ICT BASED LEARNINGS

INTRODUCTION

ICT tools are one of the learning objective which will enhance the interactions and increases the student engagement. Enables the learning, accessible any time at any place without having any difficulty and also offers new learning techniques.

By utilizing technology such as interactive whiteboards, collaborative software, and other digital resources, teachers can create engaging and stimulating learning experiences for students. Additionally, these technologies can help make more complex topics easier to understand by providing visuals and audio feedback.

POWERPOINT PRESENTATIONS

Another most important ICT tool that has been actively used in our microbiology department is the power point presentations. It increases the memory capacity of the mind. It also helps students remember information for a long time. The following are the powerpoint presentations which are given by our lecturers from the Department of microbiology.

Lecturer in Microbiology , Mrs.Sheela Deepak giving a power point presentation on PCR technique, which involves detailed explanation on the types, steps, importance and innovative methods along with the recent discoveries of PCR.

VISUALISING TUTORIALS

The Department of microbiology conducting the lectures through the e-classrooms , the students actively listening to the tutorials to get a good conceptual knowledge

Most of the ICT tools aid in the visualization of the difficult concepts. It also provide the flexibility and variety in learning. The tutorials which have been visualised by the students provided them with a wide array of knowledge ,some of the tutorial hyper links which are visualised are as follows

