good health by suppressing the growth of bad bacteria and restoring the balance of gut flora.

Introduction -
In 1930, Dr. Minoru Shirota discovered lactobacillus casei strain Shirota which was beneficial to human health. The bacteria is resistant to gastric juice and bile, which could reach intestine alive & impart a health benefit. He used it to make Yakult, a fermented milk / drink which contains more than 6.5 billion beneficial bacteria. Yakult is a scientifically proven probiotic drink. Daily consumption of Yakult helps improve intestinal function & build immunity.

9. The finished Yakult is sorted in a pack of 5 bottles that is shrink wrapped in polypropylene and loaded into a crate. The crates containing Yakult are transported to the cold room via conveyer belt.

10. In the cold room, the finished products are refrigerated at 5°C to ensure their best condition before distribution.

Quality control Measures carried out at Production Unit :-

- More than 100 checks are carried out to ensure that the final product tastes right and special care is taken to safeguard viability of live Yakult bacteria.
- Workers wear protective clothes.
- Workers sanitize their hands and pass through air shower before entering the production area.
- Bottling and filling area is controlled with germ free air.
- Frequent testing at on-site quality control divi

PAGE NO.
DATE

tank, the sterilized sugar syrup is added to culture base to form conc. Yakult and the tank is chilled at 5°C.

4. The conc. Yakult is transferred to the mixing tank and diluted with sterilized water. Natural flavours and permitted colouring are added at this stage for flavoured Yakult and the diluted mixture is then transferred to Filling Tank.

5. The plastic bottles are produced by the moulding machine at the speed of 7000 bottles per hour. These bottles (polystyrene) are transported by clean air blower through a duct to the storage tank.

6. From the storage tank, the empty bottles are transferred to Selector Machine which arranges them in an upright position before they are sent to the printing machine.

7. The printing machine prints Yakult logo, the ingredients etc. used on the empty bottles using instant dry red ink.

From the Printing Machine, the printed bottles are sent to Filling Machine which has the capacity to fill 30,000 bottles with Yakult per hour. At this stage, the bottles are capped and sealed with an Aluminium foil that has "Use by date" print.

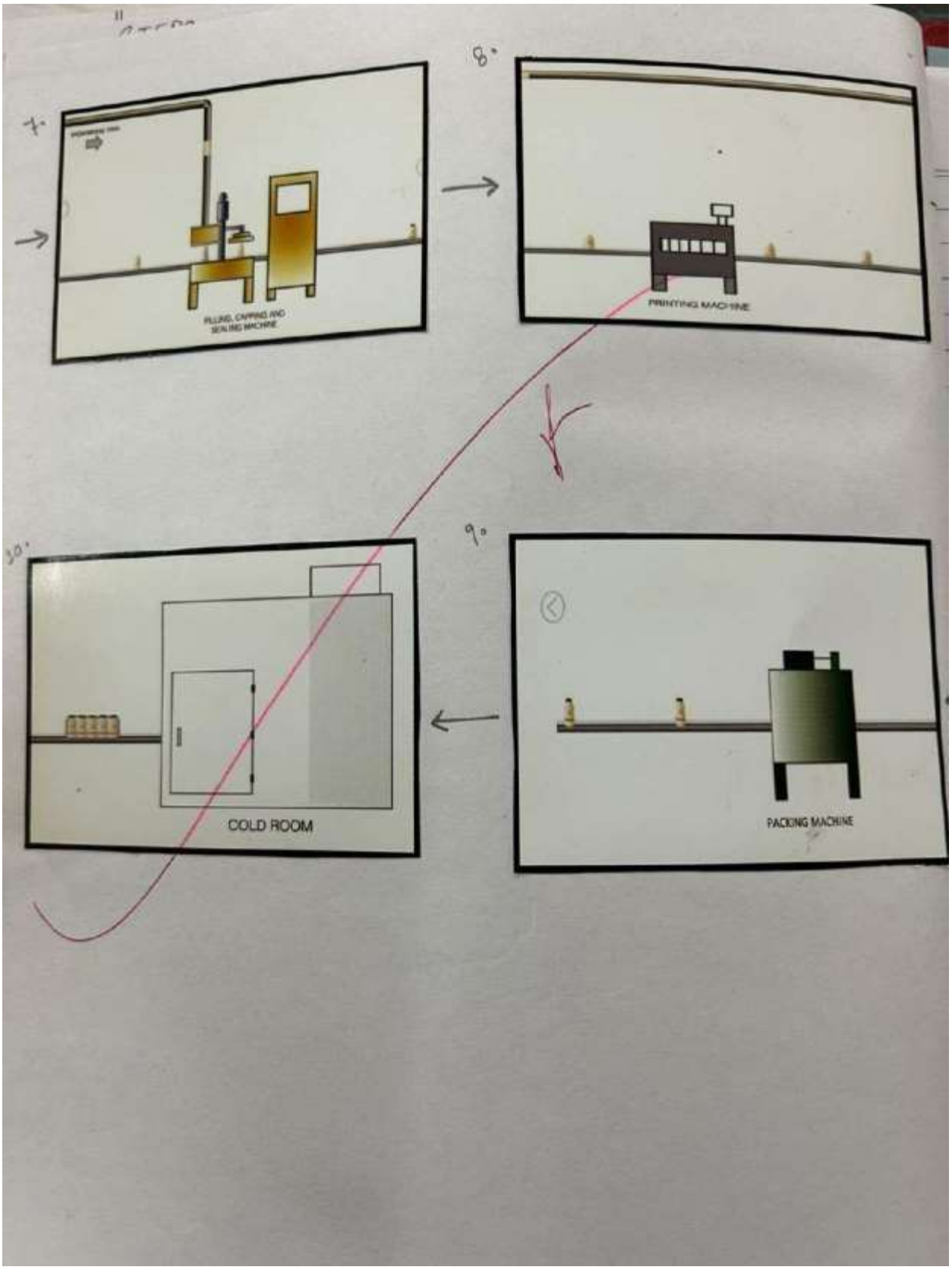
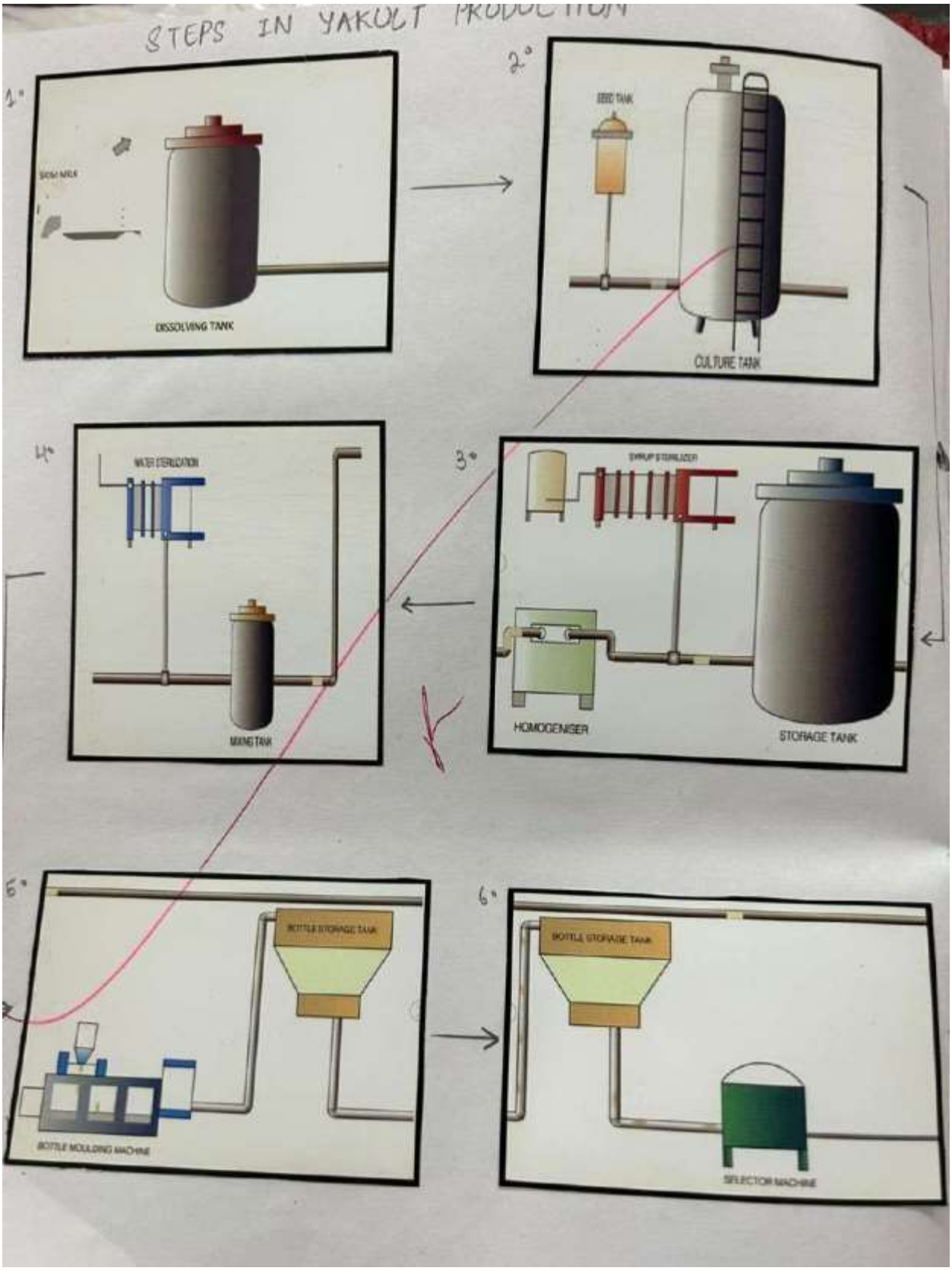

7.
8.
PRINTING MACHINE
9.
PACKING MACHINE
10.
COLD ROOM

Table showing Nutritional Information per 65 ml of Yakult

Nutritional Information		per 65 mL
1.	Energy	50 Kcal
2.	Protein	0·8 g
3.	Carbohydrates	12 g
4.	Fats	<0·1 g


STEPS IN YAKULT PRODUCTION
1°
DISSOLVING TANK
2°
CULTURE TANK
3°
HOMOGENISER
STORAGE TANK
4°
MIXING TANK
5°
BOTTLE STORAGE TANK
BOTTLE MOULDING MACHINE
6°
BOTTLE STORAGE TANK
SELECTOR MACHINE

PAGE NO.
DATE

Production of Yakult :-

Yakult's first state of art probiotic factory in India is located at Rai, Sonepat, Haryana. The industry follows the most hygienic and advanced manufacturing process ensuring the supreme quality of products day after day. It is made from skimmed milk, sugar, glucose, natural identical flavour, water, *Lactobacillus casei* strain Shirota (LcS). It is free from preservatives, colouring and stabilizers.

It is a step by step process where,

1. Skimmed milk powder is dissolved in hot water (50-55°C) in dissolving tank to make milky solution.
2. From the dissolving tank, the milky solution is transferred to culture tank and sterilized. It is then cooled to 37°C. The culture starter, *L. casei* strain Shirota from the seed tank is added into tank to ferment the solution until LcS concentration reaches ideal, and solution changes into curd form known as culture base. The culture base is passed through a homogenizer to make it into fine texture before it is transferred to storage tank. In the storage

PAGE NO.
DATE

ensures the product is highest standard upto the date of expiry.

- Every batch of Yakult is produced & monitored for 24 hrs before it is dispatched for sale.

The Indian Plant has ISO 9001:2008, HACCP, OHSAS accreditation for manufacturing a safe quality product for its customers.

Visit:-

We visited the Yakult Probiotic Industry at Rai, Haryana to see its operations. We were debriefed about the product and its history, its benefits etc followed by a visit to see its production unit. It was explained in detail by experts scientists there. Finally, we also got to taste the freshly prepared sample from the unit. Overall, it was a very well organised, interesting & informative visit conducted by our department with the help of Yakult Probiotic Industry.

Ravinder 25/9/19

2018

11/12/2018 ssndu.in/exam/print-la-student.php

Swami Shraddhanand College - Internal Aseessment Performa for Nov /Dec 2018

B.Sc (HONS.) MICROBIOLOGY - V SEM, SEC -NA

Paper: INDUSTRIAL MICROBIOLOGY(32531501)

Teacher Name: Dr. PARVINDER KAUR Phone No. 9810569544

S.No.	University Roll No.	Class Roll No.	Name	Class Test out of 10	Assig. Mar out of 10	Attd. out of 5	Total out of 25	Signature
1	16081564001	4601	SHIVAM AGGARWAL	8.75	9.5	5	23.25	Shivam
2	16081564002	4602	PRATIKSHA SHUKLA	5.5	8.0	1	14.5	Pratiksha
3	16081564003	4607	ABHISHEK SINGH	6.0	9.0	5	20.0	Abhishek
4	16081564004	4608	AMIT KHATRI	7.5	9.0	5	21.5	Amit Khatri
5	16081564005	4612	SAHIBA	5.25	7.0	2	14.25	Sahiba
6	16081564006	4614	SRIJITA ROY	7.5	8.5	1	17.0	S. Roy
7	16081564007	4617	SHUBHAM AGGARWAL	9.0	10.0	5	24.0	Shubham
8	16081564008	4618	ABDUL RAHMAN	8.0	9.5	5	22.5	Abdul
9	16081564009	4619	SIMRAN GAGNEJA	9.5	9.5	5	24.0	Gagneja
10	16081564010	4623	NISHKARSH JAIN	8.25	10.0	5	23.25	Nishkarsh
11	16081564011	4624	NEHA UPADHYAY	–	–	–	0	–
12	16081564012	4625	VANSHIKA RASTOGI	9.5	9.5	3	22.0	Vanshika
13	16081564013	4626	JYOTI	3.5	8.0	1	12.5	Jyoti
14	16081564014	4627	MOHD SHADAB	6.5	8.5	5	20.0	Shadab
15	16081564015	4628	MEENAKSHI	7.0	9.5	5	21.5	Meenak
16	16081564016	4629	MOHINI	7.0	9.0	4	20.0	Mohini
17	16081564017	4632	MONICA PANDITA	6.5	9.0	5	20.5	Monica
18	16081564018	4635	NEHA SINHA	6.75	7.0	2	15.75	Neha Sinha
19	16081564019	4637	ANKIT VERMA	0.75	Negative 0	0	0.75	Ankit
20	16081564021	4643	SHUBHAM VERMA	4.25	8.0	4	16.25	Shubham
21	16081564022	4646	KUMARI MANISHA	3.25	8.5	5	16.75	Manisha
22	16081564023	4647	ANSHU	4.5	9.0	0	13.5	Anshu
23	16081564025	4652	NUPUR TYAGI	9.0	10.0	5	24.0	Nupur Tyagi
24	16081564026	4654	RITU MANN	8.25	10.0	5	23.25	Ritu
25	16081564027	4656	DEEPANSHU	9.0	9.5	2	20.5	Deepanshu
26	16081564029	4641	SHABYA SINGH	5.5	7.5	0	13.0	Shabya
27	16081564030	4651	SONIKA	4.0	8.0	3	15.0	Sonika
28	16081564031	4611	ABHISHEK SHARMA	5.5	7.0	0	12.5	Abhishek

NOTE: Kindly submit original attendance sheet along with performa.

