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Date.....

This is to certify that the following ICT enabled tools for effective teaching-learning process was used by the various Departments in the session 2020-2021 at Rabindra Mahavidyalaya, Champadanga, Hooghly, West Bengal


Principal
Rabindra Mahavidyalaya
Champadanga • Hooghly

Dr. Prasanta Bhattacharyya
Principal

Session 2020-21

Teachers use ICT enabled tools for effective teaching-learning process.

Due to Covid-19 entire teaching learning was switched to online mode. Google Meet, Zoom, etc were used for teaching through. desktop, Laptop. Smart Phone etc. Video, PPT, PDF, excel, etc files were shared for study material. E-Journals and e-books were used for effective teaching and learning.

Some screenshots of the same are attached here.

Department of Botany (2020-2021)

Snapshots/ screenshots of E-resources and techniques used

Screenshot (sample) of E- Journal Resource

The screenshot displays a PDF document viewer interface. The top bar shows the file name 'acs_JF_if-2010-02939c 1..10', page number '1 / 10', and zoom level '100%'. The main content area shows the title page of a journal article. The journal is the 'JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY', published by 'pubs.acs.org/JAFC'. The article title is 'Impacts of Bt Transgenic Cotton on Integrated Pest Management' by Steven E. Naranjo*. The abstract states: 'Transgenic cotton that produced one or more insecticidal proteins of *Bacillus thuringiensis* (*Bt*) was planted on over 15 million hectares in 11 countries in 2009 and has contributed to a reduction of over 140 million kilograms of insecticide active ingredient between 1996 and 2008. As a highly selective form of host plant resistance, *Bt* cotton effectively controls a number of key lepidopteran pests and has become a cornerstone in overall integrated pest management (IPM). *Bt* cotton has led to large reductions in the abundance of targeted pests and benefited non-*Bt* cotton adopters and even producers of other crops affected by polyphagous target pests. Reductions in insecticide use have enhanced biological control, which has contributed to significant suppression of other key and sporadic pests in cotton. Although reductions in insecticide use in some regions have elevated the importance of several pest groups, most of these emerging problems can be effectively solved through an IPM approach.' The keywords are: *Bacillus thuringiensis*, transgenic crop, regional pest suppression, nontarget effects, insecticide use patterns, pest damage, biological control, integrated pest management. The introduction begins: 'The cultivation of crops that have been genetically engineered (GE) to tolerate certain herbicides and resist specific insect pests has become dominant in several countries worldwide. Between 1996 and 2009 GE crops were grown on nearly 1 billion hectares of farmland globally. Adoption continues to grow at a rapid pace...' and continues: '...was first legally allowed in 2002, and adoption rates there have risen dramatically, with 87% of production in *Bt* varieties by 2009. Burkina Faso was the latest large-scale cotton-producing nation, and the second nation on the African continent, to allow *Bt* cotton cultivation, joining the list of adopters in 2008. Costa Rica permitted production in 2009, but all of its small output is for seed...'. A sidebar on the left shows a thumbnail of the document and a vertical text notice: 'On April 13, 2023 at 12:00:34 (UTC), users on how to legitimately share published articles.'

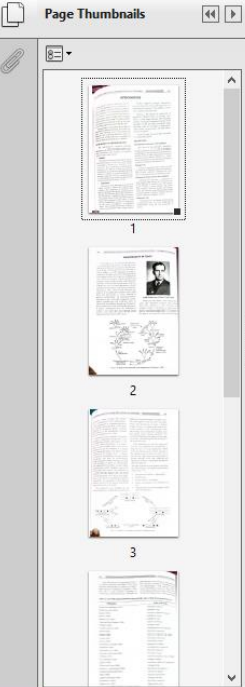
PDF Sample

Chapter. Heterokaryosis and Parasexuality.pdf - Adobe Reader

File Edit View Window Help

1 / 7 50%

Page Thumbnails



HETEROKARYOSIS

Heterokaryosis (or hetero-, dissimilar, karyons, nuclei) is the phenomenon of coexistence of genetically different nuclei in common cytoplasm. Hansen and Smith (1932) discovered the phenomenon in *Botrytis cinerea* and are now found in most of the fungi. It plays a major role in bringing variability and sexuality in fungi. This phenomenon is a prerequisite for parasexual cycle, in the same way as heterozygosity for sexual reproduction.

Heterokaryosis in fungi have given different responses by different scientists, may lead confusion. Later, Parmeter et al. (1963) stated that dikaryotic cell, containing dissimilar nuclei (in pairs of sets), is heterokaryotic, an example out of several types of heterokaryotic condition.

DEVELOPMENT OF HETEROKARYOSIS

The heterokaryotic condition develops through any one of the procedures such as mutation, anastomosis and inclusion of dissimilar nuclei in spores after meiosis.