-https://youtu.be/P6ioHoI-VZ4

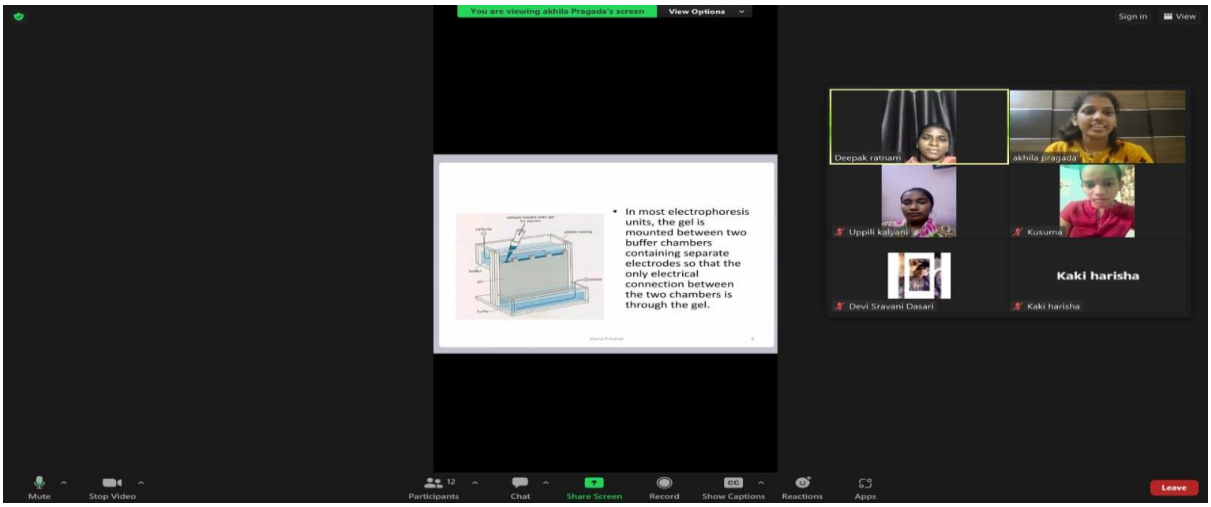
-https://youtu.be/Z36dUduOk1Y

-https://youtu.be/uwMYpTYsNZM

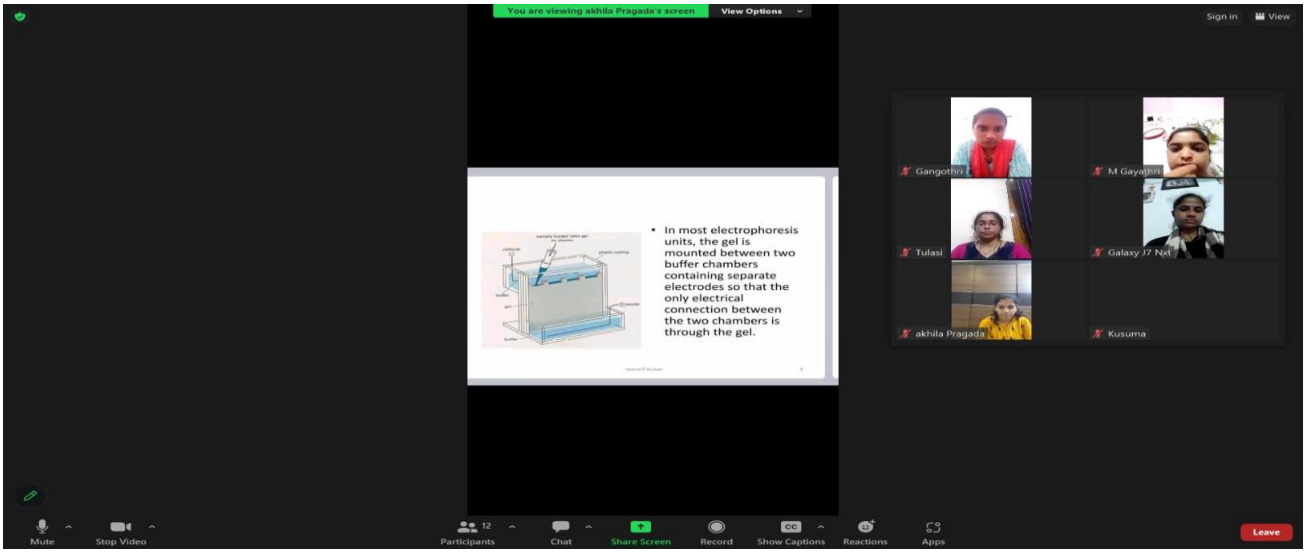
-https://youtu.be/Qs1H5P0SaLU

-https://youtu.be/iQoY4RprTxo

Online classes with zoom app

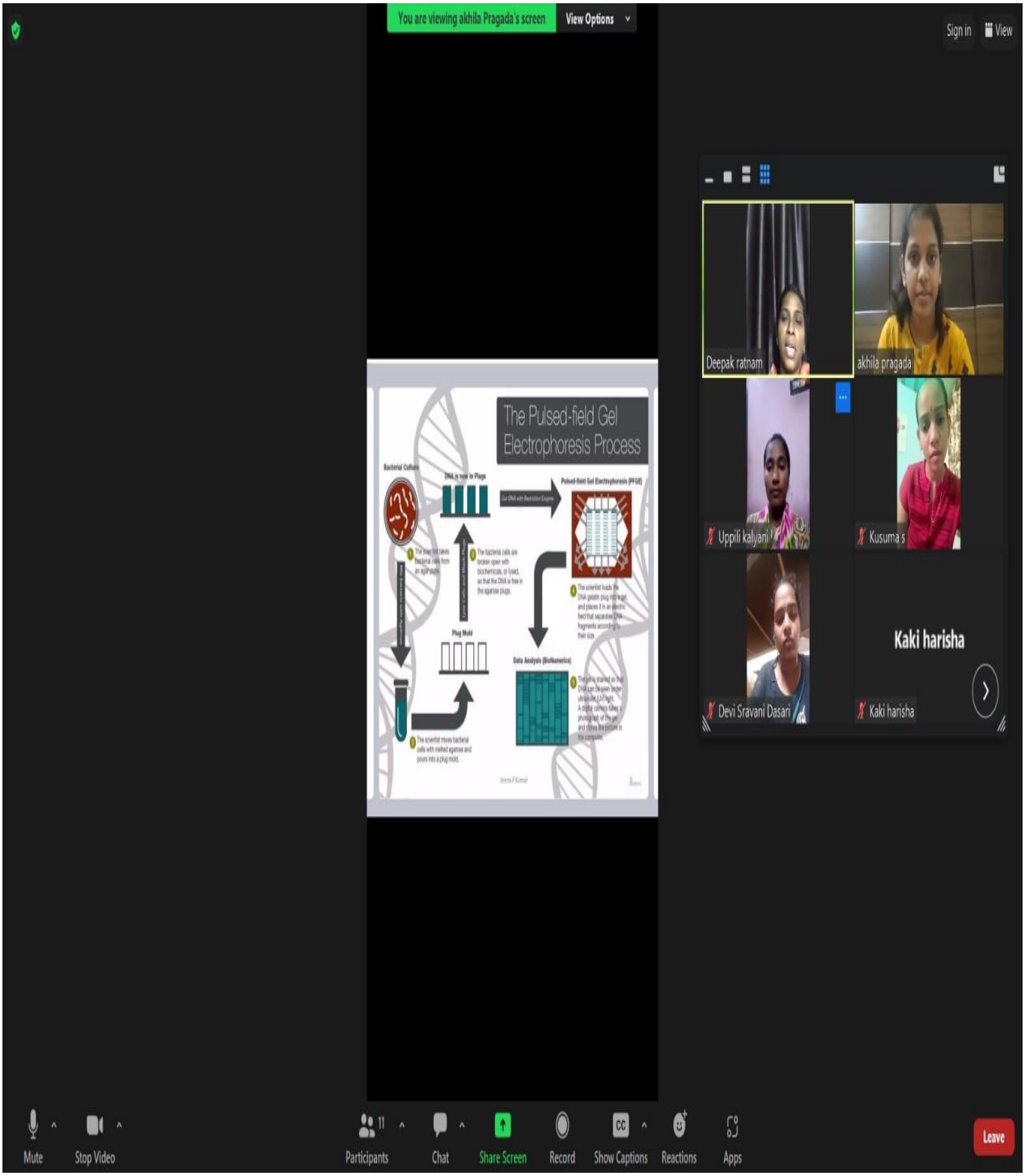


Online teaching class on Principles and methods of Gell electrophoresis



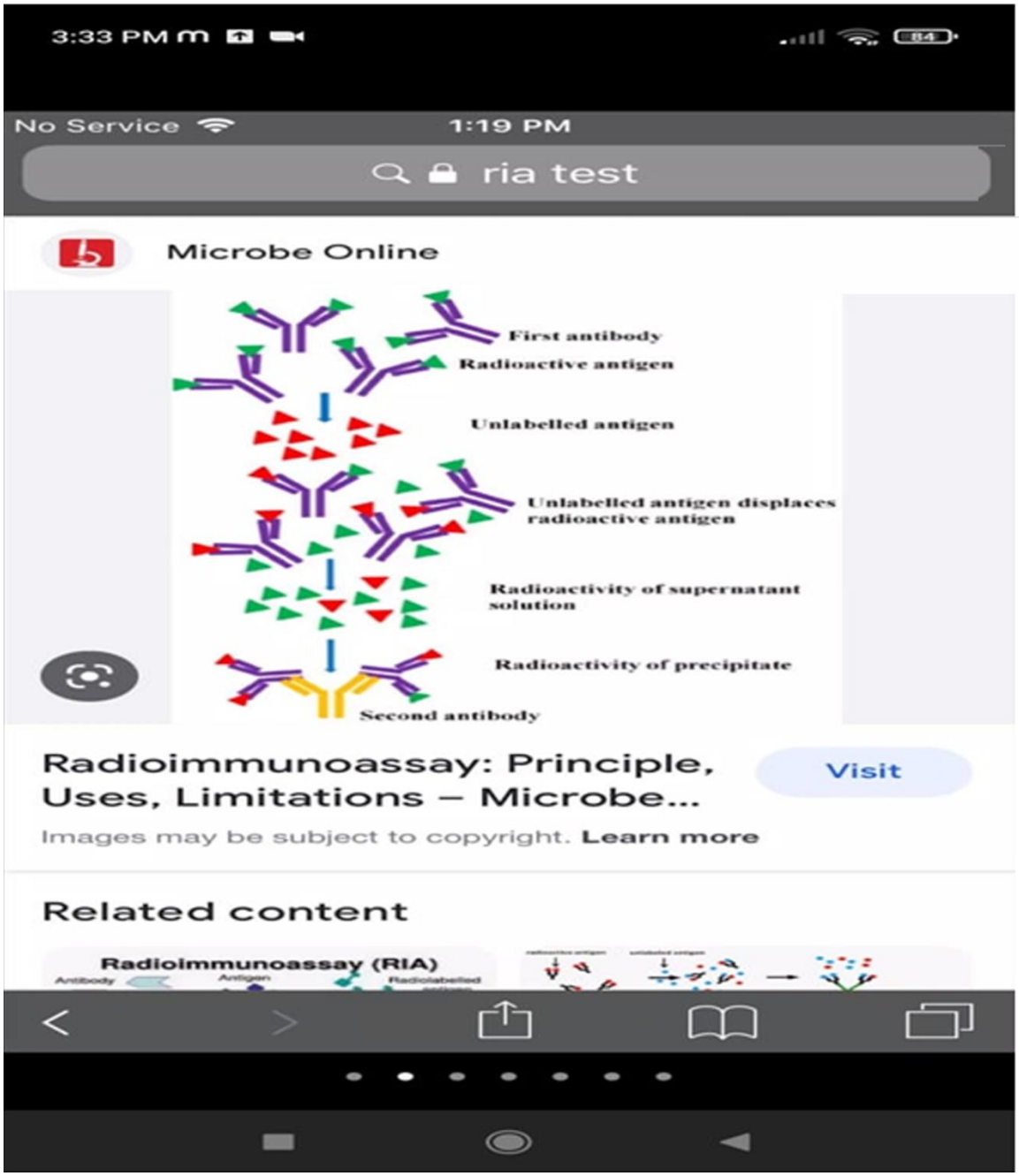
Online teaching class on the separation of DNA fragment by electrophoresis method.

Online teaching abou the Structure and organisation of prokaryotic DNA



SLIDSHARES:

SlideShare will allows the students to be innovative and forward thinking mindset. Students can turn the presentations when they need information on your specific area of expertise. The following are the slide shares which have been made on the Antigen- Antibody reactions to provide information to students. Different types immunological reaction have been discussed.

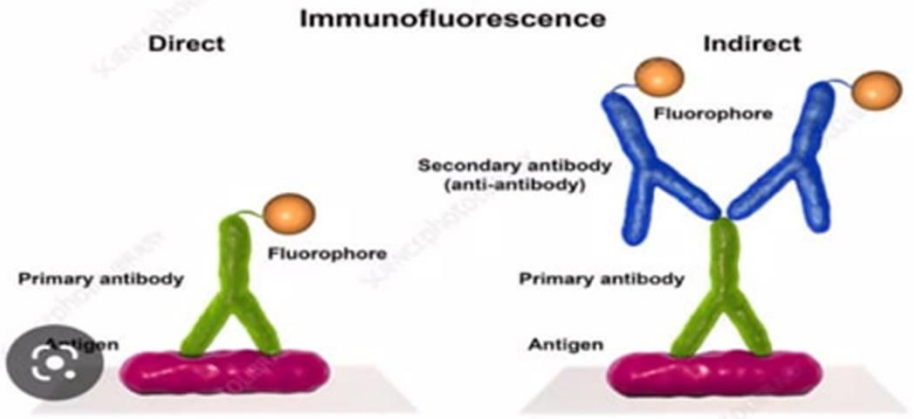


3:34 PM

Vi India 1:20 PM

immunofluorescer

Science Photo Library



Indirect immunofluorescence test, illustration - Stock Ima...

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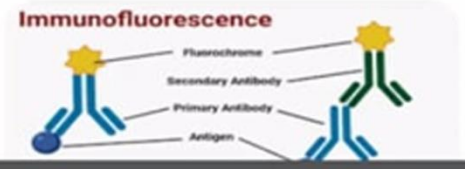
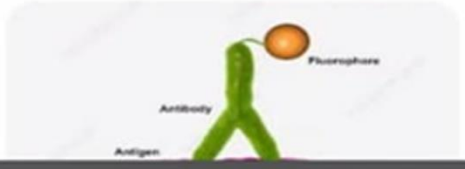




Deepak ratnam's screen

3:14 PM

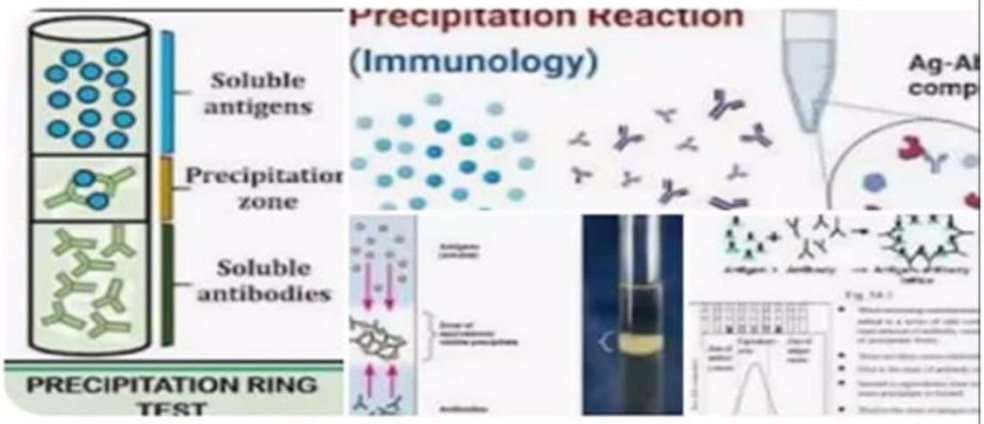
Vi India 2:54 PM

precipitation test

in Microbiology | Chemistry

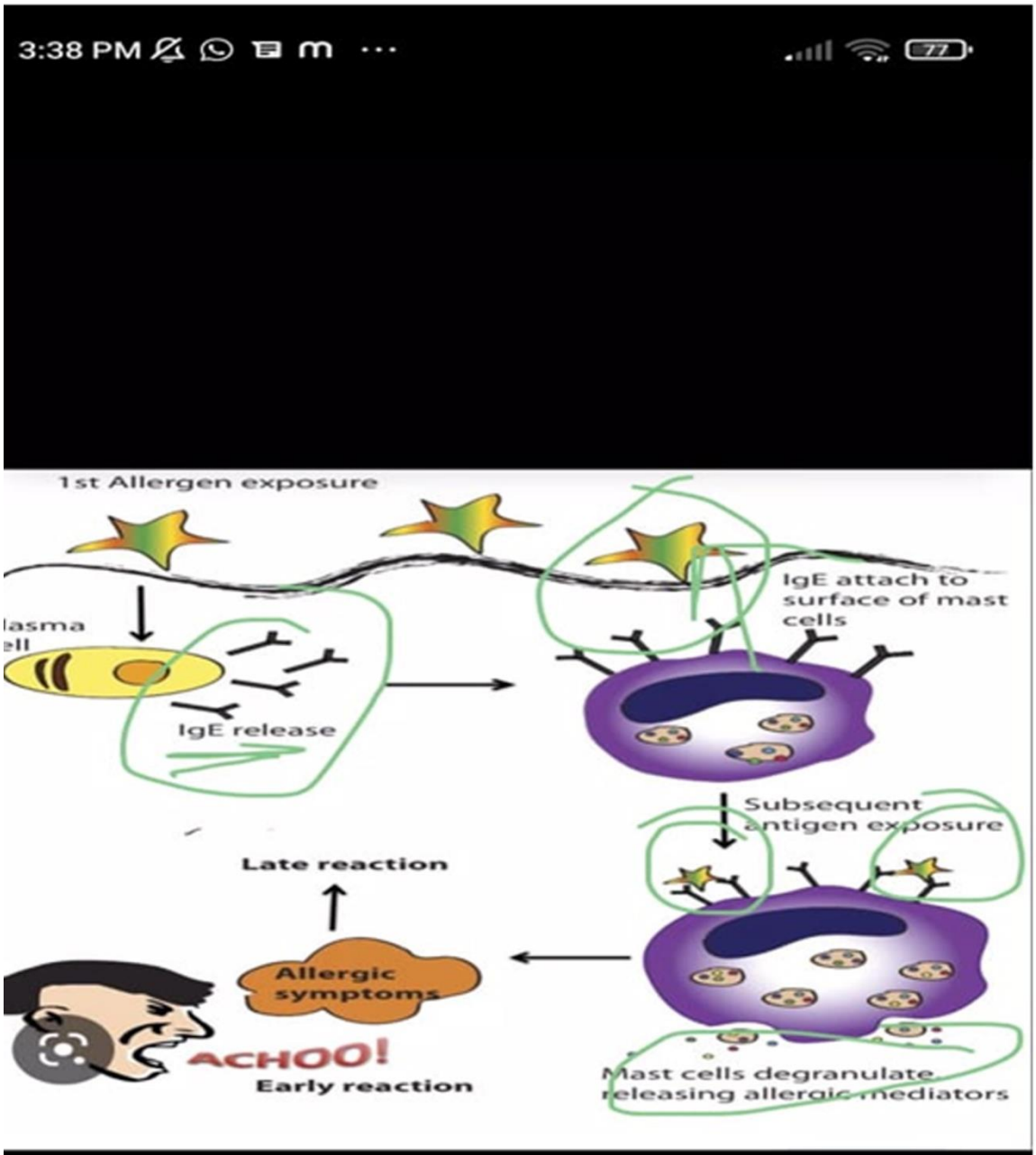
తెలుగులో శోధించండి అవపాతం పరీక్ష

Precipitation test



Precipitation test is **a type of antigen-antibody reaction in which the antigen occurs in a solution form**. It is a test in which antibody interacts with the soluble antigen in the presence of electrolyte to produce a precipitate. 03-Jun-2018

https://www.biosciencenotes.com › ...