Signature : Parvinder Kaur

16/11/18

EXCURSION TRIP TO MEHRAULI ARCHAEOLOGICAL PARK AND QUTUB COMPLEX

PRESENTED BY :

SWAMI SHRADDHANAND COLLEGE

Prof. Parveen Garg
Principal

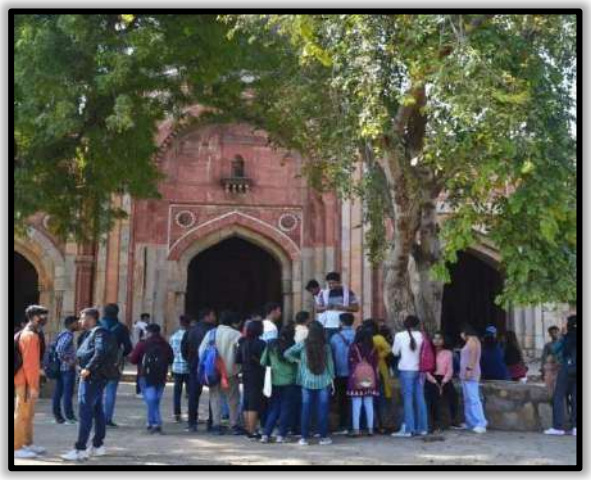
Prof. Ranjan Kumar
(Teacher in charge)

Dr. Aditi Govil
(Assistant Professor
Dept. of history)

Report on Excursion trip to Mehrauli Archaeological park and Qutub Complex

Date: 9th Feb 2023

On 9th feb 2023, one day excursion trip was organized by ATEET The history association, Department of History, Swami Shraddhanand College. We are very much thankful to the team of ASI, Ankit Sahay sir, Divya Sharma ma'am and Sarfaraz Hamid sir who accompanied the students on this heritage walk around the Mehrauli Archaeological Park and the Qutb Complex. This trip was organized and under the supervision of Mr. Ranjan Kumar (Teacher in Charge), Dr. Aditi Govil (Assistant professor, Department of History, SSN College) and Mr. Manish Sharma (Assistant professor, Department of History, SSN College). This trip comprised of around 60 students of all the 3 years of course B.A History (Hons.). The trip began from the college campus at 10:30 am, picking up all the students by bus for the destination of Mehrauli.



ABOUT THE SITES:

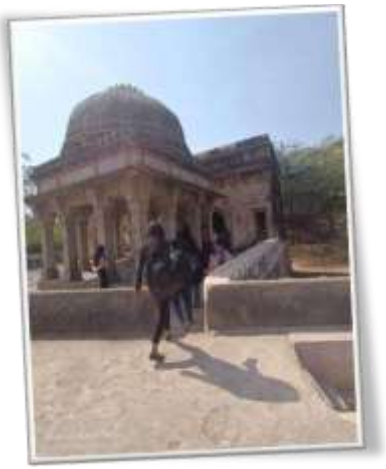
This heritage walk covered all the major sites of Mehrauli Archaeological park and Qutb Minar, located in the South delhi. Mehrauli is the 1st of the 7 cities of Delhi covering around 200 acres. This whole site was redeveloped in 1997 with the collaborative efforts of DTTDC, DDA, INTACH.

This is a heavy tourist attraction spot in Delhi and the main reason behind this it's various architectures and historical significance in the indian history. We witness that the tourist visit to qutb complex is slightly larger than that of the mehlauli archaeological park. Because of being spread in a large area many of its sites mainly remain unexplored by the people grasping the sight of mostly students and researchers only. While qutb

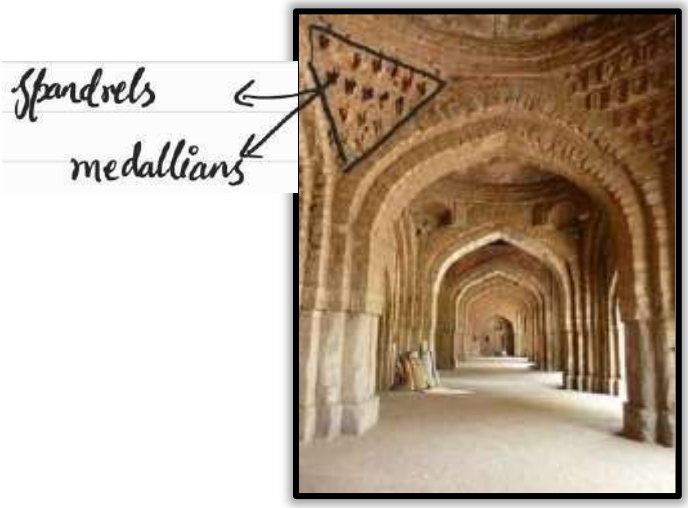
complex architecture invites the people from all sphere. These sites gave us the insight of dynastic shift and gradual development and blending of architectural styles in various sites. The professors helped us in understanding the minute details of architecture and there significance in history.

QULI KHAN TOMB is reportedly built for the foster brother of akbar. This is built on an elevated platform resembling the Mughal architecture.it was octagonal from outside and four walled room from inside with one closed side in the west direction for prayer. This site was later seen under use by Sir Thomas Metcalf and was also used as a honeymoon destination by many foreign generals. The adjacent structures i.e metcalfe's bath house and Metcalf's boathouse are the development of Metcalf in his period of governance.

RAJON KI BAOLI It's purpose is not as it's name suggest. Reports says that it was mainly used by the servants and the architects. It's main purpose was as a water reservoir connected with a well adjacent to the structure. In the same compound we visited the mosque and tomb of khwaja mohammad on the Terrence which is an example of true domb.



JAMALI KAMALI mosque is an another important structure of mehrauli comprises of 2 structurs , i.e, mosque and tomb of jamali (court poet of lodi dynasty) and kamali(his desiple). This site is very unique having features of true arch and true domb. It's prayer hall is fronted by a courtyard, has 5 arches with the central arch only having a dome where the sizes of arches increases toward the central arch. Here also we found some indo-Persian influence in architecture like lotus motis.

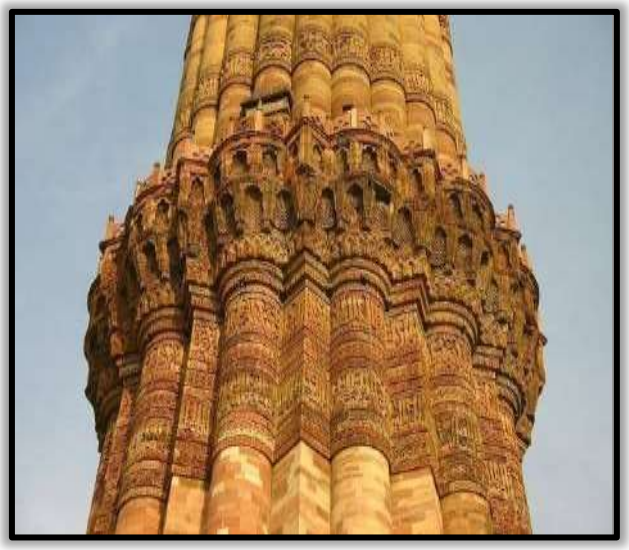


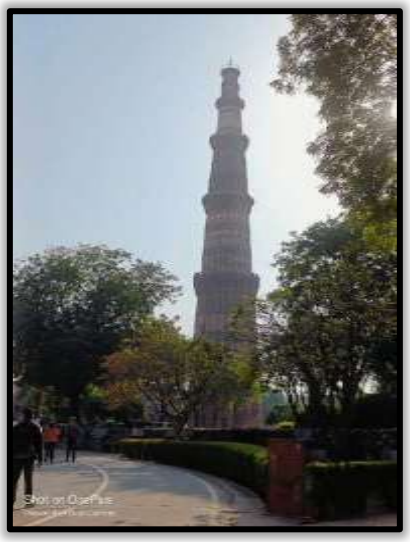
While qutb complex consist of a mosque and two minarets enclosed within a series of cloistered precincts. It was entered via four monumental gates along the north, east and south walls, of which only the southern gate (Alai Darwaza) remains. A tall screen wall with pointed archways runs along the western edge of the precinct, creating a qibla wall for the prayer spaces. In addition to these elements, the complex also contains several smaller buildings: the Tomb of Iltutmish, Ala al-Din Khalji's madrassa, and the Imam Zamin Mosque. The Qutb Minar (minaret) stands in the southeastern part of this enclosure. The unfinished Alai Minar (minaret) stands in the northeastern part of the complex.

QUTB MINAR

The Minar comprises of several superimposed flanged and cylindrical shafts separated by balconies. All the storeys have a balcony that circles the Minar with stone brackets for support. The Minar is decorated throughout with floral motifs and arabesque. Also it bears inscriptions that are verses from the Koran and messages from the Sultans. The stone brackets are decorated with honeycomb design, more conspicuously in the first storey.

In a close study we found out that The first three stories are made of sandstone and the next two of marble and sandstone. Firoz Shah Tughlaq added marble to the top storey. The Minar is in fact believed to have been built to aid the Muezzin of the mosque for prayer calls.





QUWWAT-UL-ISLAM MASJID

To mark his victory over Rai Pithora, Qutub-ud-Din Aibak built the Quwwat-ul-Islam Masjid (Might of Islam) in 1192 which was completed in 1198. It is the earliest extant mosque in India, having a rectangular court. The court is enclosed by cloisters which were erected with carved columns and other architectural members from the 27 Hindu and Jain temples, which were later demolished.

ALAI DARWAZA

It is the southern gateway of the Quwwat-ul-Islam mosque, and is a gem of Islamic architecture in India. It has intricate carvings in red sandstone and marble. It has red stone jali screens. The arched entrances and jalis are decorated by fringes of lotus buds.

IRON PILLAR

The Iron Pillar dates back to the 4th century BC. It bears inscriptions that dedicate it as a flagstaff to honor the Hindu god Vishnu and in memory of Gupta king Chandragupta II (375-413 AD). The pillar is a symbol of the progress of metallurgy in ancient India. It is made of 98 percent wrought iron and has survived 1,600 years without rusting.

ILTUTMISH TOMB

It is a simple square chamber, covered originally by a circular dome that was carried on a form of squinch arch. Dome was constructed using concentric rings, but Hindu artisans couldn't make it last long. Inside is decorated and elaborated with Quranic verses. Marble is used in mehrab and cenotaph.

