No.9
NOTES OF LESSON
Odd Semester (2020-2021)

Notes of Lesson (2020 - 2021)

ODD SEMESTER

R. KRISHNAVENI,
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1. Microbial physiology (P1R1MBCC3)
   I PG Microbiology - I Sem
2. Environment and Agricultural Microbiology (P3R1MBCC11)
   II PG Microbiology - III Sem
3. Agriculture and Environmental Microbiology
   III UG Microbiology - V Sem
4. Microbial Inoculants. (U5RMBMBE1)
   III UG Microbiology - V Sem.

Subject : Microbial physiology

Sub.code : P1R1MBCC3

class : I PG Microbiology

Unit : I cell Structure and Function

Cell Structure and function - Biosynthesis of peptidoglycan - outer membrane. Teichoic acid - Exopolysaccharides; cytoplasmic membrane, Pili, fimbriae, S-layer, cell inclusions, Transport mechanisms - active, passive, facilitated diffusions - Uni, Sym, antiports. Iron Uptake - Pinocytosis and Pagocytosis.

Unit : II Microbial Growth.

Microbial growth - Phases of growth - growth curve - measurement of growth - Calculations of Synchronous Growth, Synchrony index - factors affecting growth - PH, temperature, Substrate in thermophilic, alkalophilic, Osmophilic and psychrophilic. Bioluminescence - mechanism advantages.

Unit : III Microbial pigments.

Microbial pigments - Autotrophs - cyanobacteria - photosynthetic bacteria and green algae - heterotrophs - bacteria, fungi, myxotrophs, Brief account of photosynthetic and

19.12.20 Day order

Inhibitors of electron transport chain :-

① Complex I → rotenone amobarbital & piericidin A.

② complex III → antimycine A dimercaptrol

③ complex IV → cyanide, hydrogen sulphide, carbon monoxide, Sodium azide.

Uncouplers of oxidative phosphorylation.

2.4 dinitrophenol

thermogenin → uncoupling protein thyroxine.

① Adenine nucleotide transporter

② The phosphate transporter.

Substrate level phosphorylation

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No.9
NOTES OF LESSON
Odd Semester (2020-2021)

S. Vijaya Samundeeswari
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Department of Microbiology

Lesson plan Note

2020 - 2021 (Odd Semester)

3.8.20 Day Order I Hours I, II

Topic:- Introduction

* Important branch of Microbiology which deals with those areas of microbiology involving economic aspects.
* Valuable Products are Prepared from cheapest things and often disposable Substrates.
* Conversion of the Substrate into a desired Products is affected by the microbial activity.

Day order : VI Hour: II

15.8.20 Topic:- Terminologies.

1. Fermentor.
2. Fermeter.
3. Production modes
4. Inducers.
5. Precursor.
6. Inhibitors.
7. Antifoaming agents.
8. Downstream process.
9. IPR.
10. Intra and Extracellular Product.

Day Order : I Hour : I, II

17.8.20 Topic: Screening methods.

* Detection and isolation of high yielding Species from the natural Source, such as Soil Containing a heterogeneous microbial Population is called Screening.

Types: 1. Primary Screening.
2. Secondary Screening.

3.12.20
3/12

Day order: V Hour: V

Topic: Metal Corrosion

* Microbial corrosion is also called bacterial corrosion, bio-corrosion, microbiologically influenced corrosion or microbially induced corrosion (MIC).

* It's a corrosion caused or promoted by mo's usually chemoautotrophs.

* Corrosion is the deterioration of the metals

*

Day order: VI Hour: V

4/12/20

Topic: Microbial degradation - Paper - Leather

* Microbes produce cellulolytic enzyme which is responsible for biodeterioration of paper.

* cellulose - Oligosaccharides - cellobiose + cellulotetrose → Glucose → Gluconic acid.

* Leather defined as a durable and flexible material created by the tanning of animal skin.

Hour: IV

5.12.20
5/12

Day order: I

Topic: Microbes involved in biodegradation.

* The breakdown of toxic substances by treating with efficient strains of mo's is called degradation.

* Biodegradation disposes toxic substances so it's known as biodegradation of toxic substances.

* Usually toxic substances biological origin and non-natural such substances are called xeno

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NOTES OF LESSON

Odd Semester (2020-2021)

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மரம் வளர்ப்போம் !
மழை பெறுவோம் !

NAME Dr. M. Poornima, M.Sc., Ph.D STD. ..... SEC. ..... ROLL No. .....

SCHOOL / COLLEGE J.J. College of Arts and Science (A) SUB. .....

S.No.	Date	Title	Page No.	Marks	Teacher's Sign / Remarks
		Department of Microbiology			
		Notes of Lesson - ODD Semester (2020 - 2021)			
1.	I UG	Fundamentals of Microbiology			
2.	III UG	Microbial Genetics			

Date: 04.09.2020 Day order: 1st Hour: 3rd

→ Microbiology essentially began with the development of the microscope.

→ Leeuwenhoek conveyed his findings in a series of letters to the British Royal society during the mid 1670's.

→ Although his observations stimulated much interest, no more made of series attempt either to repeat or to extend them.

→ Animalcules as he called them, thus remained mere oddities.

Date: 05.09.2020 Day order: 2nd Hour: 3rd

Spontaneous Generation

→ Aristotle discarded this notion, but he still held that animals could arise spontaneously from dissimilar organisms or from soil.

→ Spontaneous generation was still felt as late as the 17th century.

→ Chain of observations, experiments and arguments began that eventually refuted the idea.

Date: 07.09.2020 Day order: 3rd Hour: 5th

Scope of Microbiology

→ Microorganisms are present everywhere on earth which includes humans, animals, plants and other living creatures, soil, water and atmosphere.

→ Microbes can multiply in all three habitats except in the atmosphere.

→ They are required for the production of bread, cheese, yogurt, alcohol, wine, beer, antibodies, vaccines, vitamins etc...

Date: 21.10.2020 Day order: 1st Hour: 3rd

Eukaryotes

→ Eukaryotic cells are larger than prokaryotic cells and have a "true" nucleus, membrane-bound organelles, and rod-shaped chromosomes.
→ The nucleus houses the cell's DNA and directs the synthesis of proteins and ribosomes.
→ It consists of two phospholipid bilayers: an outer membrane and an inner membrane.
→ vesicles and vacuoles are membrane-bound sacs.

Date: 22.10.2020 Day order: 2nd Hour: 3rd

Cyanobacteria

→ cyanobacteria, also called Blue-green algae, large, heterogenous group of prokaryotic, principally photosynthetic organisms.
→ Algae have since been reclassified as protists.
→ The prokaryotic nature of the blue-green algae has caused them to be classified with bacteria in the prokaryotic kingdom Monera.

Date: 24.10.2020 Day order 3rd Hour: 5th

Eubacteria

→ Eubacteria are small organisms that cannot be seen by naked eyes.
→ Thus microscopes are used to visualize and study their morphology.
→ Eubacteria reproduction usually includes dividing the parent cell into two daughter cells after the replication of genetic material in a process called binary fission.

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