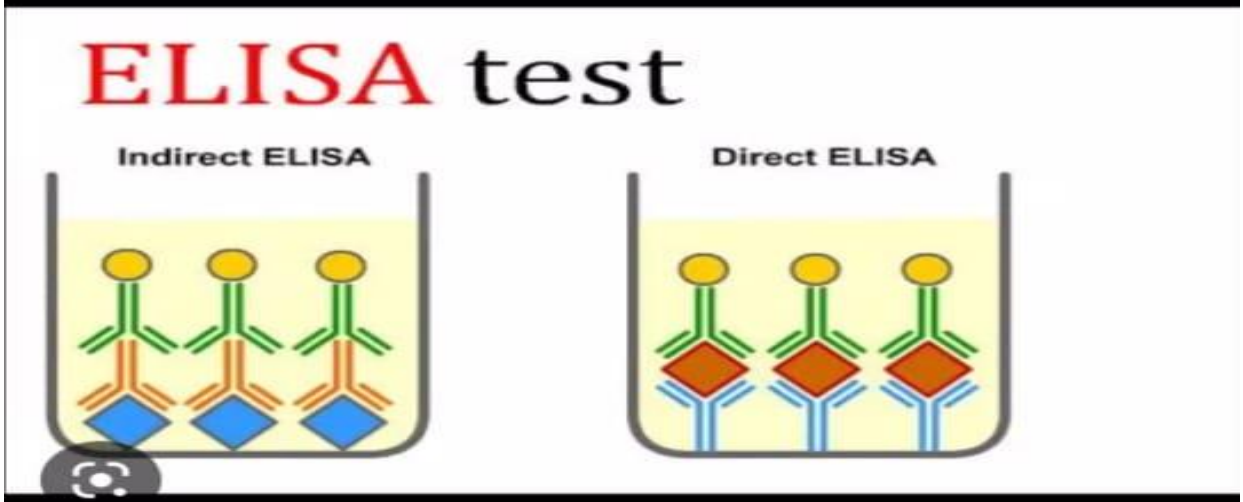

3:38 PM
1st Allergen exposure
IgE attach to surface of mast cells
IgE release
Subsequent antigen exposure
Late reaction
Allergic symptoms
ACHOO!
Early reaction
Mast cells degranulate releasing allergic mediators

3:11 PM

Vi India 1:15 PM

elisa test

YouTube
Shomu's Biology · 15:59



ELISA test

Watch

Uploaded: 4 May 2015
1.16M Views · 16.8K Likes
ELISA assay - This immunological assay lecture explains about the elisa test procedure and principle behind the elisa assay including direct, indirect and sa...

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Deepak ratnam's screen

CONCLUSION:

- ICT tools improves the effective way of learning.
- Makes teaching and learning more interactive.
- Helps to develop new skills and become more creative.
- Enhances the quality of education.

Black board teaching method on plasmids and transposons molecular structures

EXPERIMENTAL LEARNING

Microbiology is essentially a practical science and an integral part of many aspects of everyday life. This subject illustrates this connection by involving students in a series of experiments that demonstrate the use and application of many basic microbiological techniques. Experiments investigate the culture and microscopic examination of bacteria, viruses and fungi, and explore ways of detecting the presence of bacteria in food and water samples and clinical specimens. Protocols to measure the growth of bacteria as well as procedures to control growth are examined. This subject prepares students for more advanced practical subjects by providing basic training in the way in which experiments can be executed, results evaluated and reports compiled.

Soil is an ultimate source of all types of nutrients, which have both biological and non-biological importance. Studies are being carried out to isolate the various type of micro-organism from soil which has much more importance. So in the present study, amylase-producing bacteria have been isolated from various soil samples.

EXPERMENTAL LEARNING

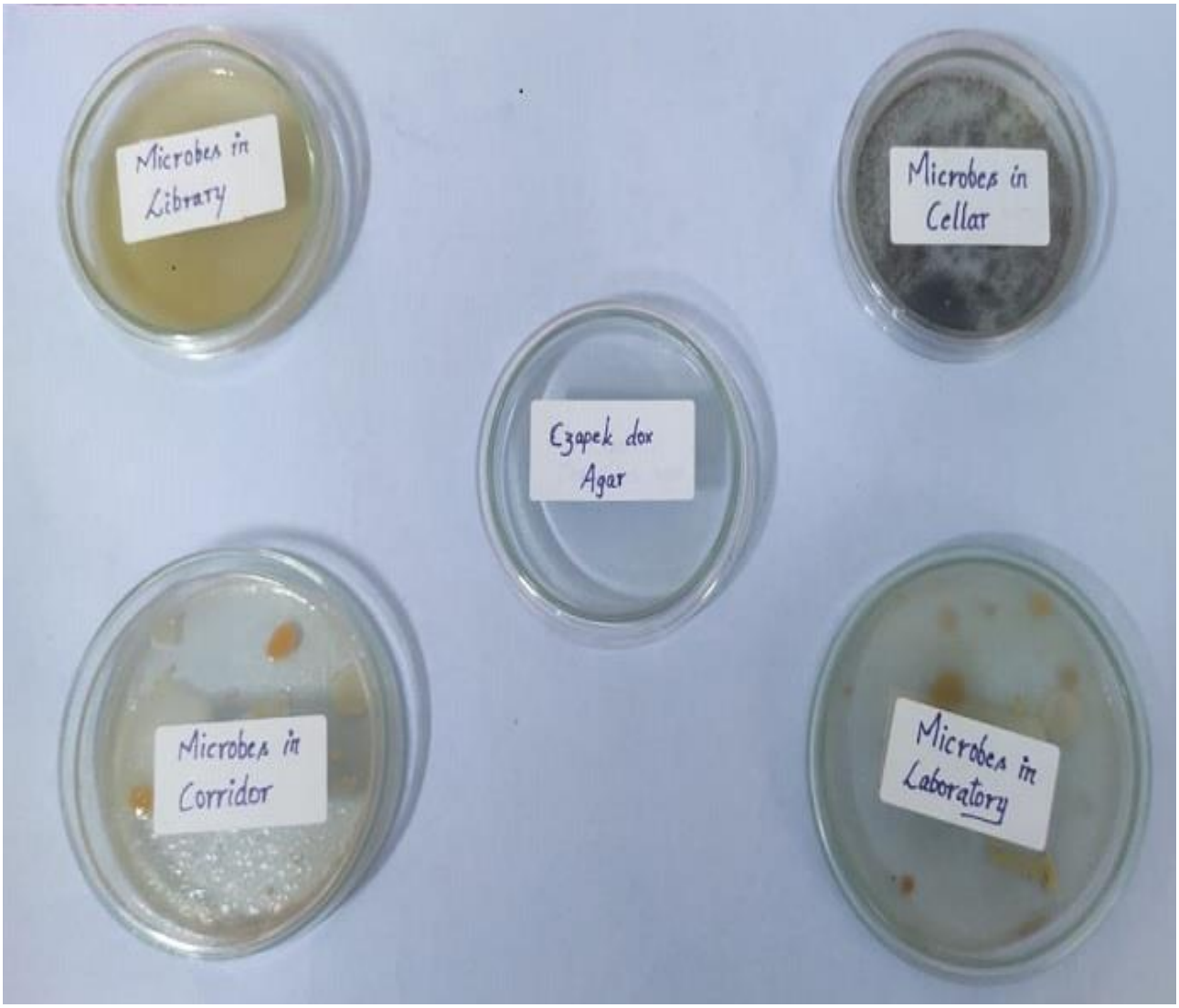
Students oberserved microbial samples using compound microscope are recorded the result in the practical obsevations ,they have observed different samples like water, soil, air, sewage,blood, urine etc and recoreded the shapes and arrangement of microbes.

Students sterilizing different glass ware before the practical in Hot-air-oven instrument by setting it with specific temperature and time – 170 degrees Celsius for 30 mins

Students isolating different microbial colonies from petriplates for colony morphology and observation of shapes of different microbial cultures following different staining techniques

Isolation of bacterial and fungal colonies on selective medias

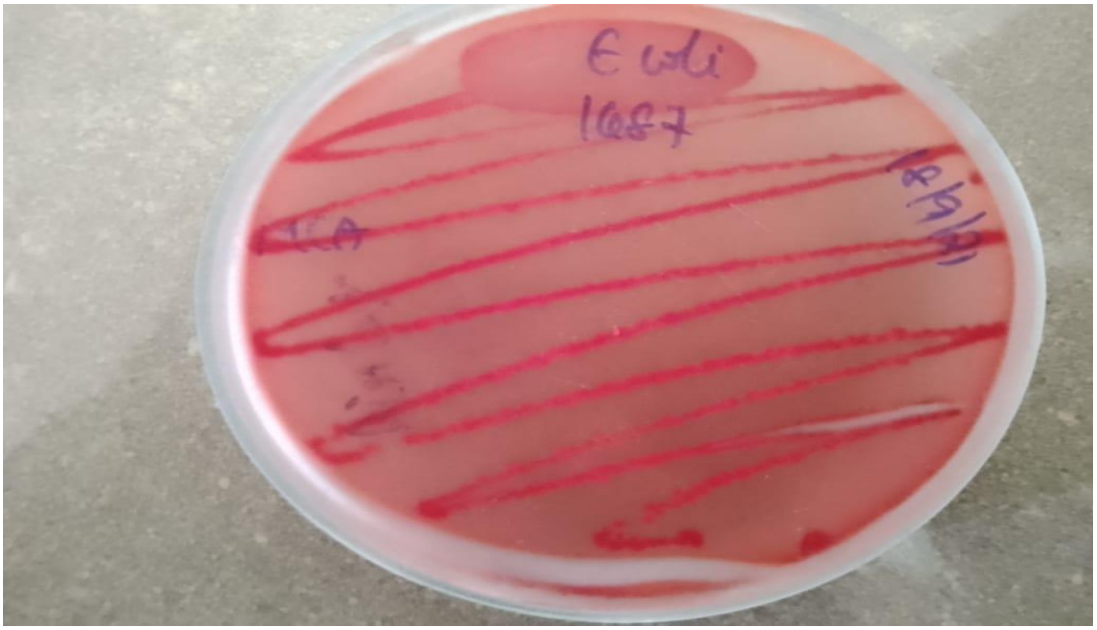
- **Nutrient media – Bacterial colonies**
- **Potatodextrose agar-Fungal colonies**
- **Czapek-dox-agar media-Both Fungi and Bacterial Colonies**