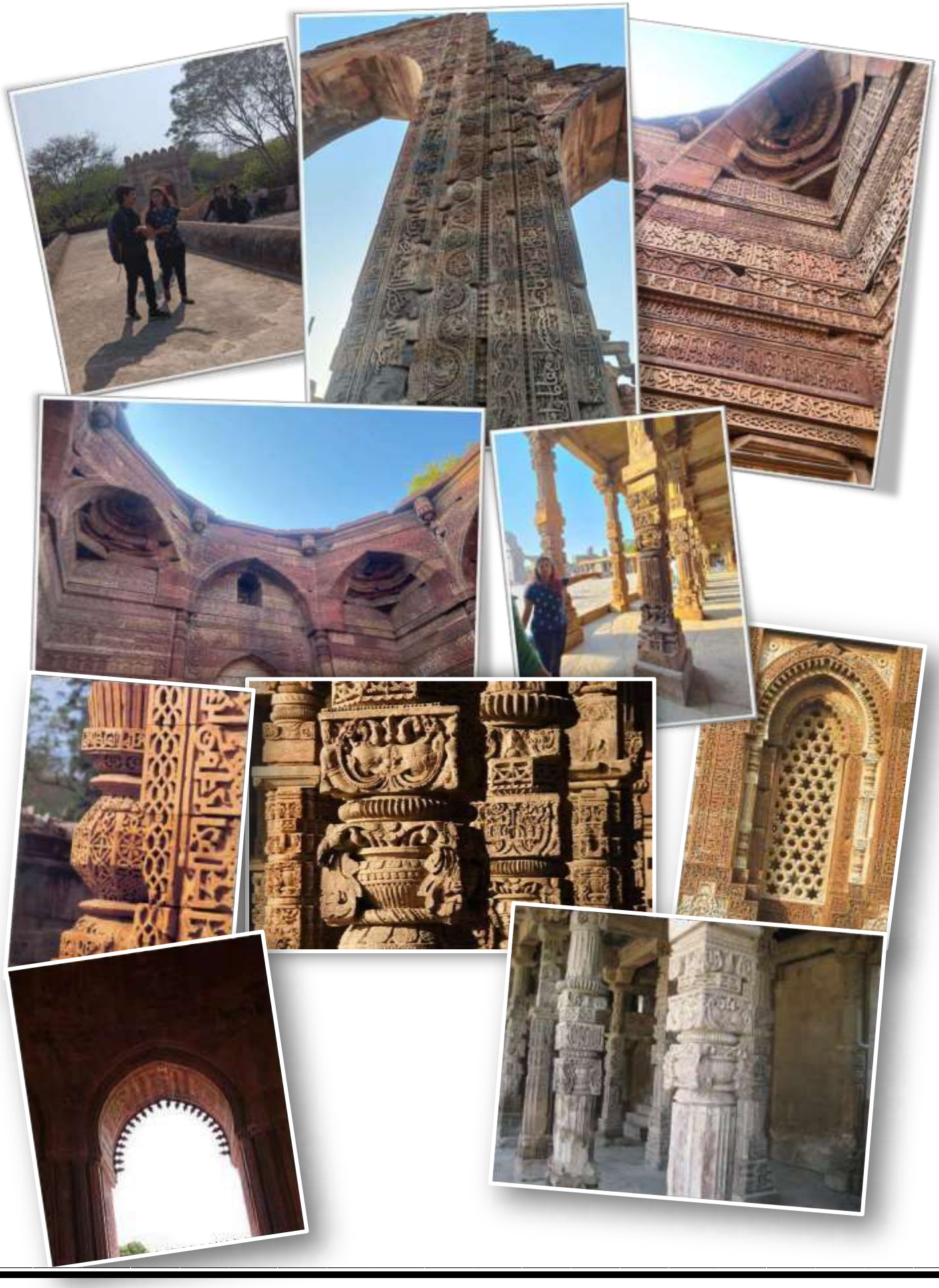
SCREEN OF ARCHES

It is an expansive screen of arches was added the entire front of the sanctuary to give mosque appearance. It formed into a great wall of masonry over 15 m in ht. At the centre, its width is 33 m and its thickness of 2.6 m. it has 5 arched openings consisting of largwr one in the centre and two lesser arches on either side.

This excursion introduced students to a whole new world which wasn't seen or explored by us. It provided a break from the usual desk learning and this helped us to gain a fresh perspective from real world and gave a practical knowledge. It enhanced the practicle knowledge about understanding history and different architecture forms Islamic architecture including the decoration through precious marbel stones and calligraphy on walls, with medallions either carved with quaranic verses or decorated with floral design. Even we discovered new elements like some of the pillars from the Quwwat-ul-islam masjid were carved with numbers written in pali and Bengali scripts.

Thank you

Gallery

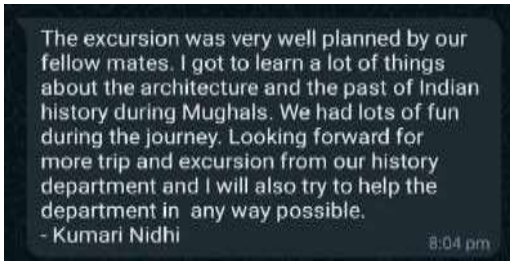


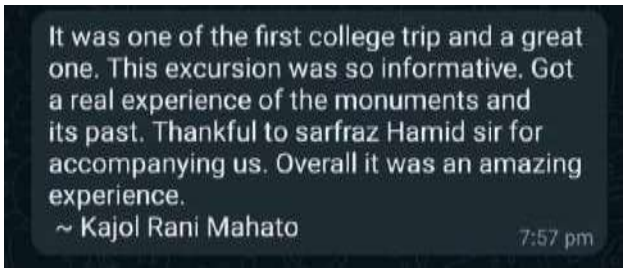
LIST OF STUDENTS :

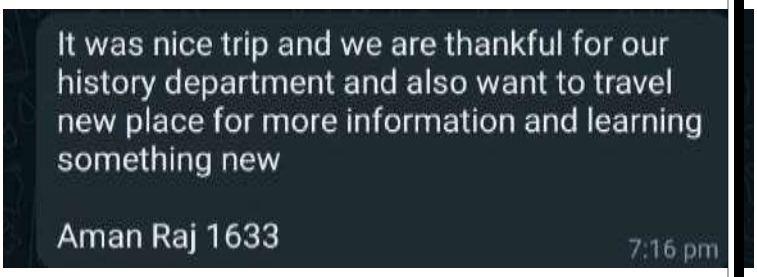
1. Tannu	1601	32. Aman kumar Mishra	1661	63. Sakshi	1664
2. Salaudeen	1603	33.Aman kumar	1604	64.khushboo	1609
3. Khushi singh	1607	34. Abhishek kumar	1626	65. Ram babu	1618
4. Kashmira rehman	1609	35. Shivam	1624	66.Abhimanyu	1612
5. Chaitanya dutt	1610	36. Sakaham	1614	67. Alhan	1650
6. Aditi priya	1611	37. Ajay shakya	1622	68. Shivam	1666
7. Bharti Kumari	1612	38. Vashu	1603	69. Aditya	1660
8. Aman kumar	1614	39. Vinay kumar	1641	70. Aman	1602
9. Lav kumar	1616	40. Ankit kumar	1670	71. Tannu	1609
10. Pratishtha tiwar	1620	41. Manya	1647	72. Riya	1647
11. Mohd. Kaif	1622	42. Sambhavi	1663	73. saumya	1630
12. Kishan kumar	1628	43. Kavya	1627	74. Nishant	1687
13. Aarti	1629	44. Vipra	1613	75. Vikas	1645
14. Vishal kumar	1635	45. Kashish	1662	76. Anupam	1690
15. Aman giri	1637	46. Mohit yadav	1642	77. Ashish	1635
16. Uma Shankar	1640	47. Minnu	1628	78. Kajal	1667
17. Himanshu Rajput	1642	48. Shivani singh	1672	79. Rakesh	1620
18. Prachetas	1644	49. Abhishek anand	1653	80. Ananya	1654
19. Nishant mandal	1650	50. Shubham kumar	1639	81. Rohit	1631
20.Ankur	1655	51. Abhinav	1649		
21. Sujeet kumar	1658	52. Praniti singh	1629		
22.Kumari nidhi	1665	53. Divyanshu senapati	1619		
23.Kailash mandal	1666	54. Titiksh	1668		
24.Kajol rani mahato	1667	55. Raghav dogra	1638		
25.Naveen kumar	1673	56. Raman	1606		
26.Abhishek bharti	1676	57. Ankit thapa	1642		
27.Naman	1679	58. Kartik pal	1623		
28.Antas anand	1669	59. Ayush kumar yadav	1644		
29.Mustafa	1654	60. Raj patel	1651		
30.Aman raj	1663	61. Kartikey singh	1645		
31. Himanshu	1616	62. Akshat	1655		

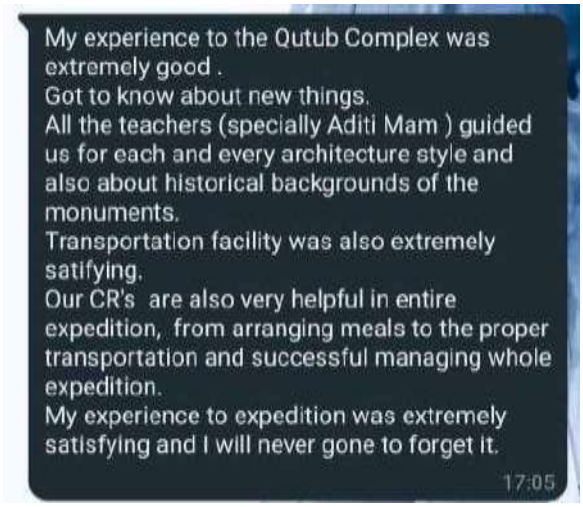
Feedbacks

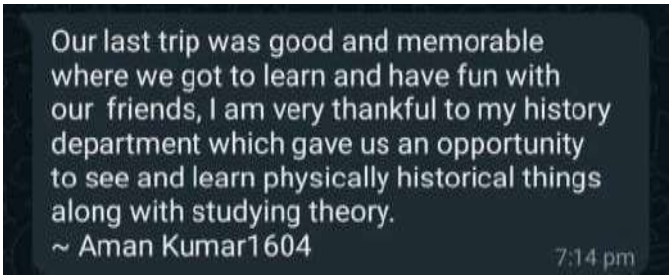

It was a great trip and through this trip we got learn some wonderful historical events and their forms related with the historical places . I'm thankful to my history department which gave us an opportunity to see and learn physically historical things and I would be glad to visit such places in future also .
~Khusboo 1609
7:15 pm


The excursion was very well planned by our fellow mates. I got to learn a lot of things about the architecture and the past of Indian history during Mughals. We had lots of fun during the journey. Looking forward for more trip and excursion from our history department and I will also try to help the department in any way possible.
- Kumari Nidhi
8:04 pm

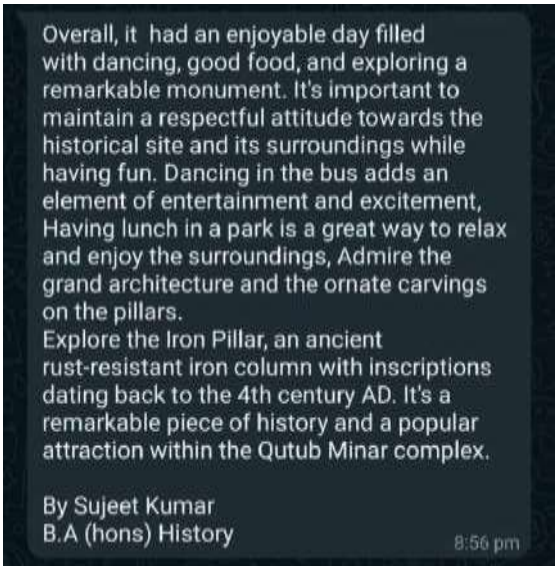

It was one of the first college trip and a great one. This excursion was so informative. Got a real experience of the monuments and its past. Thankful to sarfraz Hamid sir for accompanying us. Overall it was an amazing experience.
~ Kajol Rani Mahato
7:57 pm

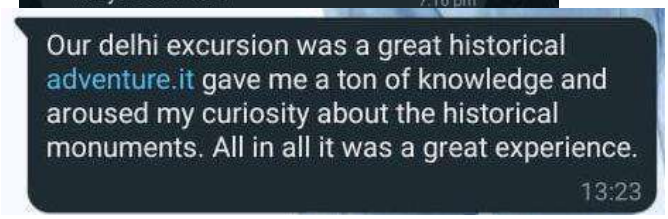

It was nice trip and we are thankful for our history department and also want to travel new place for more information and learning something new
Aman Raj 1633
7:16 pm


My experience to the Qutub Complex was extremely good .
Got to know about new things.
All the teachers (specially Aditi Mam) guided us for each and every architecture style and also about historical backgrounds of the monuments.
Transportation facility was also extremely satifying.
Our CR's are also very helpful in entire expedition, from arranging meals to the proper transportation and successful managing whole expedition.
My experience to expedition was extremely satisfying and I will never gone to forget it.
17:05

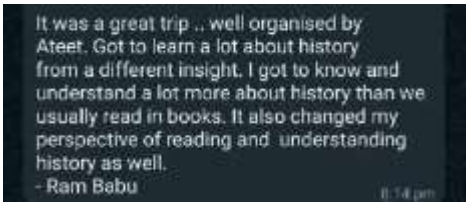

Our last trip was good and memorable where we got to learn and have fun with our friends, I am very thankful to my history department which gave us an opportunity to see and learn physically historical things along with studying theory.
~ Aman Kumar1604
7:14 pm


It was very elated and wonderful visit and experience to such a good historical place (mehrauli garden ,qutub minar) .we got to learn so many things about our history and kings and queens related with the historical place. I would be delighted to visit such place and experience new things in future also.
~ Kavya Sethi 1627
7:16 pm


Overall, it had an enjoyable day filled with dancing, good food, and exploring a remarkable monument. It's important to maintain a respectful attitude towards the historical site and its surroundings while having fun. Dancing in the bus adds an element of entertainment and excitement, Having lunch in a park is a great way to relax and enjoy the surroundings, Admire the grand architecture and the ornate carvings on the pillars.
Explore the Iron Pillar, an ancient rust-resistant iron column with inscriptions dating back to the 4th century AD. It's a remarkable piece of history and a popular attraction within the Qutub Minar complex.
By Sujeet Kumar
B.A (hons) History
8:56 pm


Our delhi excursion was a great historical adventure.it gave me a ton of knowledge and aroused my curiosity about the historical monuments. All in all it was a great experience.
13:23


It was a great experience on that trip and we learned many historical things and i hope, in future we visit such places again.
~ Raj Patel 1651
7:16 pm


It was a great trip .. well organised by Ateet. Got to learn a lot about history from a different insight. I got to know and understand a lot more about history than we usually read in books. It also changed my perspective of reading and understanding history as well.
- Ram Babu

SIX DAY FIELD TRIP AND TRAINING REPORT ON BEE KEEPING
DATE: FROM 24.09.2018 TO 29.09.2018 OF SSN COLLEGE, UNIVERSITY OF DELHI, ALIPUR, NEW DELHI 110036