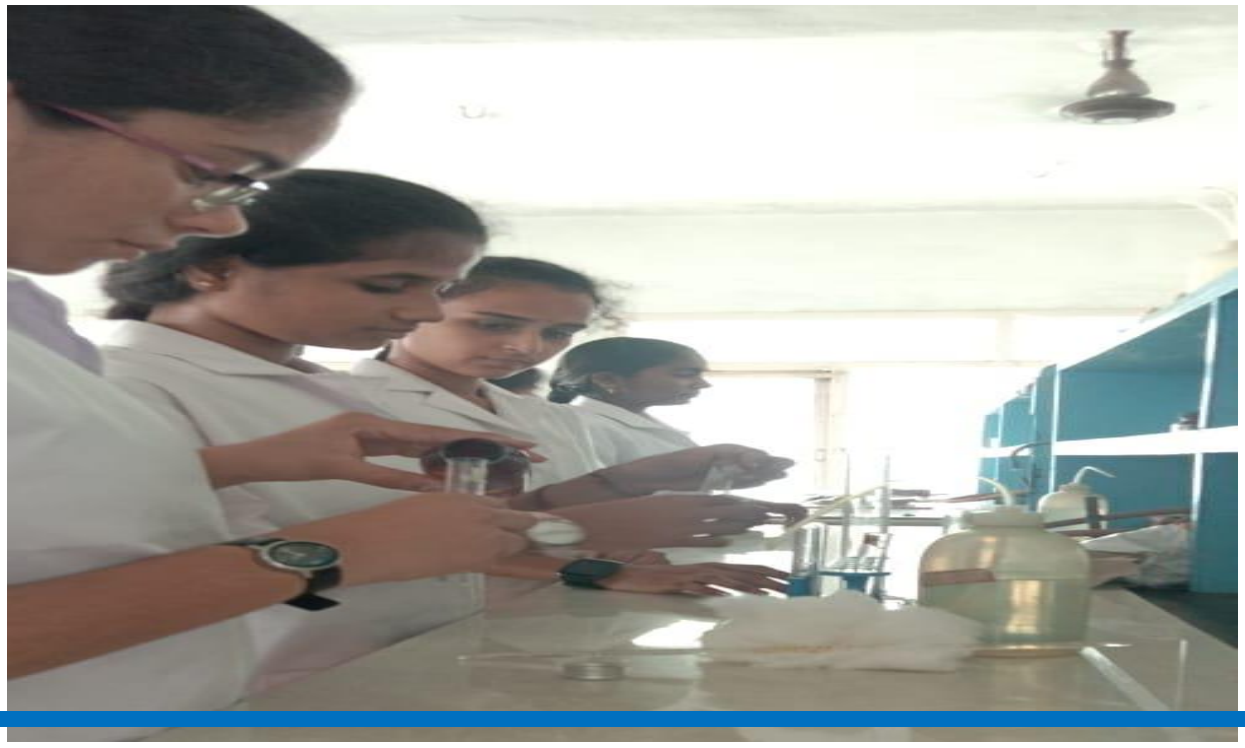
Experimental isolation of microbes by incubating the samples like air, water. Soil on the medias under a period of 2 days resulted, further followed different staining techniques like Gram staining and Lactophenol staining

- **Students followed zig-zag streaking process for isolation of pure cultures**

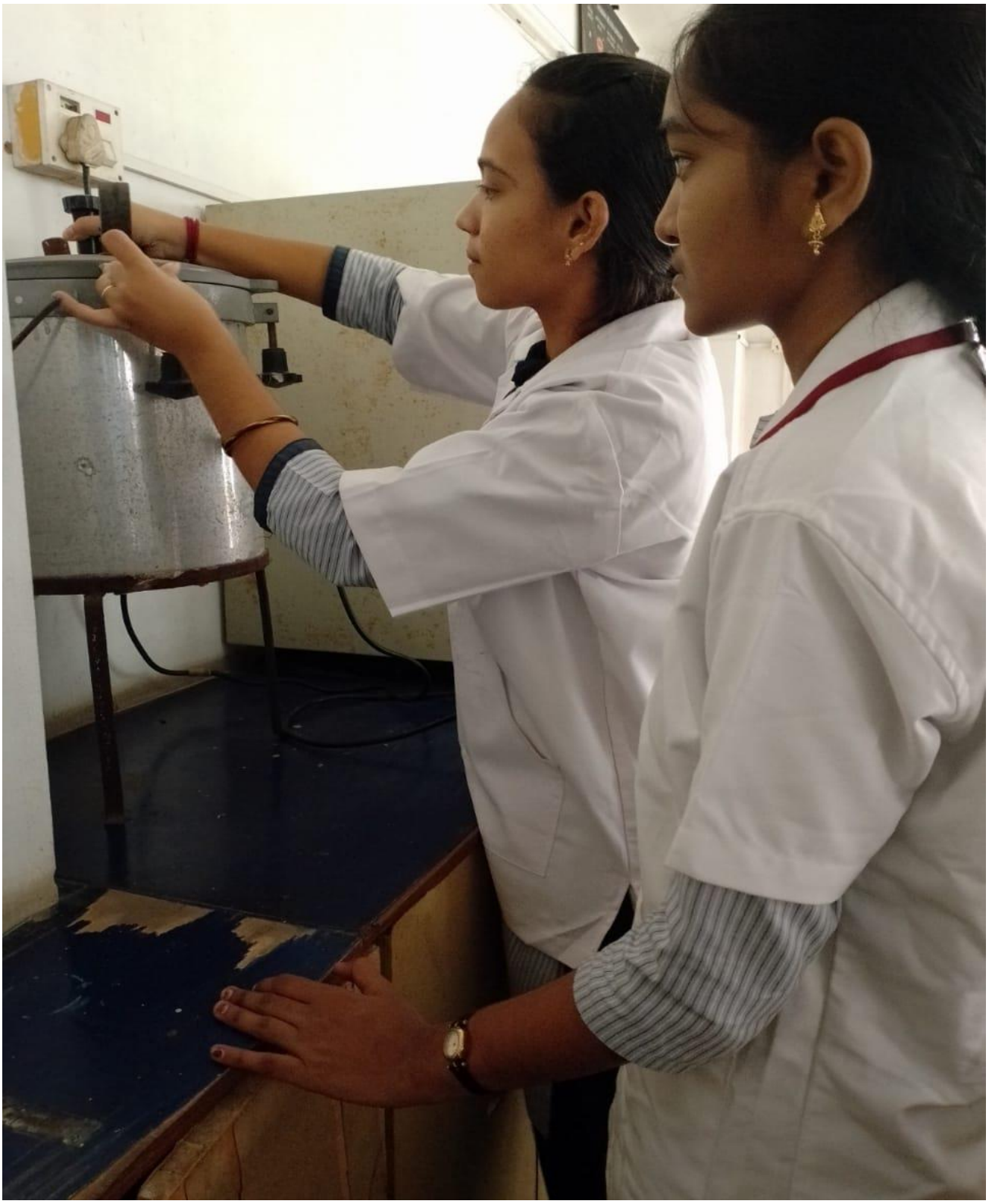
- **Ecoli cells from sewage samples and observed the rod shaped arrangement by zig-zag streaking method using EMB- Agar- Medium**



Serial dilution is a process through which the concentration of an organism, bacteria in this example, is systematically reduced through successive resuspension in fixed volumes of liquid diluent. Usually the volume of the diluent is a multiple of 10 to facilitate logarithmic reduction of the sample organism



Handling of Autoclave for the Sterilization of Czapek-dox –agar media under 121c at 15lbs pressure for 15-20 mins

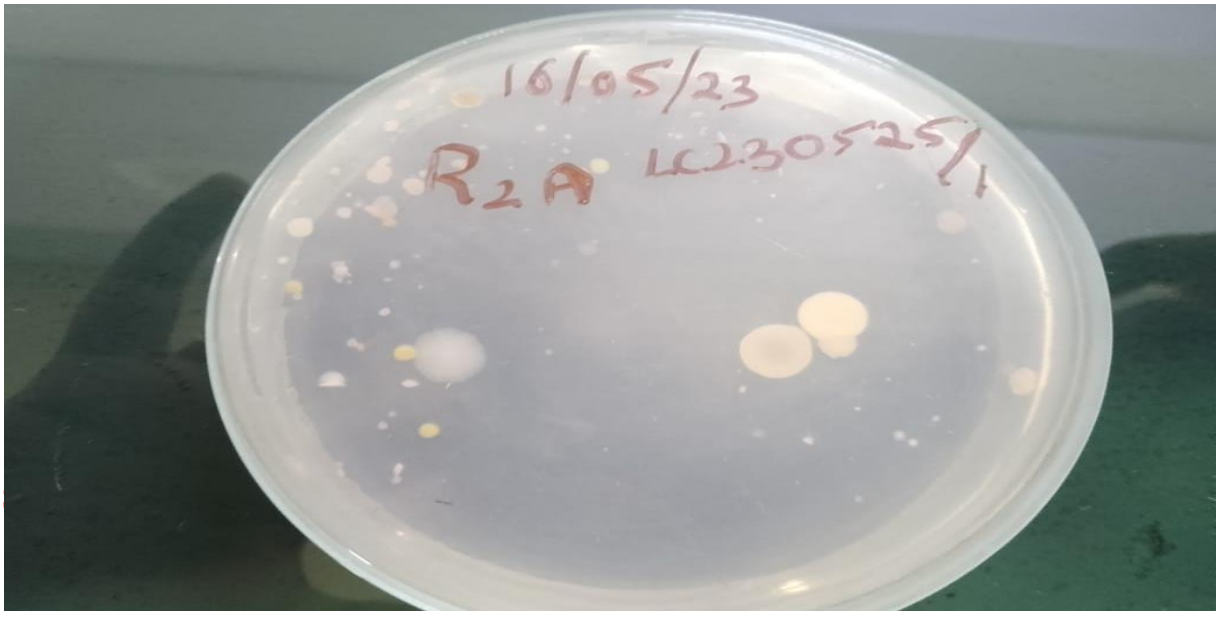


Pour –plate –method:

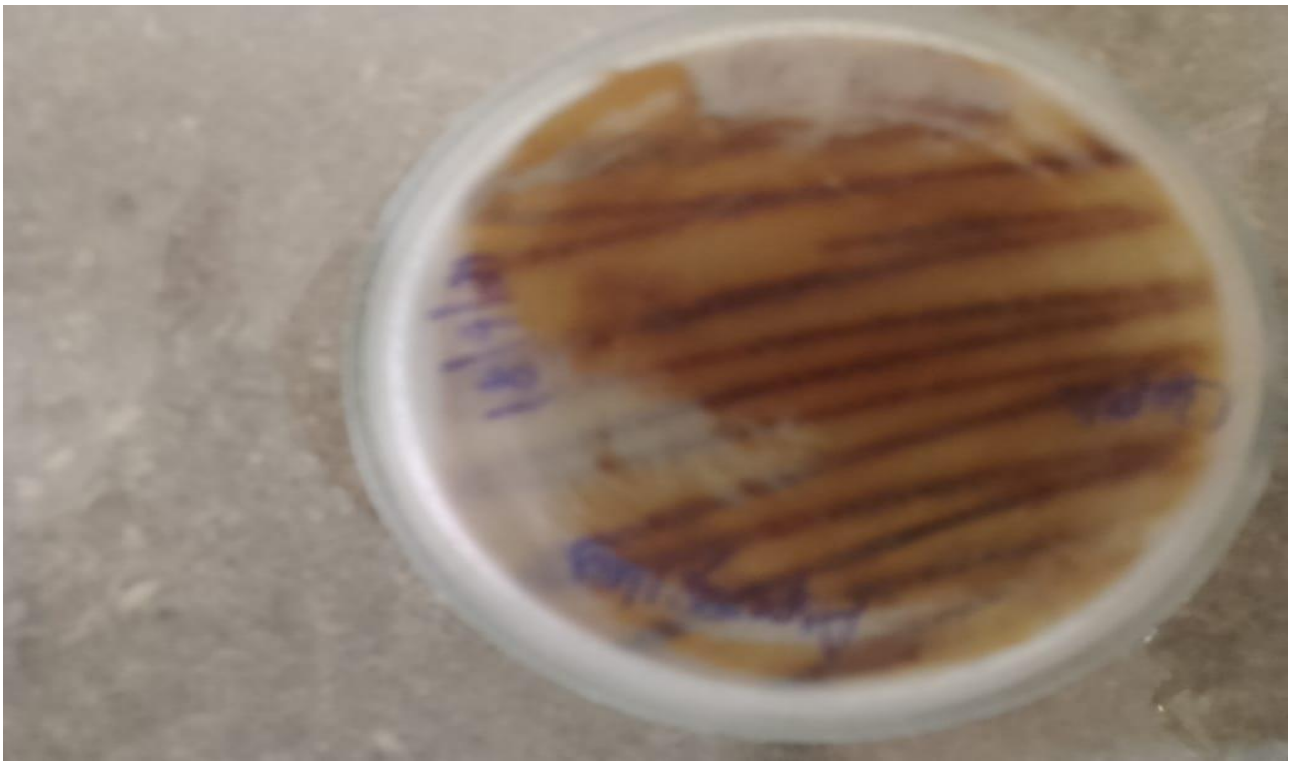
Suspend 28g of nutrient agar media (CM0003B) in 1L of distilled water.

- Mix and dissolve them completely.
- Sterilize by autoclaving at 121°C for 15 minutes.
- Pour the media into the sterilepetri dish and wait for the medium to solidify. Addition of inncoculum (soil sample) results in colony development

Isolation of submerged colonies by pour plate method



This technique involves a loopful of culture is streak on an agar plate to get individual cells far apart enough from each other. The streaking method gradually dilutes the inoculum such that the bacterial cells can be counted as colony forming units. Samples can then be taken from the resulting colonies and a microbiological culture can be grown on new plate so that the organisms can be identified ,studied or test.



Altogether, three microbial strains were identified from the soil samples in the concerned study. The concerned strains include- Shigella, Proteus and Bacillus, respectively. The concerned microbial strains were then analyzed for the amount of amylase enzyme, and it had been found that Bacillus sp produce much more amount of amylase followed by Shigellasp, and lesser amylase enzyme- producing activity was found in Proteus sp.

Demanstrating the handling process of colorimetry and identifying the Turbidity test for broth culture and sewage sample

Handling of laminar air flow for isolation of pure cultures by conducting streak plate method

SEMINARS

Microbiology is one of the most significant branches of biology that involves in the study of the biology of microscopic organisms. The Microbiology course was introduced in our college as restructured Bsc

Course in biology stream offered with combination of biochemistry and chemistry in English medium.

Microbiology overlaps the various other degree areas of biology, genetics, immunology, and involvement in fields such as pharmacy, medicine, clinical research, dairy industry, agriculture, nanotechnology & chamical technology.

The core mission of our department is to provide students with the best knowledge to excel in research with the ultimate goals of improving health and training the next generation of biomedical research

scientists and to provide high quality education and training to the students and equipping them with

excellence in education, abilities to enable them pursue a good career. This college particularly molded generations of students. The curriculum was designed to educate important microbiological disciplines as well as to promote wide opportunities to the students.

ACTIVE CLASSROOM SEMINARS

In a typical classroom, a learning environment can be characterised by active interaction between the learner and the instructor or between the learner and their peers. The environment of the "Active Classroom Seminars" will established to ensure Students are encouraged to think independently and creatively to become more interested in new ideas. To enable this the students will be given choice in terms of resources and methods available to them to participate actively in the Classroom Seminars. This allows a creative zone for the students. The students are more likely to explore critical thinking skills aiding towards academic success.

- Arshiya Asheeri Shaikh from IIndyear(MB.BC.C) Department of Microbiology presented a classroom seminar on "A Rare Inherited-

  Autonomic Neuropathy Disease" - CIPA (CONGENITAL INSENSITIVITY TO THE PAIN WITH ANHIDROS

OBSTETRICS AND GYNAECOLOGICAL PROBLEMS" has been discussed in detail by P. Akhila, IInd (MB.BC.C) year Department of Microbiology.

It provide awareness to the fellow students on the GYNAECOLOGICAL problems such as Uterine Fibroids,

Menstrual Disorders, Cervical Dysplasia, Pelvic organ Prolapse.

B. Swati III (MB.BC.C) presenting her seminar on the much needed subject ‘’ Depression and Anxiety’’. The seminar included the role of hormones and other chemicals in our body and awareness required to the teenagers

Another student Y. Bhuvaneswari presenting her seminar on '' Japanese Encephhalitis''. She provided completed information about the disease and the related guidance in the class.

Seminars were conducted every week in the class which gave the students to gain knowledge on various subjects besides the academic syllabus. It gave them an opportunity to put forward their opinions by having friendly discussions among the classmates. It also proved helpful in enhancing their skills.

Gnashwari kavitha III (MB.BC.C) Presented a seminar fibrodysplasia ossificans progressive- week ness in bones and tissue replacement in bones and appliction of replacement of tissue

GROUP DISSCUSSIONS

- Bsc students organized group disscussions among them to create awareness about recently identified viral and genetical disorders and precautions mentioned for preventions
- Group discussion among them create a good communication among them which will provide knowledge,and also increase participants attention and focus on their learning objectives

QUIZ PROGRAMMES IN CLASS

QUIZ COMPETITION -2022

The quize competition conducted among the Students in the classroom . Students gather questions themselves based on food and agricultural microbiology as well as the current affairs.Students are divided into two groups for the competition.The quize competition were carried enthusiastically by the Students under the guidance of the lecturer in charge.

There are 20 members participated in this quiz competition.They are divided into 2 groups .

Group A | Group B In each group they are 10 members.

QUIZ COMPETITION QUESTIONS

1.In mycorrhizal association the advantage of plants is?
A:Increased mineral absorption and disease protection.

2. Which bacteria used as biofertilizers?
A: Azotobacter, and Rhodospirillumetc .

3.By producing endospore name of the bacteria is ?
A: Bacillus .

4.The following association in which involves the exchange of nutrients between two species is referred to as?
A:Syntrophism.

5 . The conversion of molecular nitrogen into ammonia is known as?
A: Nitrification.

6 .. The degradation of complex molecules in soil by fungi for utilization by Bactria this the example of the following type of association?
A: Commensalism.
7.Most soil protozoa are flagellates or amoebas, having their dominant mode of nitrogen as?
A : Ingestion of bacteria.

8.Most spoilage bacteria grow at ?

A: neutral pH.

9.Which of the following acid will have higher bacteriostatic effect at a given pH?
A: Acetic acid.

10. Which of the following microorganisms contains a lot of vitamins?
A: yeast.

11. What are the factors that contribute to microbial growth ?
A: pH, moisture, oxidation- reduction potential.

12.In yeast cells what is the protein content range?
A:40-50 percent.

13. The main micro organism in yoghurt is?
A: Streptococcus thermophilus.

14.How is microbiology used in agriculture?
A: To increase production and reduce the use of fertilizer.

15.Nitrifying bacteria are?
A:Gram negative ,rod shaped bacteria.

16.soil micro organisms are most active at?
A: 34-36°C

Conclusion

Quizzes are intended to encourage fun learning methods while also enhancing general knowledge. Students can "think outside the box" or from diverse perspectives by participating in quiz tournaments. It encourages constructive dialogue among participants so they can benefit from one another.

REPORT

Group A-points	Group B-points
10	10
9	10

Group B won the competition.

Bhuvaneshvari	**Lahari**
Sunitha	**Asha**
Bhargavi	**Bindu**
Ramya sri	**Umadevi**
Swathi	**Sravani**

QUIZ COMPETITION -2023

microbiology department conducts the quiz programme among the students in the classroom . Students are divided into teams for the competition. Students prepare questions themselves based on our core subject microbiology as well as the current affairs . The quiz competitions were carried enthusiastically by the students under the guidance of the lecturer in charge.

There are 20 members participated in this quiz competition.They are divided into 2 groups .

Group A | Group B In each group they are 10 members.

QUIZ COMPETITION QUESTIONS

1.What are the 4 main components of DNA?

There are four nucleotides, or bases, in DNA: adenine (A), cytosine (C), guanine (G), and thymine (T).

2.Anticodon is present in

(a) DNA

(b) tRNA

(c) rRNA

(d) mRNA

Answer: (b)

3.Which enzyme responsible for replication of DNA?