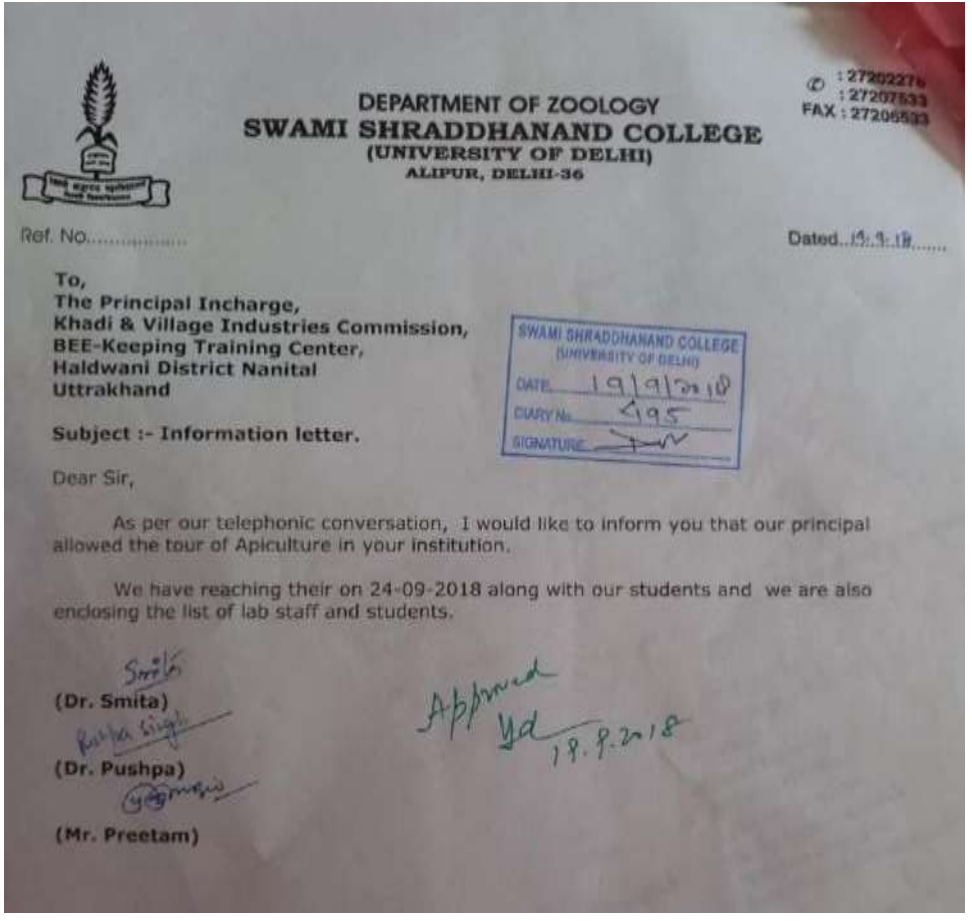
- INTRODUCTION

Dr Smita Shukla,Dr Pushpa, Mr Preetam Kumar Department of Zoology, Swami Shraddhanand College (University of Delhi) Alipur, Delhi 110036 organised six days field trip and training on honey bee keeping for the 45 students of B.Sc.Life Science Vth semester from 24.09.2018 to 29.09.2018

CENTRE NAME:-BEE KEEPING EXTENSION CENTRE, KHADI AND VILLAGE INDUSTRIE COMMISSION HIMALAYAN FARM BARELI ROAD HALDWANI-263139, NAINITAL(UTTARAKHAND)

PHOTOMONTAGE

PERMISSION



DEPARTMENT OF ZOOLOGY
SWAMI SHRADDHANAND COLLEGE
(UNIVERSITY OF DELHI)
ALIPUR, DELHI-36

✆ : 27202276
: 27207533
FAX : 27206533

Ref. No.....

Dated..19.9.18.....

To,
The Principal Incharge,
Khadi & Village Industries Commission,
BEE-Keeping Training Center,
Haldwani District Nanital
Uttrakhand

SWAMI SHRADDHANAND COLLEGE
(UNIVERSITY OF DELHI)
DATE 19/9/2018
DIARY No. 195
SIGNATURE

Subject :- Information letter.

Dear Sir,

As per our telephonic conversation, I would like to inform you that our principal allowed the tour of Apiculture in your institution.

We have reaching their on 24-09-2018 along with our students and we are also enclosing the list of lab staff and students.

Smita
(Dr. Smita)

Pushpa Singh
(Dr. Pushpa)

(Mr. Preetam)

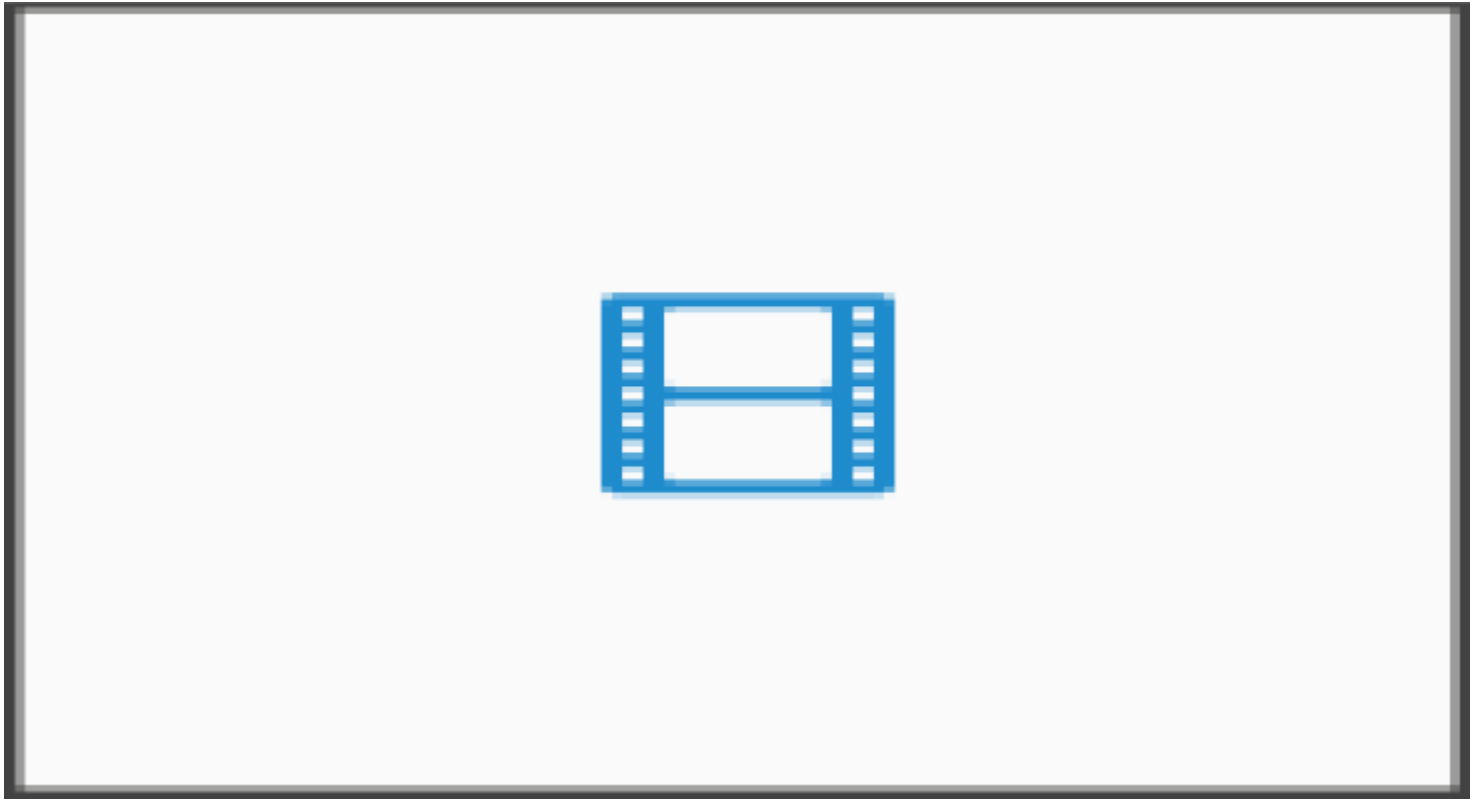
Approved
19.9.2018

OBJECTIVES OF BEE KEEPING

The main advantages of beekeeping are:

1. Provides honey, which is the most valuable nutritional food.
2. Provides bee wax which is used in many industries, including cosmetics industries, polishing industries, pharmaceutical industries, etc.
3. Plays an excellent role in pollination. Honey bees are the best pollinating agents which help in increasing the yield of several crops.
4. According to the recent studies, the honey bee's venom contains a mixture of proteins which can potentially be used as a prophylactic to destroy HIV that causes AIDS in humans.

REEL ON APICULTURE



CONCLUSION

1. Apiculture is method or the practice of maintaining the bee hives for collecting honey.
2. Honey has high nutritional value and it is also abundantly used in preparing the medicines.
3. Apart from honey, bee wax is also produced by honeybee which is used in preparing cosmetics and also used in industries for various works
4. For making practice of bee keeping successful, one should have proper knowledge about the nature as well as habits of bees. Also, the beehives should be properly managed in accordance to different seasons.

Akanksha and Dr. Manmohan took the students of Life Science (prog.) IV Sem for an educational visit to Dept. of Geology (Museum of Fossils) as a part of their curriculum activity dated 27.03.2023.


GPS Map Camera
New Delhi, Delhi, India
24, Faculty of Science, University Enclave, Delhi University, New Delhi, Delhi 110007, India
Lat 28.689611°
Long 77.21078°
27/03/23 11:42 AM GMT +05:30
Google


GPS Map Camera
New Delhi, Delhi, India
24, Faculty of Science, University Enclave, Delhi University, New Delhi, Delhi 110007, India
Lat 28.689599°
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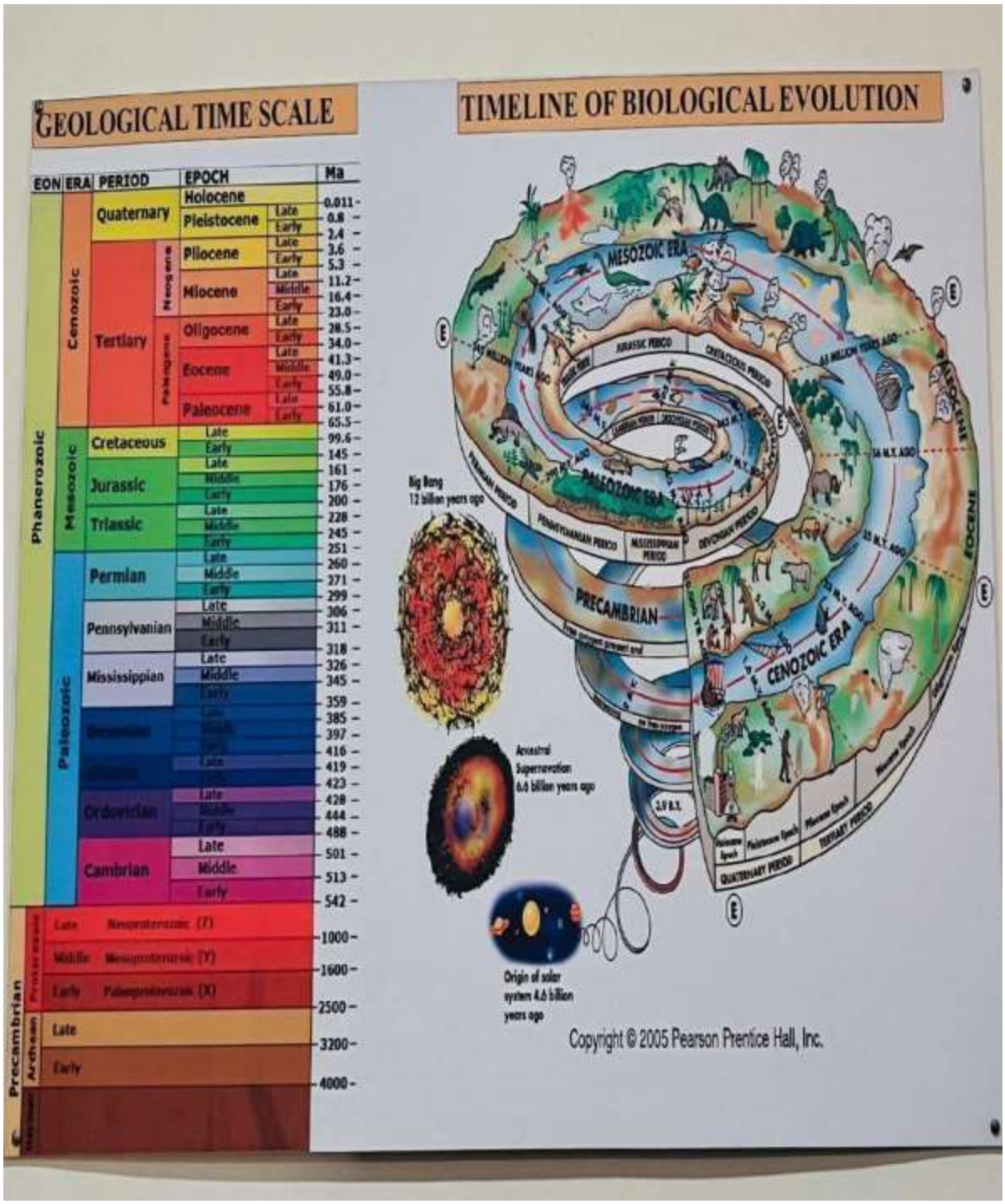

GEOLOGICAL TIME SCALE
EON
ERA
PERIOD
EPOCH
Ma
Phanerozoic
Cenozoic
Quaternary
Holocene
Pleistocene
Late
Early
0.011
0.8
2.4
Tertiary
Neogene
Pliocene
3.6
5.3
Miocene
Late
Middle
Early
11.2
16.4
23.0
Paleogene
Oligocene
28.5
34.0
Eocene
41.3
49.0
Paleocene
55.8
61.0
65.5
Mesozoic
Cretaceous
99.6
145
Jurassic
161
176
200
Triassic
228
245
251
Paleozoic
Permian
260
271
299
Pennsylvanian
306
311
318
Mississippian
326
345
359
385
397
416
419
423
Ordovician
428
444
488
Cambrian
501
513
542
Precambrian
Late
1000
Middle
1600
Early
2500
Archean
Late
3200
Early
4000
TIMELINE OF BIOLOGICAL EVOLUTION
MESOZOIC ERA
PALEOZOIC ERA
PRECAMBRIAN
CENOZOIC ERA
JURASSIC PERIOD
CRETACEOUS PERIOD
PENNSYLVANIAN PERIOD
MISSISSIPPIAN PERIOD
DEVONIAN PERIOD
PALEOCENE
EOCENE
QUATERNARY PERIOD
TERTIARY PERIOD
Big Bang
12 billion years ago
Ancestral
Supernovation
6.6 billion years ago
Origin of solar
system 4.6 billion
years ago
Copyright © 2005 Pearson Prentice Hall, Inc.


85 Woodocrinus expansus
Age: Carboniferous
Location: England


Ammonite shell
showing beautiful
suture morphology

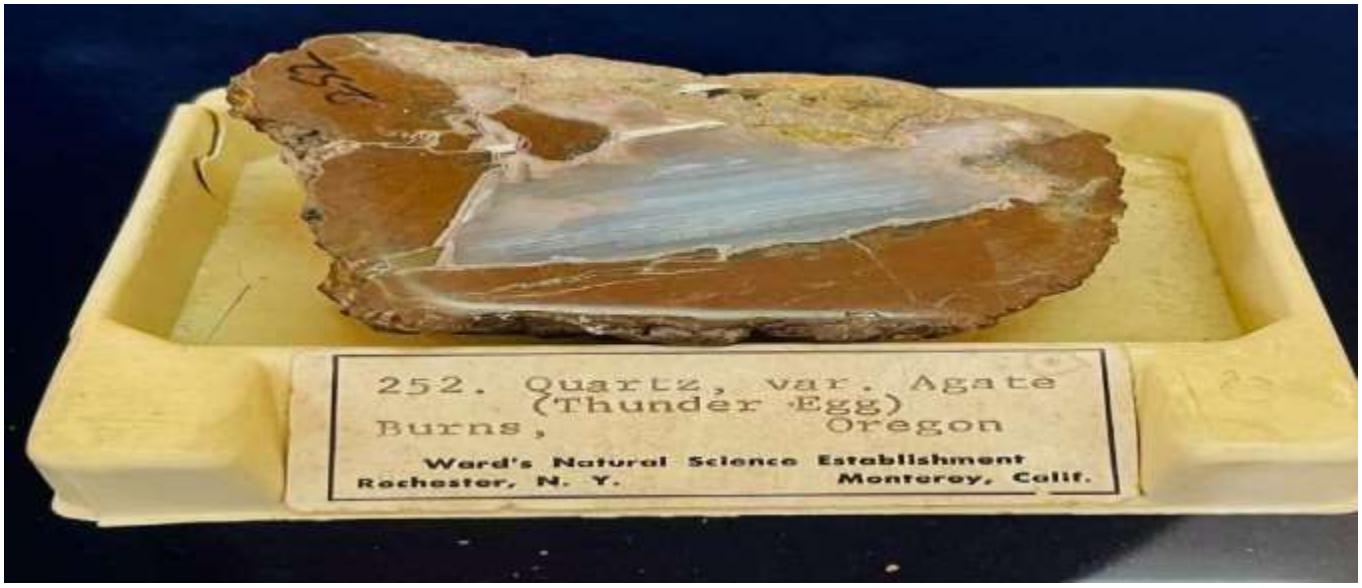

Physa prinsepii
Upper Cretaceous Deccan
Intertrappean beds


Neuropteris in Ironstone Nodule
Dudley
Coal Measures Formation


Ammonite Polished
Cross-section


SCOLECITE
Sangamner Maharastra

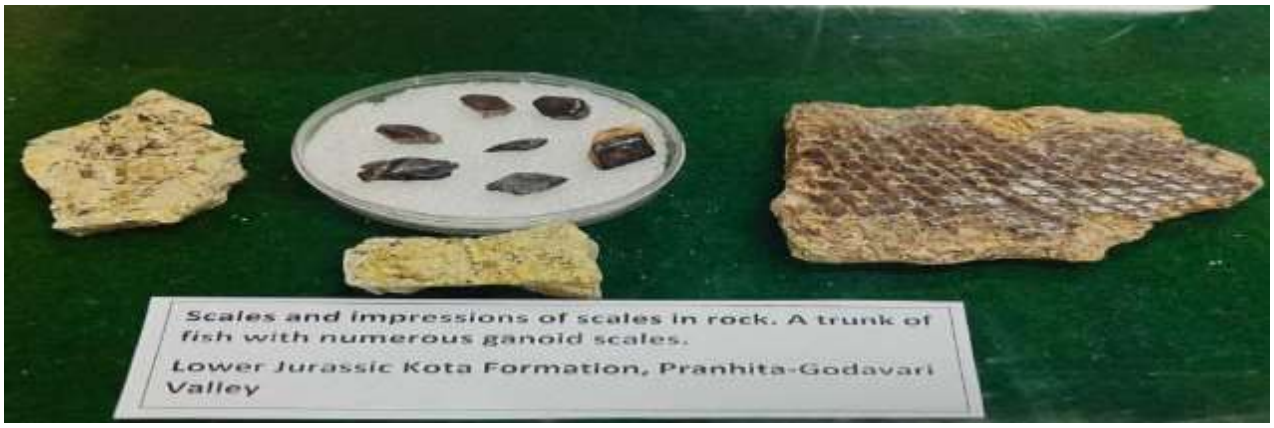

240. Quartz, Geode
Chihuahua, Mexico
Ward's Natural Science Establishment
Rochester, N. Y. Monterey, Calif.


252. Quartz, var. Agate
(Thunder Egg)
Burns, Oregon
Ward's Natural Science Establishment
Rochester, N. Y. Monterey, Calif.


AMETHYST
Guatemala


GEOLOGY MUSEUM DELHI UNIVERSITY
DESCRIPTION :
AQUAGREEN
ZEOLITE
LOCALITY :
SOURCE


Ammonites
(Polyptychoceras sp.,
Gaudryceras sp. In nodule,
Turonian
Hokkaido, Japan


Scales and impressions of scales in rock. A trunk of fish with numerous ganoid scales.
Lower Jurassic Kota Formation, Pranhita-Godavari Valley


Bivalves in sandstone
Shell Limestone
Garudamangalam Formation


Alectryonia
Maastrichtian Ottokovil Fm
Cauvery Basin


Stygmatopygus (echinoid shell)
Upper cretaceous
Kallankuruchhi Fm.
Cauvery Basin
Terebratula
Upper cretaceous
Kallankuruchhi Fm.
Cauvery Basin


Colonial corals from the Middle Eocene Harudi Formation, Kachchh, Gujarat


Antler (Tragulid) skull


Solitary Corals
Middle Eocene Harudi Fm.
Kachchh

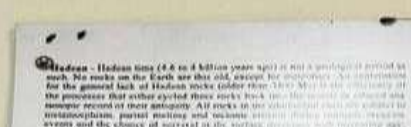

Turritella Gastropod shells
from the Intertrappean beds of
Rajahmundry, Andhra Pradesh

ARCHAEAN EON

Hadean - Hadean time (4.6 to 4 billion years ago) is not a geological period as such. No rocks on the Earth are this old, except for meteorites. An explanation for the general lack of Hadean rocks older than 3.9 Myr is the continuity of the processes that either ejected these rocks back into the solar system or caused any nonoptic record of their antiquity. All rocks in the solid crust are subject to metamorphism, partial melting and volcanic activity during subsequent geological events and the chance of survival in the surface environment is a long age. In addition, a period of intense meteorite bombardment in the period 4.0–3.5 Ga pulverized all rocks at the Earth's surface during that period.

During Hadean time, the Earth's surface temperature probably settled to a value not too far removed from the present day. Water, which had been driven off from the interior by volcanic activity, condensed in the atmosphere, fell as rain, and collected on the Earth's surface. Besides water vapor, volcanoes also produced gases rich in the basic ingredients of life: carbon, hydrogen, oxygen, and nitrogen. Toxic gases such as ammonia and methane were common. At this point, Earth's early atmosphere consisted entirely of these volcanic gases, and there was no free oxygen. So what were the first living things and when did they appear? Studies of genetic material indicate that a living group of single-celled organisms called Archaea may share many features with early life on Earth. Many Archaea now live in hot springs, deep-sea vents, saline water, and other harsh environments. If the first organisms resembled modern Archaea, they also may have lived in such places, but direct evidence for early life is controversial because it is difficult to distinguish between complex inorganic structures and simple biological ones in the geologic record.Based on our inferences of modern life forms and of the environments that existed in the Archaean, the transition from non-living matter into living things occurred sometime late in the Hadean or early in the Archaean.

Laboratory experiments show that most of the building blocks of life will form out of inorganic chemicals in a variety of situations: near clays, near deep-sea vents, inside the spaces of rocks near deep-sea vents, even near ice. In the primordial "soup" of the early seas, organic molecules concentrated, formed more complex molecules, and became simple cells.The transition from complex organic molecules to living cells could have occurred in several environments. Small, warm ponds are one possibility, but recent work has suggested that deep-sea hydrothermal vents, such as those found along mid-ocean spreading centers today, may have been the cradle of Earth's life. These environments contain the chemicals and the source of energy needed to synthesize more complex organic structures. Although scientists have not succeeded in creating life from organic molecules in the laboratory, they have reproduced many of the intermediate steps.



Hadean Landscape

Time Line of Evolution of Planets of the Solar System and Life on the Earth

Archaean - The Archean customarily starts at 4 Ga—at the end of the Hadean Eon. The Archean Eon (also spelled Archaean; formerly Archaeozoic) is a geologic eon before the Proterozoic Eon, before 2.5 Ga (billion years), or 2,500 million years ago. The term *Archaean* means "ancient" and was originally used to refer to the oldest known rocks. Rocks of Archaean age contain the earliest fossils of life on Earth. Because these rocks were formed very long ago—between 2.5 to 4.0 billion years ago—most have long since been covered by younger sediments, eroded, or subducted into the Earth's mantle. Nevertheless, some Archaean strata survived in the central parts of continents. Their Archaean "shields" lie in the heart of Canada, Greenland, Scotland, Australia, Africa, India, Brazil and Siberia.

Archaean cratons of India

Earth at the beginning of the Archean

When the Archean began, the Earth's heat flow was nearly three times as high as it is today, and it was still twice the current level at the transition from the Archean to the Proterozoic (2,500 Myr). The extra heat was the result of a mix of remnant heat from planetary accretion, heat from the formation of the Earth's core, and heat produced by radioactive elements. Scientists argue that, because the Earth was much hotter, tectonic activity was more vigorous than it is today, resulting in a much faster rate of recycling of crustal material.

Most surviving Archean rocks are metamorphic or igneous. Volcanic activity was considerably higher than today, with numerous lava eruptions, including unusual types such as komatiite. Granitic rocks predominate throughout the crystalline remnants of the surviving Archean crust. Examples include great melt sheets and voluminous plutonic masses of granite, tonalite, layered anorthosite, anorthosites and monzonites known as sanukitoids. The question of whether plate tectonic activity existed in the Archean is an active area of modern research.

One school maintains that no large continents existed until late in the Archean: small *protocontinents* were common, prevented from coalescing into larger units by the high rate of geologic activity. The other school believes that the continents grew to their present volume in the first 500 million years of Earth history and have maintained a near-constant ever since: throughout most of Earth history, recycling of continental material must go back to the mantle in subduction or collision zones balances crustal growth.

Archaean Atmosphere

Archean Earth differed greatly from our modern Earth not only in tectonic activity but also with respect to atmosphere and obviously life forms. At that time, it was likely a reducing atmosphere of methane, water vapor, ammonia, carbon dioxide, nitrous oxides, hydrogen sulfide, and other noxious gases. Most notably, the Archean atmosphere was depleted in free oxygen.

Also during this time, the Earth's crust cooled enough that rocks and continental plates began to form. Astronomers think that the sun had about 70–75 percent of the present luminosity, yet temperatures appear to have been near modern levels even within 500 Ma of Earth's formation, which is puzzling (the faint young Sun paradox). The presence of liquid water is evidenced by certain highly deformed sediments produced by metamorphism of sedimentary rocks. Alternatively, Earth's albedo may have been lower at the time, due to less land area and cloud cover.

ARCHAEAN EON

In contrast to Proterozoic rocks, Archean rocks are often heavily metamorphosed deep-water sediments, such as greywackes, mudstones, volcanic sediments, and banded iron formations. Carbonate rocks are rare, indicating that the oceans were more acidic due to dissolved carbon dioxide than during the Proterozoic. Greenstone belts are typical Archean formations, consisting of alternating units of metamorphosed mafic igneous and sedimentary rocks. The meta-igneous rocks were derived from volcanic island arcs, while the metasediments represent deep-sea sediments eroded from the neighboring island arcs and deposited in a forearc basin. Greenstone belts represent suture between protocontinents.