A: DNA polymerase.

4.What is the most important feature of a plasmid?

A:So, the correct answer is 'Origin of replication(ori)'

5.What is the role of plasmids in microbiology?

A: provide bacteria with genetic advantages, such

as drug resistance.

6.What is PCR used for?

PCR (polymerase chain reaction) tests are a fast, highly accurate way to diagnose certain infectious diseases and genetic changes.

7.Are proteins acidic or basic in nature?

A: Proteins usually are almost neutral molecules; that is, they have neither acidic nor basic properties.

8.What is the optimal pH and temperature of enzymes in human stomach?

A: Pepsin works in the highly acidic conditions of the stomach. It has an optimum pH of about 1.5.

9.What is mycology?

A: study of fungi.

10.Who proposed lock and key model?

A: Emil Fisher .

11.During fermentation process at which phase where the microorganisms not replicating itself?

A: At stationary phase

12. Who discovered fermentation process?

A: Louis Pasteur.

13.Who is known as father of microbiology?

A: Leeuwenhoek is universally acknowledged as the father of microbiology.

14.Name three antifungal drugs which are used to prevent fungal infection?

A: nystatin ,clotimazole , amphotericin.

15.What kind of bacteria is E. coli?

A: Escherichia coli (E. coli) is a Gram-negative, rod-shaped, facultative anaerobic bacterium.

Conclusion

Conducting Student centric like Seminars and Quiz programmes every week promoted thhe personalized learning in the students and making learning an enjoyable experience . It has improved participation in thhe students which helps them in teaching teamwork and a healthy learning atmosphere in the classroom.

REPORT

Group A-points	Group B-points
10	10
9	8

Group -A won the competition.

Anjali kumari
Ch.Alekhya
D.devi Sravani
K. Kalyani
K.Nandini

P.punyavati
M.Keerthi
J.Rama tulasi
K.Nandini
A.kusuma

QUIZ COMPETITION -2023(I MBBCC)

The microbiology department conducts the quiz programme among the students in the classroom . Students are divided into teams for the competition. Students prepare questions themselves based on our core subject microbiology as well as the current affairs . The quiz competitions were carried enthusiastically by the students under the guidance of the lecturer in charge.

There are 18 members participated in this quiz competition.They are divided into 2 groups .
Group A | Group B In each group they are 9 members.

QUIZ COMPETITION QUESTIONS

1. Another name of plasmids called as..

A: Episomes

2.What are the optimal physiological conditions in innoculation ?

A: pH, temperature, oxygen supply ,azitiation .

3.What is another media used for the cultivation of pathogen staphyllcocci?

A: Mannitol salt agar .

4.Another name of synthetic media is..

A: Chemically defined media.

5. In which year gram staining was first discovered?

A: 1884.

6. which method is called freeze drying process?

A: Lyophilization.

7. What are the four methods can be used to isolate the microbial population?

A :1)Streak plate method

2)spread plate method

3)pour plate method

4)serial dilution method.

8. Which is the best and the cheapest disinfectant used in diaries ,cellers for cleaning the floors ?

A: chlorinated lime.

9. Who is the father of microbiology?

A:Antonie van Leeuwenhoek.

10. How many types of microorganisms are there?

A :Microorganisms are divided into seven types

11. The number of elements present in carbohydrates is..

A: 3(C,H,O)

12.What are the two components of nucleoside?

A: purine and pyrimidine

13.What is phospholipid and its function?

A:phosphatidylcholine, lipid metabolism

14. Which technique used to identify and estimate the number of bacteria in food andwater sample.

A. Most probable number technique.

15.Laminar air flow is used in..

A: used for air filteration

Conclusion

Conducting Student centric like Seminars and Quiz programmes every week promoted thhe personalized learning in the students and making learning an enjoyable experience . It has improved participation in the students which helps them in teaching teamwork and a healthy learning atmosphere in the classroom.

REPORT

Group A-ponts	Group B-points
12	12
11	10

Group A won the competition .

Janaki

Yeswanthini

Bhavani

Keerthana

Sarayu

Deepika

Suryavathi

Chandini

Jyoshna

ASSIGNMENTS

Assignment writing assists students in developing a structure or pattern. Research work helps to enhance your practical skills and opens up your mind. Improvise your writing pattern: The more you write, the better your writing skills will improve.

INTRODUCTION

The following are the assignments which have been done by the 1st year students of the department of Microbiology, the making and processing of the assignments plays an important role in enhancing the skills of the students, some of the assignments which have a vital role in the human body such a biomolecules example

1.Carbohydrates.

2. Triacylglycerols.

3. Amino acids.

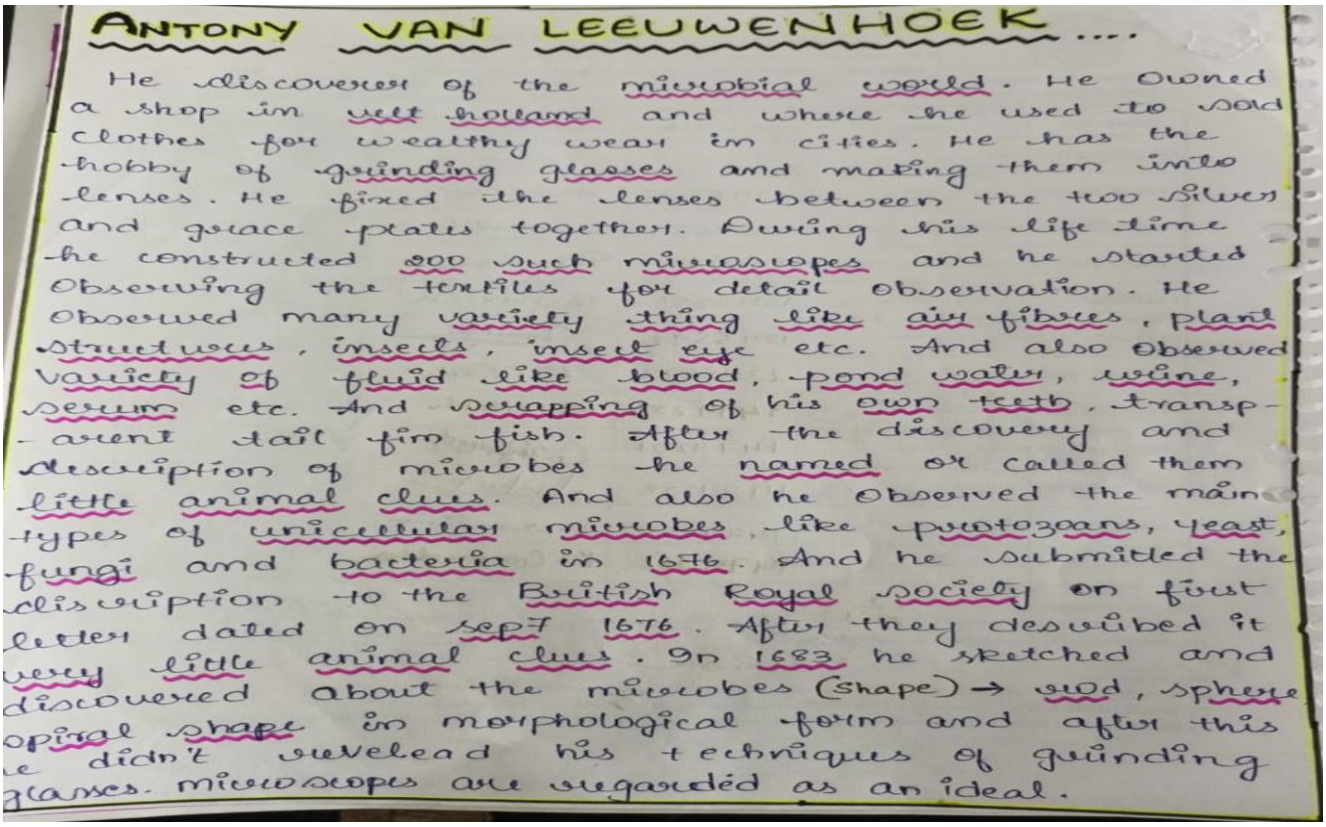
And the assignments on the scientists who made a glorious discoveries in the field of Microbiology such as