The Origin of Life

Earth was able to support life only after the planet had cooled enough for a rocky crust to solidify. Once that happened, water vapor from volcanoes condensed in the atmosphere, fell as rain, and collected on the Earth's surface. Besides water vapor, volcanoes also produced gases rich in the basic ingredients of life: carbon, hydrogen, oxygen, and nitrogen. Toxic gases such as ammonia and methane were common. At this point, Earth's early atmosphere consisted entirely of these volcanic gases, and there was no free oxygen. So what were the first living things and when did they appear? Studies of genetic material indicate that a living group of single-celled organisms called Archaea may share many features with early life on Earth. Many Archaea now live in hot springs, deep-sea vents, saline water, and other harsh environments. If the first organisms resembled modern Archaea, they also may have lived in such places, but direct evidence for early life is controversial because it is difficult to distinguish between complex inorganic structures and simple biological ones in the geologic record.Based on our inferences of modern life forms and of the environments that existed in the Archaean, the transition from non-living matter into living things occurred sometime late in the Hadean or early in the Archaean.

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World ARCHEAN LIFE FORM found on Earth's DEEP hottest South Vents

Living stromatolites in Shark Bay, at the westernmost point of Australia.

The Archean is known as the "Age of Prokaryotes", the first documented forms of life. Prokaryotes are simple, single-celled organisms that lack a nucleus, mitochondria and organized cell function. Prokaryotes have a distinct advantage over other life forms in that they reproduce asexually. All life today is descended from these simple organisms. By the end of the Archean, the first photosynthesizing organisms had evolved and began to produce oxygen, which was released into the oceans.

Life was probably present throughout the Archean, but may have been limited to simple non-nucleated single-celled organisms, called Prokaryota (formerly known as Monera).

Stromatolites from Kana Dolomite

Our oldest fossils date to roughly 3.5 billion years ago, and consist of bacteria microfossils. In fact, all life during the more than one billion years of the Archean was bacterial. The Archean coast was home to mounded colonies of photosynthetic bacteria called stromatolites. Stromatolites have been found as fossils in early Archean rocks of South Africa and western Australia. Stromatolites increased in abundance throughout the Archean, but began to decline during the Proterozoic. They are not common today, but they are doing well in Shark Bay, Australia.

There are no known eukaryotic fossils, though they might have evolved during the Archean without leaving any fossils. No fossil evidence has been discovered for ultramicroscopic intracellular replicators such as viruses.

Why are Cyanobacteria important? Stromatolite forming cyanobacteria are among the earliest Earth dwellers dating back at least 3.3 Ga, discovered in the Warrawoona Formation of the Northwest Territories of Canada.

2.2 Ga stromatolites from Michigan's Kone Dolomite. Through photosynthetic activity, cyanobacteria fundamentally altered the Archean atmosphere through the production of a valuable waste product--free oxygen! Amazingly, prokaryotes have changed little in the past 3.5 Ga. In fact, one can travel to Shark Bay, Australia and meet modern cousins of Earth's earliest inhabitants.

The earliest evidences for life on Earth are graphite found to be biogenic in 3.7 billion-year-old metasedimentary rocks discovered in Western Greenland and microbial mat fossils found in 3.48 billion year-old sandstone discovered in Western Australia.

Fossil evidence of Archaean life

Widely accepted lines of evidence for Archaean life are based on (i) stromatolites; (ii) microfossils; (iii) molecular biomarkers; and (iv) carbon and sulphur isotopic data - for the most part dating from rocks as old as ca 3500Myr. It is precisely during this period of Earth history, prior to 2000Myr ago (Ma), that most workers have assumed that the major varieties of prokaryotes originated (after J. William Schopf, *2006. DOI: 10.1098/rstb.2006.1834*).

Preservation of the Archaean rock record

The sedimentary rock record of Earth shows that due to geological recycling about 10% of sediments are estimated to have survived to the present date are of Phanerozoic age (<550 Ma) and the rest are from the earlier Precambrian (~4000 Ma) and about 90 percent of the Precambrian rocks once deposited is gone', surviving rocks petering out rapidly with increasing geologic age to yield a severely depleted Archaean rock record.

Rock Type	Geographic Location	Age in million years (Ma)
Oldest surviving igneous rocks	Acasta Gneiss Complex of Northwest Territories, Canada	4000 Ma
Oldest known sedimentary rocks (amphibolite facies metasediments)	Isua Supracrustal Group of Southwestern Greenland	3800 Ma
Ancient thick sedimentary sequences, regionally metamorphosed to greenschist facies	Pilbara Craton of Western Australia	~3500 – 3000 Ma
Ancient thick sedimentary sequences, regionally metamorphosed to greenschist facies	Barberton Greenstone Belt of South Africa and Swaziland	~3500 – 3000 Ma

Stromatolites

Because of depleted rock record of Archaean and the destructive effects of metamorphism, relatively very few fossils were preserved in the Archaean rocks in comparison to Proterozoic rocks (between 3500 – 545 Ma). Despite this, the Pilbara Craton and Bralgoiroo Greenstone Belt sedimentsreserved evidence of life in the form of layered organosedimentary structures of microbially (prokaryotic) deposited stromatolites. The term 'stromatolite' refers to synsedimentary sedimentary structures, commonly thinly layered, organosedimentary and calcareous, interpreted to have been produced by the activities of mat-building communities of mucilage-secreting micro-organisms, mainly photoautotrophic prokaryotes.

In the Archaean, the problem of proving the biogenic nature of such structures presents a greater problem, due chiefly to the paucity of Archaean sediments and the correspondingly small number of known occurrences of stromatolites and preserved microbial assemblages. In the Proterozoic, however, stromatolites are so widespread and abundant, and their biological interpretation is so firmly backed by studies of microbial communities cellularly preserved in Proterozoic cherty stromatolites that there can be no doubt that nearly all are products of biological activity.

Archaean stromatolites/microbial mats. (a) Conical, pseudocolumnar and branching columnar stromatolites, overlain by rippled sediments and (b) conical stromatolite, from the ca 2723Myr old Tumbiana Formation, Western Australia. (c–e) Stratiform and conical stromatolites from the ca 2985Myr old Insuzi Group, South Africa.photo in (e) courtesy of N. J. Beukes. (f) Laterally linked, low relief stratiform to conical stromatolite mats from the ca 3245Myr old Big Tree Group of South Africa (after Schopf, 2006).

ca 2300–2100Myr old Archaean microfossils photographed in petrographic thin sections (a–e) Broad prokaryotic (oscillatoriacean cyanobacterium-like) tubular sheaths (Siphonophycus transvaalense) from the ca 2114Myr old Gamohaan Formation of South Africa. (f–k) Solitary and paired (denoted by arrows) prokaryotic (bacterial or cyanobacterial) coccoidal unsheaths and (l–q) solitary and paired (denoted by arrows) bacterium-like rod-shaped unsheaths from the ca 2600Myr old Monse Crisis Formation of South Africa. (r) Narrow prokaryotic (bacterial or cyanobacterial) septate filament and (s) broad sheath-enclosed prokaryotic (oscillatoriacean cyanobacterium-like) septate filament from the ca 2733Myr old Tumbiana Formation of Western Australia

Archaean microfossils

Given that the co-occurrence of biological morphology and carbonaceous chemistry in ancient microfossil-like objects is a presumptive indicator of biogenicity of Archaean microfossils. Spheroidal and filamentous forms are the most common Precambrian microfossils. Generally these forms characterized as "cellular microfossils" are composed of carbonaceous matter as would be expected of organically preserved microorganisms.

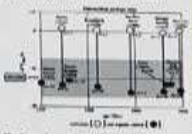
Analytical techniques, such as sem microprobe, electron microprobe, Raman spectroscopy, combined use of Raman imagery and confocal laser scanning microscopy, permit a one-to-one correlation, at micron-scale spatial resolution, of cellular morphology and carbonaceous chemistry in objects claimed to be microscopic fossils. Six distinctive classes of microbe-like morphotypes were reported from the Archaean deposits.

Evidence of Paleoarchean (3200-3600 Ma) life

Ancient sedimentary sequences

Such as those of the Pilbara Craton of Western Australia and the Barberton Greenstone Belt of South Africa and Swaziland contain stromatolites/microbial mats and microfossils. In addition to these, some of the rock units yielded average 13 CPDB values that range from - 27 to - 32‰, which are consistent with carbon isotopic fractionation by autotrophic micro-organisms (- 35±10‰) and, thus, with a biologic origin of the reduced carbon (e.g. Hayes *et al.*, 2002).

Microfossils



A map of Archaean ecology — places where early life may have flourished among rock settings are mid-ocean ridges (chemotrophic communities)

Carbon isotopic values of carbonate and organic carbon measured in bulk samples of the nine Palaeoarchaean units reported to contain putative microfossils (Strauss & Moore, 1992; Ueno et al., 2001a, b; Brasier et al., 2002). Although most of the Archaean fossil sites are interpreted to have been deposited under shallow marine conditions, some of them (Apex chert, Dresser and Dixon Island Formations, and the Sulphur Springs Group) represent hydrothermal settings The fossils from hydrothermal settings were chemotrophs. Evidence for the existence of life during the Archaean remains strong. Currently 48 Archaean deposits reported to contain biogenic stromatolites, 14 Archaean units reported to contain 40 morphotypes of putative microfossils, and 13 especially ancient, 3200–3500Myr old Palaeoarchaean units, for which available organic geochemical data support the view of most workers in the field of Precambrian palaeobiology, worldwide indicate that the 'true consensus for life's existence' dates from more than equal to 3500Myr ago.

Arjun Singh Rathore


Crab remains
Middle Eocene Harudi Formation
Kachchh, Gujarat

How do fossils get preserved

Trace Fossils

Trace fossils are the remains of an organism's activity or behaviour.

Dinosaur Tracks | Dinosaur eggs | Dinosaur Coprolite

Trilobite | Wildlife Tracks | Burrows

Gastroliths

These are smooth, polished stones that are often found in the abdominal cavities of the skeletons of dinosaurs. They are thought to have helped those huge animals grind up vegetable matter in their stomach.

Gastroliths

Paleontologists Frank with gastroliths in its stomach region. American Museum of Natural History

Coprolites

Fossil excrement can sometimes give definite knowledge about the diet of the animal and vegetation of the area.

- Analysis of fossil dung of many herbivorous animals showed a variety of plant and animal remains. Fish-like vibes on the diet of the animals
- Dinosaur coprolites from 65 m.y. rocks of western India revealed presence of glycosides in plants
- Late Triassic Coprolites from peninsular India yielded about 50 taxa of plants

Living Fossils

"Living fossils" are those animals and plants which are not themselves extremely close like the coelacanth and tuatara, which were known as fossils before they were discovered to be still living.

Fake Crabs

These are not true crabs but are related to spiders and scorpions. The modern horseshoe crab Limulus lives close to the shoreline in the Far East and in the Atlantic Ocean off North America. It is very similar to the fossil Mesolimulus, an animal that lived on the sea about 150 million years ago. Other fossil forms that make include species which lived in freshwater swamps 300 million years ago.

150 mya | Living and fossil Horse shoe crab

Didelphids are a family of marsupial mammals which include the opossums. They are first recorded in the Late Cretaceous of North America. Modern opossums have many features typical of the related primitive didelphids of Cretaceous age, although they do have some significant differences.

Fossil skull of a didelphid | Virginia opossum

Long ranges

Ginkgo first appeared in the Triassic and were much more widespread in the geological past than they are today. Only a single species, *Ginkgo biloba*, lives today. The characteristic fan-shaped leaves are easily recognisable when fossilised, as in this Jurassic example.

Recent and fossil *Ginkgo biloba* Jur.-recent age

Coelacanth

The first modern coelacanth was identified in 1938 by Professor Smith, an ichthyologist in South Africa. Undoubtedly, the most famous of all living fossils is the coelacanth. Coelacanth have a distinctive three-lobed tail and fins with arm-like bases. They range back to the Devonian.

Living & Fossil coelacanth fish

Other Fossils

DNA from fossils: In recent years biochemical analyses have been developed which can reliably separate and analyse extremely small samples (<1 gm) and this has meant that original organic molecules of the once living organisms can be studied. Although few amino acids are the most commonly encountered fossil molecules, in many cases exhibiting remarkable preservation, it is the potential for fossil DNA that has captured the popular imagination.

What do fossils tell us ?

Fossils are one of the most important sources of information from the geological record.

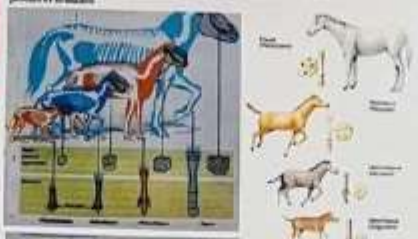
- Dating of rocks: absolute/logical sequence of events in earth's history
- Provides clues to past environments & ecosystems, past food sources, climate changes
- Base evidence for evolution of life
- Past distribution of land and sea

The following broad categories of scientific information can be removed from fossils:

Taxonomic: Fossils contain morphological information which allows them to be recognised and named, and their relationship to other taxa recognised and living taxa.

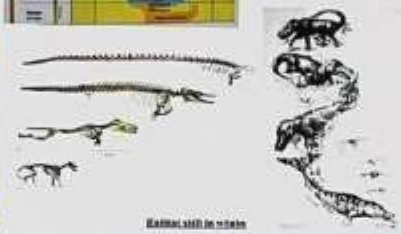
Evolutionary

Evolutionary: Fossils provide direct evidence on the evolutionary progression of life who descended from whom. Evolution of horse is one of the triumphant proof of the process of evolution.



Each stage shows slight changes that took place in one species as replaces by another.

Evolution of horse is one best example

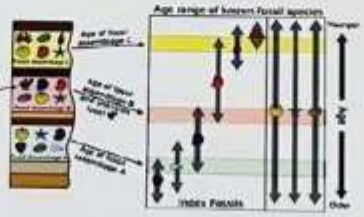


Skeletal shift in whales

Age relationship of rocks

Fossils are the most important guides in subdividing the rock sequence into units dictated by time boundaries. They provide information on chronological sequence of events in earth's history. They are particular useful in the search of hydrocarbons and correlation of oil wells within a basin or on a regional scale.

Relative Time : Law of Superposition



Since sedimentary rocks form by things falling down under gravity, a sequence of sediments must get younger upward. This is known as the Law of Superposition, proposed by Niels Steensen (Steno) in the 17th century.

Relative Time & Correlation

No single sequence of sedimentary rocks provides a complete record of Earth history. We need to deduce Earth's history by weaving pieces of history into a longer story.

How do we do this?

- Principle is that rocks containing the same fossil assemblage were deposited at the same time.
- This procedure, called correlation, was discovered by William Smith in the early 19th century. (one-thing formal theory of evolution!)
- Only good back to 540Ma

Behaviour & Physiology

Breeding of eggs by a parent or helper | Endoskeletal skeleton enabling

Past distribution of land and sea

Fossils can help us in understanding the past distribution of land and sea (moving together and making areas of continents in the geological past). Alfred Wegner's continental drift hypothesis was based on Glossopteris (Fern and like extinct monocotyledon and Lystrosaurus)

Fossil evidence for contiguity of Southern continents in the geological past

Mesosaurus, an aquatic reptile of Lower Permian age

Continental Drift

Past Ecosystems

Fossil and fossil assemblages provide insight into the nature and development of ecosystems and on the interaction of plants and animals with each other and their ancient environment.

Palaeobathymetry

It is now commonly accepted that most fossil assemblages in marine sedimentary rocks are related to the relative depth of the depositional environment. Similarly, foraminifera and ostracods among microfossils are often used in the reconstruction of depth of the depositional basin.

Bathymetry of Trace Fossils

Past Environment

Living organisms are limited in distribution and diversity by environmental factors. The nature of ancient environments, and the specifics of depth, temperature, salinity and oxygen levels, may be determined through the comparison of living and fossil assemblages.

Many organisms are very particular about where they live - their ecological niche.

Certain plants and animals are indicators of in the environment in which they are living. Some are obvious like fish.

We know that corals are marine (normal salt water) organisms. If we find fossil corals we know that the rock in which they are found were marine deposits.

Brachiopods (commonly in marine/shallow water)

Crinoids were also called "sea lilies" lived in warm, shallow marine waters. They are actually animals related to starfish and sea urchins.

Trilobites were marine organisms that are now extinct. Finding a trilobite in a rock with a geologist that the rock is at least 225 million to 570 million years old and is deposited under marine waters.


What is a fossil?
Palaeontology - The Science of Fossils
Micropalaeontology
Palaeontology
Molecular Palaeontology
Vertebrate Palaeontology
Invertebrate Palaeontology
Where do fossils occur?
How do fossils form?
Modes of fossil preservation
Types of fossils
I.Body fossils
1A. Unaltered remains
Most Common Body Fossils
Ammonite
Fish
Leaf
Wood
Ammonite ornament
Pollen & Spores
Shark Teeth
Encrustation
Trapped Fossils
Fossils in Amber
Lagerstätte Deposits
Refrigeration
Mummification
Exceptional Preservations
1B. Altered remains
Permineralization
Carbonization
Microfossils
Pseudo Fossils


GPS Map Camera
Delhi, Delhi, India
34, Chhatra Marg, Faculty of Science, University Enclave, Delhi, 110007, India
Lat 28.689575°
Long 77.210763°
27/03/23 11:53 AM GMT +05:30
Google


भू-विज्ञान विभाग
DEPARTMENT OF GEOLOGY
उन्नत अध्ययन केन्द्र
CENTRE FOR ADVANCED STUDIES

A Visit to IVF Centre

12JULY' 22, TUESDAY

33 STDUENTS OF LIFE SCIENCE DEPARTMENT & 4 TEACHERS OF ZOOLOGY DEPARTMENT ,SWAMI SHRADDHANAND COLLEGE

AVEYA IVF CENTRE, RAJOURI GARDEN, NEW DELHI-110027

INTRODUCTION

The Life Science department of Swami Shradhhanand College under Dr.Gauri Mishra organized a visit to Aveya IVF Rajouri Garden for its semester 2 students on the 12th of July. The visit aimed to provide students with practical exposure to the IVF process, its history, and its importance in the field of reproductive health. Accompanied by four teachers from the Zoology department, the students were welcomed by the clinical team, comprising of Dr. Nisha Bhatnagar and Dr. Payal Bajaj, and the research head, Mr. Harshith Saliyan.

ABOUT

During the visit, Dr.Nisha took the students through the history of IVF, its increasing rates in India, and its probable solutions like ICSI, IUI, and IVF.

Mr. Saliyan highlighted the factors responsible for the increasing rates of infertility in India. These include environmental factors such as pollution, unhealthy lifestyle habits such as smoking, and changing socio-economic factors such as increased stress levels. He advised the students to adopt a healthy lifestyle, avoid smoking and alcohol, and manage stress levels to maintain their fertility.

Dr.Nisha also discussed ICSI, a complex procedure used in cases of low sperm count or quality, or difficulty in the fertilization process. She explained the procedure in great detail and highlighted its benefits. The students were fascinated by the intricate details of the procedure and appreciated the technological advancements involved.

In addition to the informative session, the students were given a tour of the entire center, where they had the opportunity to view all the labs and wards. They were able to witness firsthand the advanced technological procedures and equipment that the IVF center employs. The students were also provided with refreshments, which added to their overall experience.

CONCLUSION

The visit to Aveya IVF Rajouri Garden was an exceptional learning opportunity for the students of the Life Science department. They were able to witness the process of IVF firsthand and learn about the various techniques and procedures that the center employs. The visit left the students with a newfound appreciation for the importance of reproductive health, and they left the center with valuable advice where they told the students on how to maintain their fertility in the long run.

VISIT SNAPSHOT

Feedback

"The visit to Aveya IVF centre was a great learning experience. We got to see the various procedures like ICSI, IUI and IVF in action and understand the science behind it. It was a valuable addition to our curriculum and helped us gain practical knowledge on the topic. MUSKAN"

"I am grateful for the opportunity to visit Aveya IVF centre as a part of our curriculum. It was an enriching experience that not only taught us about the different procedures but also highlighted the increasing infertility issues. I would like to thank our zoology teacher Dr Gauri Mishra for organising this visit.

MADHAV"

"The visit to Aveya IVF centre was an eye- opener for me. The staff were knowledgeable and answered all our questions with patience. We got to see the latest technology used in the field of reproductive medicine and learn about the advancements being made. It was a great experience overall.

PRAKRITI"

"I appreciate the effort taken by our college to organise a visit to Aveya IVF centre. It was an educational and interesting experience that allowed us to see firsthand the procedures that we learnt in theory. The staff were helpful in answering our doubts and queries.

SARTHAK"

Dated: 12/07/22 AT 12PM

1st Session 1st Batch

12/7/2022 (Aveya IVF Centre

HOD → Dr. Nisha Bhatnagar

S.No	Name.	Contact No	Signature
(1)	Pari Sharma	7417734083	Sharma.
(2)	Vanshika Sharma	7889135032	vanshika
(3)	MADHAV-DAWAR	9717479924	Madhav Dawar.
(4)	MEGHA BISHT	7428862946	Megha
(5)	ARYAN PRAKASH	9773734232	Aryan Prakash.
(6)	DARPAN VATS	9711853659	Darpan
(7)	VISHAL SINGH	9351322728	Vishal
(8)	SAHYOG	9205955942	Sahyog
(9)	NIDHI	9910919208	Nidhi
(10)	Priya	9625538094	Priya.
11)	Poorvaja	9873189108	Poorvaja
12)	Shivani	8810567681	Shivani.
13)	Ansh	7982604510	Ansh
14)	Aakriti	9821193265	Asuji
15	Lakshita	8397819450	Lakshita
16	Annu	9555015193	Annu
17	Khushi	9045449019	Khushi
18	Sakshi	9518237116	Sakshi
19.	Preeti	8467027723	Preeti
20.	Anjali Vashishta	9417778220	Anjali

	Name	Contact No.	Sign
	Tamanna Bansal	8882036099	Tan
22.	Sarthak Kaushik	9205171460	Sarthak
23.	Aakanksha Yadav	8958065987	
24.	Anushka Sumrani	9968511944	Anu
25.	AKSH KUMAR	8700489938	~~AKSHKUMAR~~
26.	Harshita sharma	8448810785	Harshita
27	Kajal kumari	8595336741	Kajal.
28.	Himanshi	8506851085	Himanshi
29	Sonal kumari	9205330597	Sonal
30.	Divya	8851087152	~~Divya~~
31.	Tannu	6006940962	
32.	Saumya Sharma	~~9856~~ 9667408090	Saumya
33.	Prakriti	7607876296	Prakriti
34.			
35.			

Department of Zoology

Swami Shraddhanand College(University of Delhi), Alipur, Delhi-36

This is certify that the following students of B.Sc.(H) Zoology had submitted the project report in Semester VI on " Culture of *Drosophila* in Laboratory" as a part of the paper DSC-Developmental Biology in the academic session 2022-23

College Roll No.	Name	Signature
20/5001	Kartika	Kartika
20/5003	Simran Kumari	Simrankumari
20/5004	Nishad Parvin Khan	—
20/5006	Riya Singh	Riya
20/5007	Shubhra	
20/5008	Bhavya Priya	Bhavya.
20/5009	Merin C Joy	Merin.
20/5011	Kapil Sharma	—
20/5014	Diksha Chauhan	—
20/5016	Chintu	Chintu
20/5019	Sumit Kumar Jha	Sumit
20/5020	Rahat Thakur	Rahat.
20/5021	Vivekanand Gaur	Vivekanand
20/5023	Kashish Gupta	Kashish.
20/5024	Km Neeloo	Km. Neeloo.
20/5026	Neha Tomar	Neha
20/5027	Gavya Sharma	Gavya.
20/5028	Aman Rai	Aman Rai
20/5030	Aimen Iqbal	Aimen
20/5031	Shashank Barnwal	Shashank
20/5032	Yashika Mehra	Yashika
20/5034	Priyanka Yadav	Priyanka Yadav
20/5038	Anita Shekhawat	Anita.
20/5039	Bikash Mahto	Bikash
20/5041	Megha	Megha

Saxena

Department of Zoology

Swami Shraddhanand College (University of Delhi) , Alipur, Delhi-36

This is certify that the following students of B.Sc.(P) Life Science had submitted the project report in Semester VI on respective titles as a part of the paper SEC- Physical Health and Hygiene in the academic session 2022-23

College Roll No.	Name	Report Titles	Signature
20/3602	Himanshu	Tuberculosis	
20/3605	Gayatri Devi	Diabetes mellitus	
20/3607	Urvashi Goyal	Hypertension	
20/3608	Tanisha Chauhan	Coronary heart disease	
20/3610	Bipin	Tuberculosis	
20/3613	Prachi	Diabetes mellitus	
20/3614	Anshu	Hypertension	
20/3615	Gautam Kumar	Coronary heart disease	
20/3616	Keshav Narayan	Tuberculosis	
20/3619	Fahima Usmani	Diabetes mellitus	
20/3629	Anushka Srivastava	Hypertension	
20/3634	Harshdeep Singh	Coronary heart disease	
20/3635	Parul	Tuberculosis	
20/3636	Nikhil Pratap Singh	Diabetes mellitus	
20/3638	Deepanshu Chauhan	Hypertension	
20/3644	Haider Ali	Coronary heart disease	
20/3645	Raksha Pandey	Tuberculosis	
20/3650	Harsh	Diabetes mellitus	
20/3651	Rahul Kohli	Hypertension	
20/3652	Jatin Kumar	Coronary heart disease	
20/3654	Indira V	Tuberculosis	
20/3660	Kashish Yadav	Diabetes mellitus	
20/3662	Shivani	Hypertension	
20/3663	Vaishali	Coronary heart disease	
20/3667	Kajal	Tuberculosis	
20/3669	Rajkiran Mehar	Diabetes mellitus	
20/3671	Nirdesh Kumar	Hypertension	
20/3672	Snigdha Kapuria	Coronary heart disease	
20/3674	Sakshi	Tuberculosis	
20/3676	Shrawan Kumar	Diabetes mellitus	
20/3677	Aayush Chauhan	Hypertension	

20/3801	Riya Mishra	Diabetes mellitus	
20/3802	Varsha	Hypertension	
20/3810	Poonam	Coronary heart disease	
20/3820	Ankush Gautam	Tuberculosis	
20/3824	Gunjan	Diabetes mellitus	
20/3833	Shubham Gupta	Hypertension	
20/3835	Vishal Karghati	Coronary heart disease	
20/3839	Kritika Yadav	Tuberculosis	
20/3840	Nisha Rani	Diabetes mellitus	
20/3844	Varsha	Hypertension	
20/3846	Keshav	Coronary heart disease	
20/3849	Kanishka	Tuberculosis	
20/3851	Nitin	Diabetes mellitus	
20/3852	Tanisha Khobiyan	Hypertension	
20/3856	Aditya Mohan Jha	Coronary heart disease	
20/3858	Anshita Bhowmick	Tuberculosis	
20/3859	Sameer Agnihotri	Diabetes mellitus	
20/3860	Lakshita Malik	Hypertension	
20/3862	Afifa Ejaz	Coronary heart disease	
20/3864	Ritika Rangarh	Tuberculosis	
20/3865	Yogita Gaur	Diabetes mellitus	
20/3866	Md Abdullah	Hypertension	
20/3868	Saurabh Meena	Coronary heart disease	
20/3869	Milee Raj	Tuberculosis	
20/3874	Ritika Singh	Diabetes mellitus	
20/3875	Suyesh	Hypertension	
20/3877	Shivam Sharma	Coronary heart disease	