1. Antony Van Leeuwenhoek

2. Edward Jenner

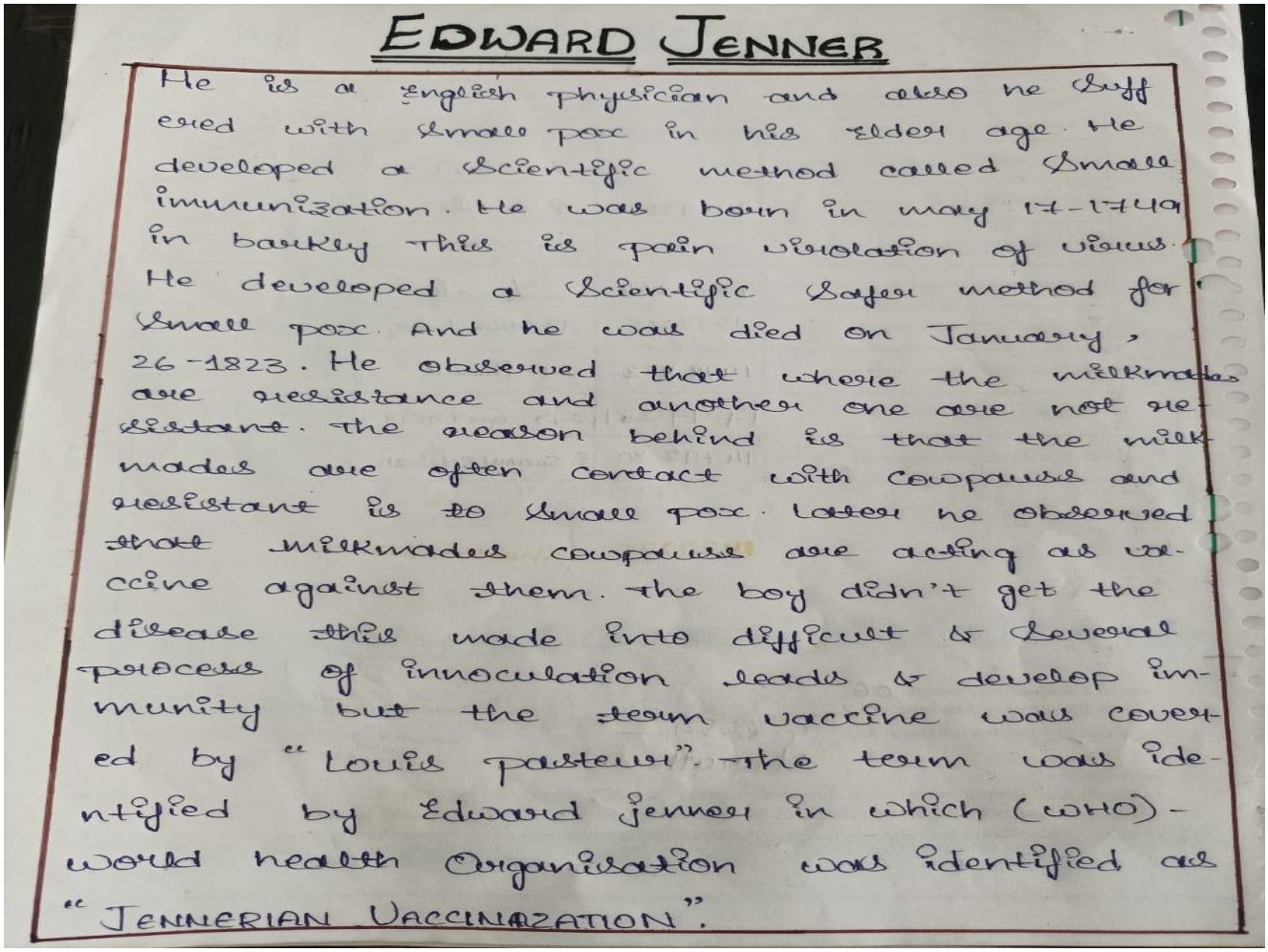
3. Louis Pasteur

I Year Micro Biology Assignments



ANTONY VAN LEEUWENHOEK....

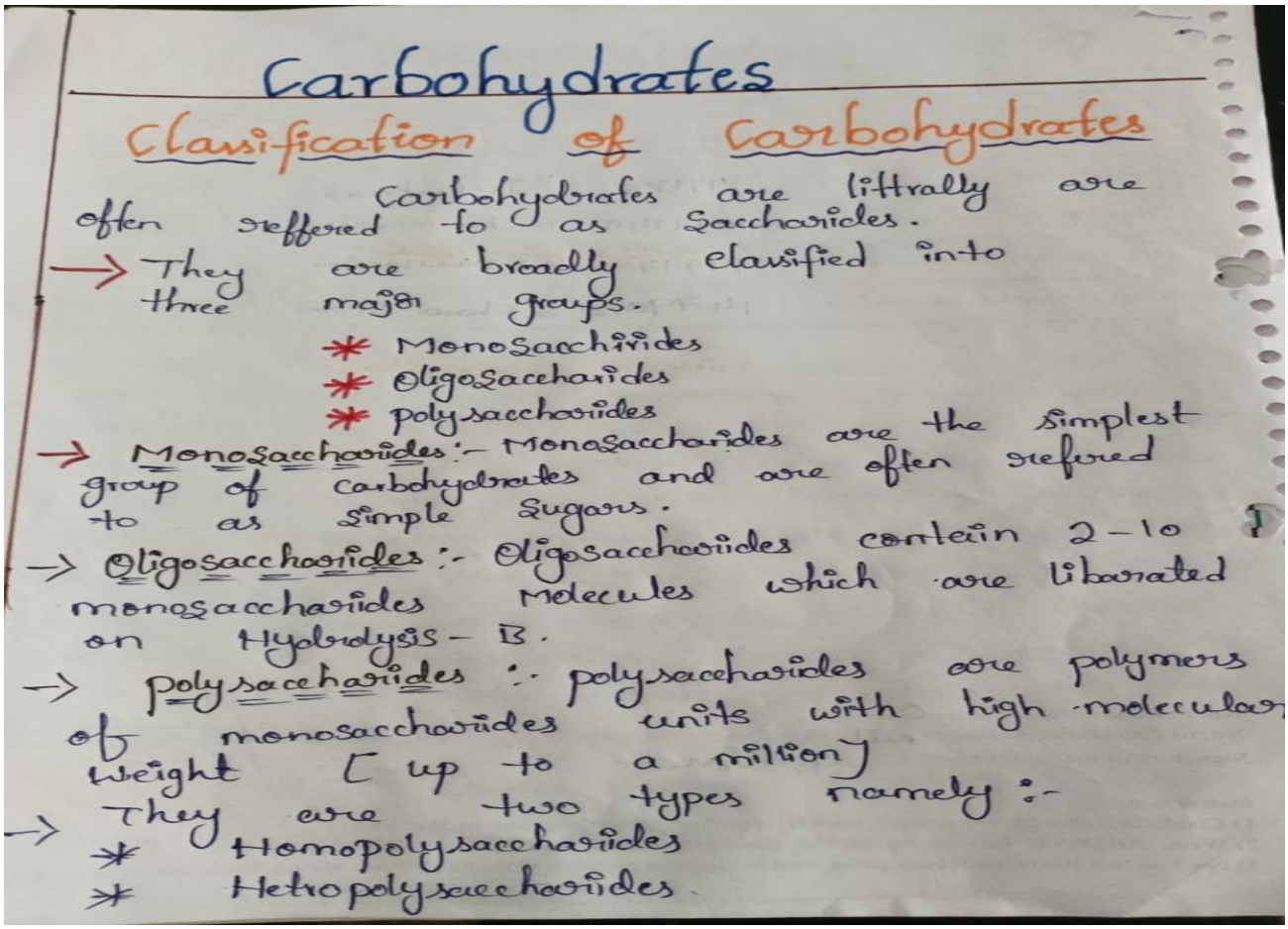
He discoverer of the microbial world. He owned a shop in delft holland and where he used to sold clothes for wealthy wear in cities. He has the hobby of grinding glasses and making them into lenses. He fixed the lenses between the two silver and grace plates together. During his life time he constructed 400 such microscopes and he started observing the textiles for detail observation. He observed many variety thing like air fibres, plant structures, insects, insect eye etc. And also observed variety of fluid like blood, pond water, urine, serum etc. And scrapping of his own teeth, transparent tail fim fish. After the discovery and description of microbes he named or called them little animal clues. And also he observed the main types of unicellular microbes like protozoans, yeast, fungi and bacteria in 1676. And he submitted the discription to the British Royal society on first letter dated on sep 7 1676. After they described it very little animal clues. On 1683 he sketched and discovered about the microbes (shape) → rod, sphere opiral shape in morphological form and after this he didn't revelead his techniques of grinding glasses. microscopes are regarded as an ideal.



EDWARD JENNER

He is a English physician and also he suffered with small pox in his elder age. He developed a scientific method called small immunization. He was born in may 17-1749 in barkly This is pain virolation of virus. He developed a scientific safer method for small pox. And he was died on January, 26-1823. He observed that where the milkmades are resistance and another one are not resistant. the reason behind is that the milk mades are often contact with cowpauss and resistant is to small pox. Later he observed that milkmades cowpauss are acting as vaccine against them. the boy didn't get the disease this made into difficult & several process of innoculation leads & develop immunity but the term vaccine was covered by "Louis pasteur". the term was identified by Edward jenner in which (WHO)- world health Organisation was identified as "JENNERIAN VACCINAZATION".

II Year Micro Biology Assignments



Carbohydrates

Classification of Carbohydrates

Carbohydrates are littrally often refferred to as Saccharides.

→ They are broadly classified into three major groups.

* Monosaccharides
* Oligosaccharides
* polysaccharides

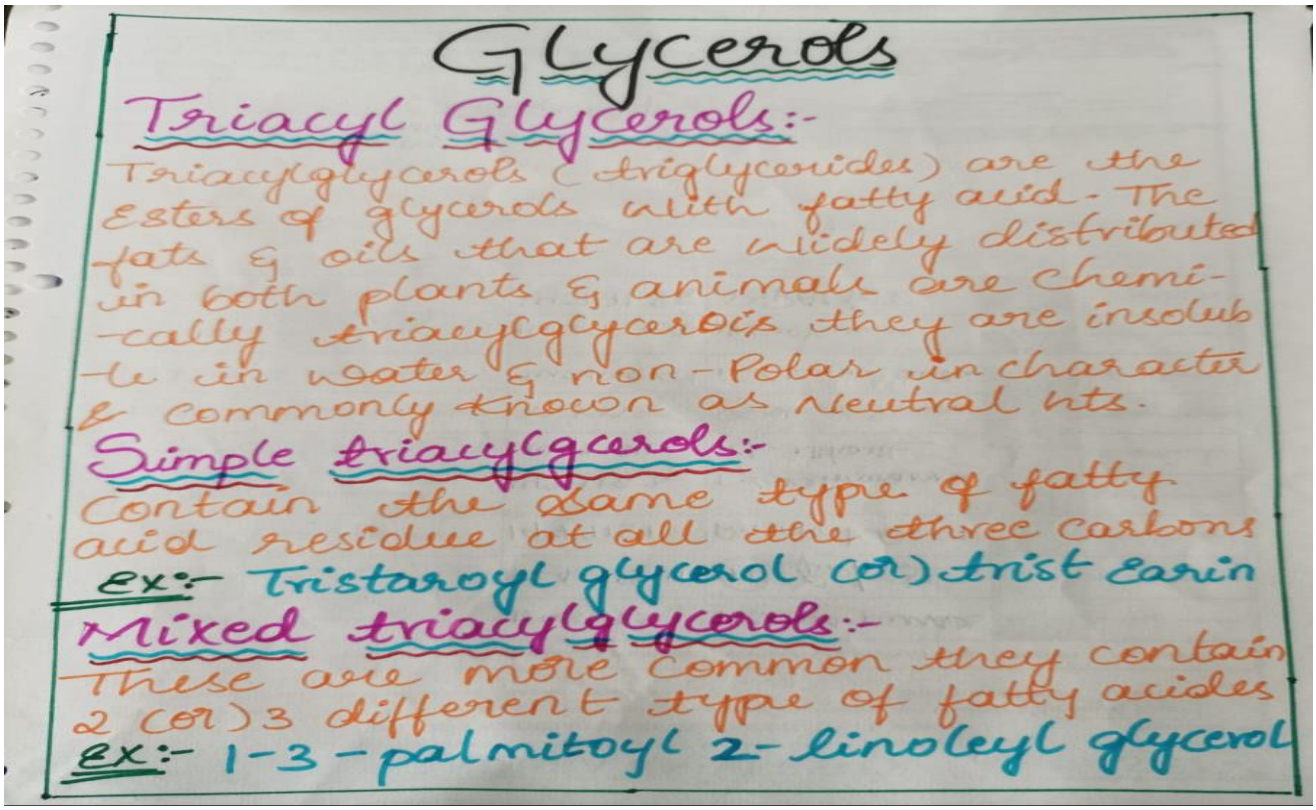
→ Monosaccharides :- Monosaccharides are the simplest group of carbohydrates and are often refered to as simple sugars.