Department of Zoology

Swami Shraddhanand College (University of Delhi) , Alipur, Delhi-36

This is certify that the following students of B.Sc.(H) Zoology had submitted the project report in Semester IV on " Disinfectants Used in Sericulture" as a part of the paper SEC-Sericulture in the academic session 2022-23

College Roll No.	Name	Signature
21/5001	Khusi Pandey	Pandey
21/5002	Harshita	Harshita
21/5003	Ankita	Ankita
21/5004	Debangshi Dasgupta	Debangshi
21/5005	Telhat Zabi	Telhat Zabi
21/5006	Manthan Sharma	Manthan Sharma
21/5008	Akansha Yadav	Yadav
21/5009	Aanchal Aggarwal	Aanchal
21/5011	Himani	Himani
21/5012	Iftikhar Alam	
21/5014	Neha Zachariah	
21/5016	Amey Chauhan	Amey
21/5018	Gourav Yadav	Gourav
21/5020	Niket Kumar	
21/5021	Bhoopendra Saini	Bhoopendra
21/5022	Bitupon Lalung	Bitupon
21/5024	Anshul Bharti	Anshul
21/5025	Dolly	Dolly
21/5027	Gaurav	gaurav
21/5028	Vanshika Kumari	Vanshika Kumari
21/5029	Khushi Rani	Khushi Rani
21/5030	Sumit Bharti	Sumit
21/5032	Garima Singh	Garima
21/5033	Anjali Kalondia	
21/5034	Chitra	Chitra
21/5035	Sakshi Nayan	Sakshi
21/5037	Ishika	Ishika

EXCURSION TRIP TO PURANA QILA

PRESENTED BY :

SWAMI SHRADDHANAND COLLEGE

Prof. Parveen Garg
Principal

Prof. Ranjan Kumar
(Teacher in charge)

Dr. Lal Bahadur Swarnkar
(Assistant Professor
Dept. of history)

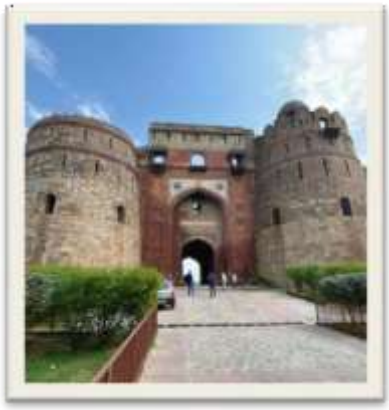
Report on Excursion trip to Purana Qila

Date: 1ST March 2023

ATEET The History Association, Department of History of Swami Shraddhanand College had organized a one day excursion trip on 1st March 2023. This trip was organized and under the supervision of Mr. Ranjan Kumar (Teacher in charge) and Dr. Lal Bahadur Swarnkar (Assistant professor of Department of History).About 45 students from history hons. And programme course had participated in this trip. The students were accompanied by Dr. Badnath Awasthe and Dr Basant swarnkar (Deputy Superintending Archaeologist at Archaeological Survey of India , Delhi). Their presence provided a very different perspective and enabled the students to visualize the history on this ongoing excavation site visit. This started around 10 am in the morning where students reached the destination on there own at the given time. This trip covered the areas around Purana Qila visiting a no. of monuments and sites like Humanyun's private Library, qila-i-kuhna mosque and archaeological museum.

ABOUT THE SITES:

Purana qila is located at the Delhi Mathura Road, a well maintained sites with its peaceful gardens studded with well-preserved ancient red-stone monuments. It also includes the intricately patterned Qila-i-Kuhran Mosque i.e. Mosque of Sher Shah. Purana Qila has been reopened with ongoing excavation while the excavated remains are preserved, conserved, and provided with a shed. The site has been showcased as an Open Air Site Museum, allowing visitors to experience the rich historical legacy of Delhi. Currently this also served as a point of attraction for G-20 Summit delegates. According to Minister of Culture and Tourism and Development of Northeast Region, G Kishan Reddy this is the only site in Delhi-NCR where one can witness the continuous history of Delhi from the Pre-Mauryan to Mughal period through the excavated remains. The findings showcase the rich cultural heritage of our country.
This excavation site is also sometimes termed as 'from Indraprastha to Delhi'.



Purana Qila :

The Purana Qila was built by the Mughal Emperor Humayun as a part of his new city of Dinpanah in the 16th century. Humayun started building this in 1533 CE. By 1534 CE, the walls, bastions, ramparts and gates of the citadel were almost complete. It is difficult to estimate how much of the Purana Qila was complete when Sher Shah took over in 1540 CE. The Suri interregnum of 15 years, despite its brevity, was significant in terms of the architectural development of the fort. Sher Shah renamed Din Panah as Sher Garh and built various important structures within it.

Qila-e-Kuhna :

A prominent structure of the Purana Qila is the Qila-e-Kuhna (Sher Shah mosque). The architectural features encountered here appear in more pronounced forms in the monuments built by Emperor Akbar later on. The Qila-e-Kuhna is a rectangular domed structure built in grey quartzite with profuse use of red and yellow sandstone. This mosque is an aesthetic structure that reflects a transitional stage between the architecture of the Lodhis and the Mughals. Its architecture is very much similar to the architecture of Jamali Kamali mosque. The façade of the structure contains five arches. It is beautifully decorated by the bands of calligraphy of verses from the Quran inscribed on it. The *Mihrabs* and the ceilings of the Qila-e-Kuhna are also worthy of attention. Here we see squinches that are exquisitely carved.

Sher Mandal :

After Humayun recaptured the throne, he is said to have converted this building into a library. The Sher Mandal is a compact octagonal structure built in red sandstone and sparingly decorated with white and black marble inlay. Emperor Humayun had a fatal fall on the steps of this very structure. It is said that Humayun, after he heard the call for prayer from the mosque, hurried down the steps of his library, got caught in the flares of his long robe, and fell.

Excavation site :

A strong local tradition believes that the area in which the Purana Qila stands today is the site of Indraprastha, the capital of the Pandavas of the great epic *Mahabharata*. Historians have sought the help of archaeology to verify this claim. Excavations at this site in 1954–55 and 1969 -1973, conducted by the Archaeological Survey of India and headed by BB Lal, revealed a few shards of pottery belonging to the Painted Grey Ware (PGW) variety, that historians trace to the Mahabharata period (1500-1000 BCE). They also revealed the existence of stratified layers belonging to 8 periods starting from the 4th century CE and continuing right up to the 19th century, confirming that the site had a long and unbroken chain of habitation for centuries.

GALLERY:


HOUSE COMPLEX, SUNGA - KUSHAAN PERIOD
RING WELL, MAURYAN PERIOD

Feedbacks

Our purana qila excursion was too wonderful and knowledgeable... I saw live excavation first time in life and which is unforgettable. I'm very grateful to our college history department and our teachers for this wonderful trip. we've learnt a lot of things during this excursion which is going to be memorable...

We went on our second excursion trip it was a great opportunity for us to know and enhance our knowledge it was great experience to know
how it happens it was a really great experience for us it's the first time to see how our ASI works and search our historical antiques etc and we get the lecture from archaeology teacher

It was nice trip and we are thankful for our history department and also want to travel new place for more information and learning something new

Our last trip was good and memorable where we got to learn and have fun with our friends, I am very thankful to my history department which gave us an opportunity to see and learn physically historical things along with studying theory.

It was a great experience on that trip and we learned many historical things and i hope, in future we visit such places again.

The excursion was really awesome, especially because of my fellow mates. I enjoyed it a lot; the garden was truly beautiful. I learned a great deal about Mughal architecture and medieval Indian history, particularly during the Mughal era. We had loads of fun during the journey. I am eagerly anticipating more trips and excursions from our history department because these excursions help students grasp the relevance of what we're studying and why. It enhances the significance of the subject.

It was a great trip .. well organised by Ateet. Got to learn a lot about history from a different insight. I got to know and understand a lot more about history than we usually read in books. It also changed my perspective of reading and understanding history as well.

THANK YOU

NATIONAL ZOOLOGICAL PARK VISIT
Zoology Department (2022-2023)

- **The Department of Zoology organized a visit to National Zoological park, on 4th February, 2023 for the students of first year ,as per the practical syllabus (S.No. 7) of the paper, Nature and Wildlife Studies, Paper Code: 2234001002.**
- **The students were accompanied by Dr Pranav Singh who briefed the students about the purpose and importance of the visit.**
- **It provided the students an opportunity to freely explore the wildlife and understand their distribution, migration pattern and habitat.**
- **The students also learnt the different prospects of ex-situ conservation of wildlife. After the successful visit all the students submitted the visit reports.**

Permission letter:

The Principal
SSN College
University of Delhi
Alipur - 110036
New Delhi

Subject : application for requesting permission to visit National Zoological Park

Respected Sir,

With due respect I would like to inform you that I (Dr Pranav Singh, Guest faculty, Zoology) am teaching the class of Generic Elective : Nature and wildlife studies (1st Sem. Hons.) in the current session. As per their syllabus a report based on the field trip of any wildlife conservation site is mentioned in the curriculum.

So, I am kindly requesting you to give permission to visit the National Zoological Park, Delhi on February 4th 2023.

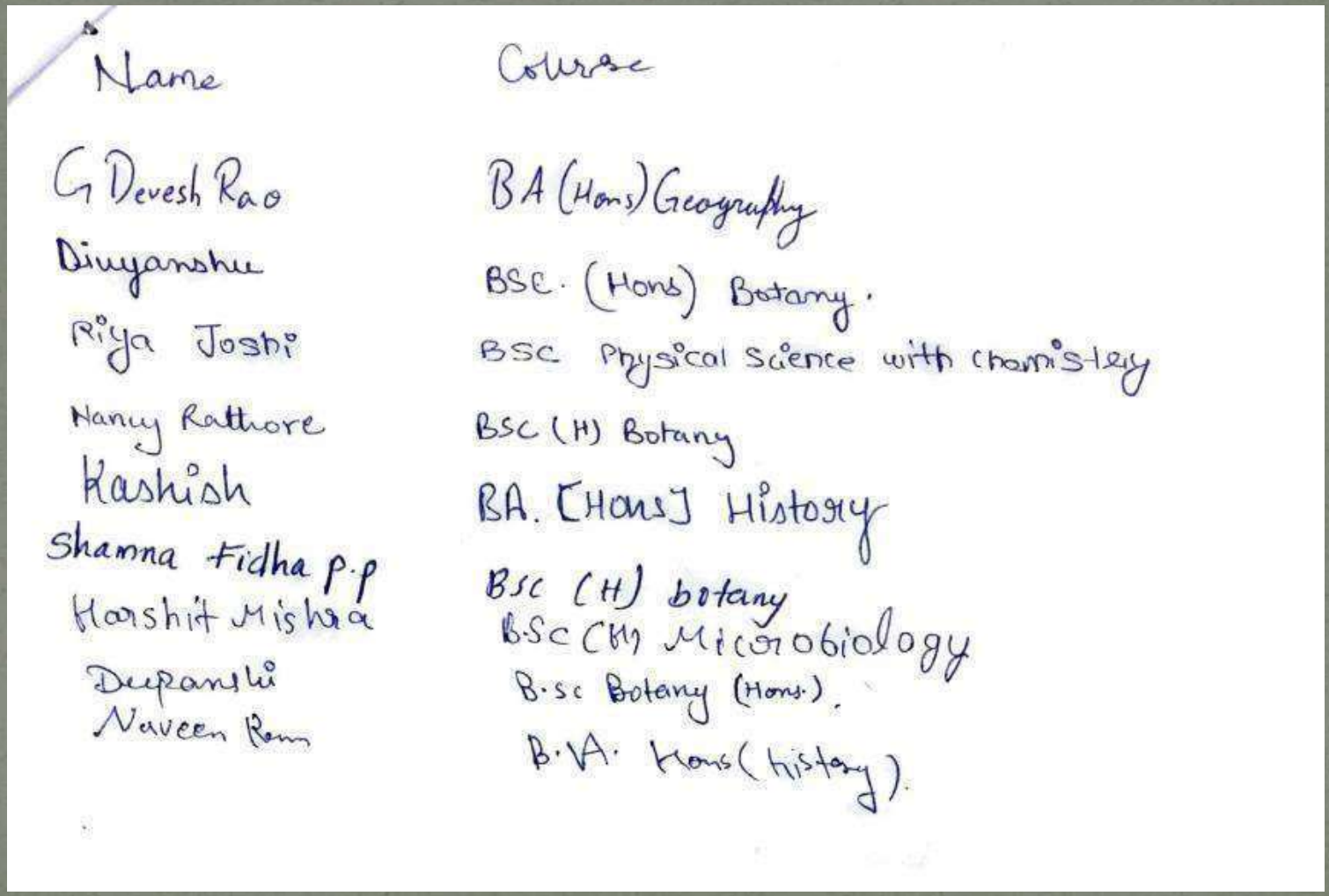
Recommended for nec. action
T/C, Zoology Deptt.

with teacher only

Thanking you
Sincerely
Pranav Singh
Dr. Pranav Singh
Guest Faculty
Zoology

ENCL: List of students enclosed.

Students Attendance:



Name	Course
G Devesh Rao	BA (Hons) Geography
Divyanshu	BSC. (Hons) Botany.
Riya Joshi	BSC Physical Science with chemistry
Nancy Rathore	BSC (H) Botany
Kashish	BA. [Hons] History
Shamna Fidha P.P	BSC (H) botany
Harshit Mishra	B.SC (H) Microbiology
Deepanshi	B.sc Botany (Hons.)
Naveen Ram	B.A. Hons (history).

Help Conserve WildLife

National
Zoological Park
New Delhi


Digitally signed by
PARVEEN GARG
Date: 2024.01.04
12:32:47 +05'30'