→ Oligosaccharides :- Oligosaccharides contain 2-10 monosaccharides molecules which are liberated on Hydrolysis - B.

→ Polysaccharides :- polysaccharides are polymers of monosaccharides units with high molecular weight [up to a million]

→ They are two types namely :-

* Homopolysaccharides
* Hetropolysaccharides



Glycerols

Triacyl Glycerols:-

Triacylglycerols (triglycerides) are the Esters of glycerols with fatty acid. The fats & oils that are widely distributed in both plants & animals are chemically triacylglycerols they are insoluble in water & non-Polar in character & commonly known as Neutral fts.

Simple triacylglycerols:-

Contain the same type of fatty acid residue at all the three carbons

Ex:- Tristaroyl glycerol (or) tristearin

Mixed triacylglycerols:-

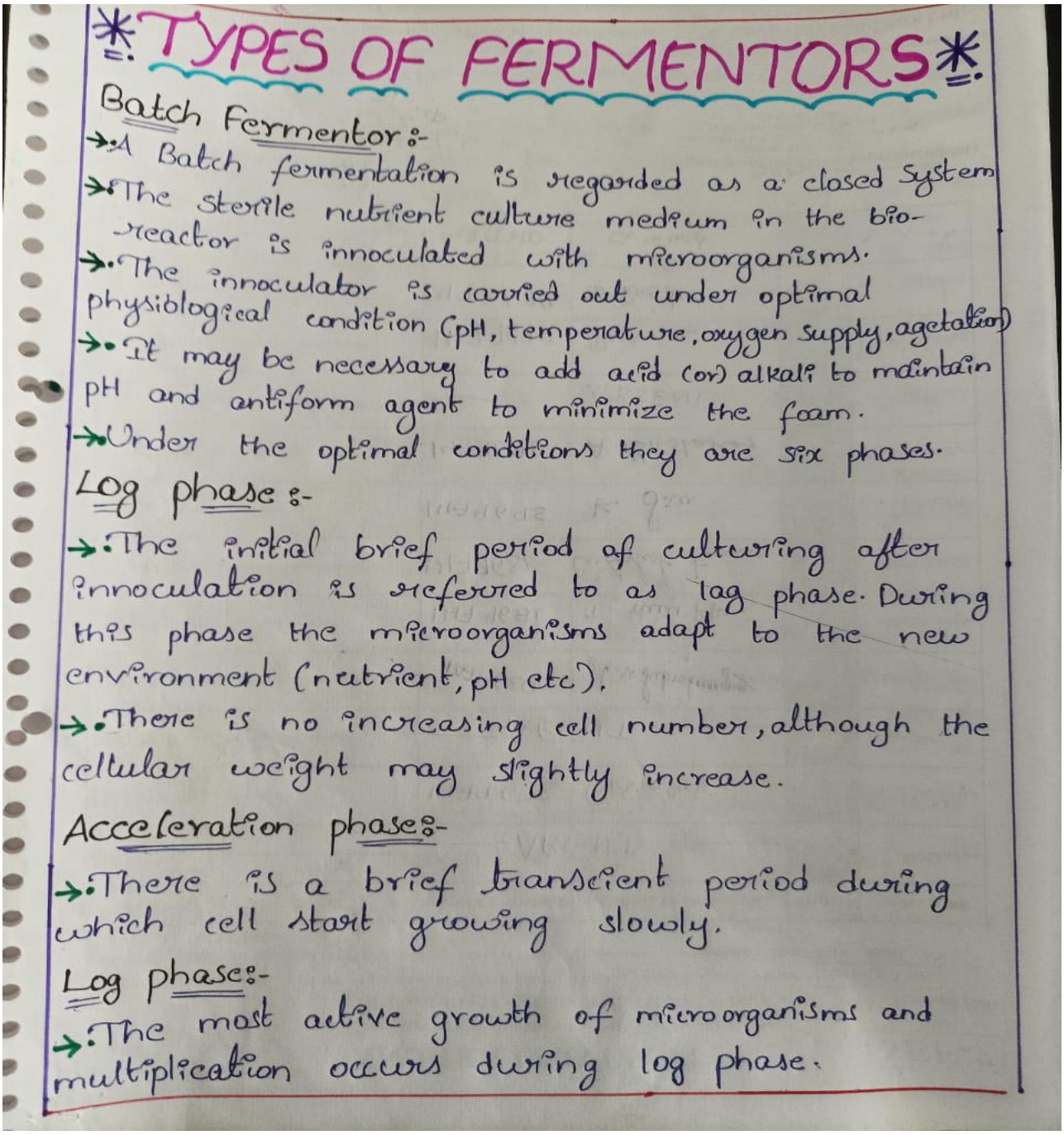
These are more common they contain 2 (or) 3 different type of fatty acides

Ex:- 1-3-palmitoyl 2-linoleyl glycerol

The assignments which have been given to the 2nd year students of the Department of the microbiology which have a major significance in the World of microbiology and they are as follows

1. Types of fermenters.
2. Structure of plasmids.
3. Gene cloning.
4. DNA double helix.

Which have been given as the topics for the assignments to expose them for a wide array of information regarding the modernisation of the gene technologies and genetical information.



TYPES OF FERMENTORS

Batch Fermentor:-

→ A Batch fermentation is regarded as a closed System
→ The sterile nutrient culture medium in the bio-reactor is innoculated with microorganisms.
→ The innoculator is carried out under optimal physiological condition (pH, temperature, oxygen supply, agetation)
→ It may be necessary to add acid (or) alkali to maintain pH and antiform agent to minimize the foam.
→ Under the optimal conditions they are six phases.

Log phase:-

→ The initial brief period of culturing after innoculation is referred to as lag phase. During this phase the microorganisms adapt to the new environment (nutrient, pH etc).
→ There is no increasing cell number, although the cellular weight may slightly increase.

Acceleration phase:-

→ There is a brief transient period during which cell start growing slowly.

Log phase:-

→ The most active growth of microorganisms and multiplication occurs during log phase.

Structure Of Plasmids

1) Every Plasmid has Certain essential elements. These as follows:

- Origin of replication (OR): This refers to a Specific location in the Strand Where the replication of Process begin In Plasmids, this region is A=T rich region as it is easier to Separate the Strands during replication
- Selectable marker Site: This region Consists of antibiotic resistance genes Which are useful in the identification & Selection of bacteria that Contains Plasmids.
- Promoter region: This is the region Where the transcriptional machinery is loaded.
- Primer binding Site: This is the Short Sequence of Single - Standard DNA Which is useful in DNA amplication & DNA Sequencing
- Multiple cloning Sites: The Site Contains Various Sequencing Where the restriction enzymes Can bind & cleave the double Stranded Structure

2) The Size of the Plasmid Varies from 2Kb. to 200 Kb.

3) It is the extra-Chromosomal element of the Cell Which is not required for the growth & development of the Cell

4) Most of the Plasmids Contain the TRA gene, Which is the transferred gene & is essential in transfering the Plasmid from one Cell to another.

GENE CLONING

Gene Cloning, as the name suggests, is the cloning of a gene of interest. As the genes of all the organisms (microbes, plants and animals) are made up of same genetic material i.e., nucleotides (adenine, guanine, cytosine and thymine), one can easily shuffle the genes of one organism into another. By means of gene cloning the production of many industrially important bioproducts has been increased many folds. Using this technique not only the copy number of the concerned gene can be increased but the expression of the gene can be enhanced by replacing the orginals weak promoter of the gene with a strong promoter. The process of gene clonning is explained below. Let's assume we have isolated a bacterial strain which produces a unique protease of industrial importance. Unfortunately, this organism is slow grower and requires a highly nutritious and expensive medium for growth. In addition, the amount of unique protease produced by this Organism is very low. To produce this Protease in large amounts, we must clone the Protease gene under the influence of a strong promoter in a fast-growing organism.

DNA DOUBLE HELIX (James Watson, Crick)

1. The DNA is a right handed double Helix. It consists of two polyribonucleotide chains [strands] twisted around each other on a common axis.
2. The two strands are antiparallel, i.e, one strand runs in the 5' to 3' direction while the other in 3' to 5' direction. this is comparable to two parallel adajacent roads carrying traffic in opposite direction.
3. The width (or) diameter of a double helix is 20A° (2nm).
4. Each turn (pitch) of the Helix is 34A° (3.4nm) with 10 pairs of nucleotides, each pair placed at a distance of about 3.4A°
5. Each strand of DNA has a hydrophilic deoxyribose phosphate backbone [3'-5' phospho-diester bond] on the outside [peripherry] of the molecule while the Hydrophobic bases are stacked inside (core).
6. The two polynucleotide chains are not identical but complementary to each other due to base pairing.
7. The two strands are held together by hydrogen bonds formed by complementry base pair. The A-T pairs has 2 Hydrogen bonds while G-C pair has 3 Hydrogen bonds. the G≡C is stronger about 50% then A=T.
8. The complementary base pairing in DNA Helix proves Chargaff's rule. The content of Adenine equals to that of thymine [A=T] and Gaunine equals to that of Cytosine [G=C].

REPORT:

The role of taking and making an assignment and it's submission plays a vital role as it not only provides a good information about a certain topic but also make the student to think creatively and to be effective regarding the topics. It makes the student attentive and to be more focused on the academics. The topics which have been given to the students in the Microbiology department gives an excellent opportunity for them to know more about the following things such as,

1. The detailed classification of the carbohydrates such as mono,oligo and polysaccharides.
2. Complete classification and uses of the triacylglycerols
3. Classification of amino acids based on many conditions and criteria
4. Detail discussion of life history and achievements of the scientists such as Edward Jenner, Antony Van Leeuwenhoek, Louis Pasteur
5. Modern microbiology including the gene cloning, promotors and the enzymatic actions involving in it.
6. Types of fermenters and information regarding their growth curves, log phases, acceleration phase and the uses of fermenters and their importance in the industrial and the domestic lives.
7. The Watson and crick model of the DNA it's double helix and the theories regarding the polynucleotide chains and the H-bonding.
8. The structure of plasmids and their vital role in the cell structure including their replication,marker sites, promotors, cloning sites etc.

The above mentioned are summaries of few of the topics of the assignments made by the students of Department of Microbiology