- 1. Mutation**
The mutation frequently takes place in fungi, is the main source of variability in many species of *Aspergillus*, *Penicillium*, *Fusarium*, *Venturia* etc. and maintaining a homokaryotic condition is very difficult. In USA, new races of *Phytophthora* are commonly developed through mutation, in absence of sexual reproduction. In *Mutagenic* fungi like *Fusarium*, variants develop in wild cultures through mutation and give name as Dual phenomenon (Hansen, 1938).
- 2. Anastomosis**
Anastomosis is the phenomenon of fusion of hyphae caused to develop the heterokaryotic condition. The anastomosis is commonly intra-specific, although inter-specific and inter-generic are also found. Hansen and Smith (1932) reported inter-specific anastomosis between *Botrytis cinerea* and *B. cinerea*. On the other hand, there are reports that cytoplasmic deterioration of fused cells and antigen-like reactions are reported to be the cause of cytoplasmic incompatibility (Raper, 1961). But the actual reason of failure or success of anastomosis is not yet clearly known.

Nuclear migration through anastomosis from one mycelium to the other give rise to a heterokaryotic mycelium. This condition is commonly found in *Batiidiomycota*.

Meiosis is the process of production of genetically different nuclei in common cytoplasm. In some fungal members like *Podospora anserina*, *Neurospora tetrasperma* and also in the members of other secondary holocephalic fungi, dissimilar nuclei are included in single spore. These spores on germination develop heterokaryotic mycelium.

In asexual stage, this occurs very commonly in multinucleate spores.

SIGNIFICANCE

Development of new race of the pathogen
New races of the pathogen, developed through anastomosis of the mycelium of different pathogenic races are able to cause infection in resistant variety of wheat, where earlier races are not able to cause infection (Nelson et al., 1955). Similar development of new races may develop in *Linsaed* rust caused by *Melanospora lini*.

Pathogenicity
It plays an important role to cause rust and smut diseases in different important crop plants. Heterokaryotic condition is essential for infection in one group of hosts in heterocyclic rusts.

Substrate for Heterozygosity and Variability
Heterokaryosis provides a substitute for heterozygosity rather than for sex. Its significance as the dispenser of variability was first emphasized in *Botrytis cinerea* (Hansen and Smith, 1932; Hansen, 1938 and Hansen and Snyder, 1943). The variability gained through this process provides plasticity in fungi to tackle the environmental condition with greater success.

Parasexual cycle
Heterokaryosis is an integral and initial step of parasexual cycle. It is to be noted that all heterokaryotic fungi are not parasexual in nature.

PPT. Sample

JAYITA SAHA

INDUCIBLE AND REPRESSIBLE OPERON: POSITIVE AND NEGATIVE CONTROL

JAYITA SAHA

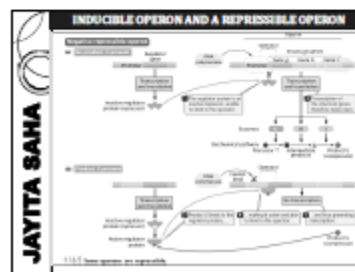
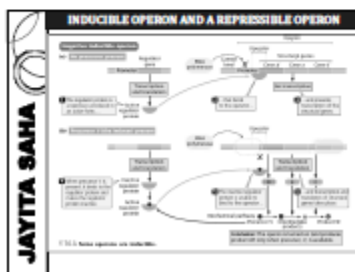
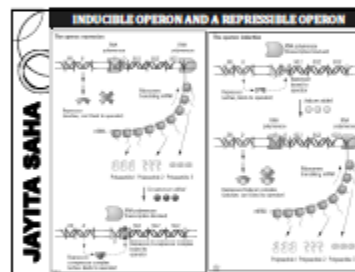
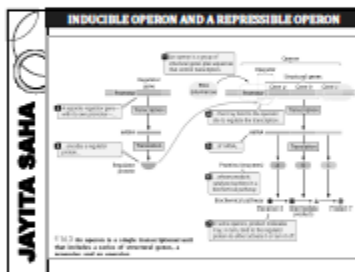
INDUCIBLE OPERON AND A REPRESSIBLE OPERON

INDUCIBLE OPERON:

- The repressor binds to the operator(s) of an inducible operon.
- Inducible operon is turned off in the absence of the effector (inducer) molecule.
- Lac operon.

REPRESSIBLE OPERON:

- The repressor / effector molecule complex binds to the operator(s) of a repressible operon.
- A repressible operon is turned on in the absence of the effector (corepressor) molecule.
- Tryp operon.



Word Doc. Sample

Unit_2_Species concept [Compatibility Mode] - Word

FILE HOME INSERT DESIGN PAGE LAYOUT REFERENCES MAILINGS REVIEW VIEW

Cut Copy Paste Format Painter Clipboard

Times New Roman 12 A A Aa

B I U abc x₂ x² A a

Paragraph

Styles: Normal, Body Text, No Spacing, Heading 1, Heading 2, Heading 4, Heading 5

CC-6: Plant Systematics
Unit 2: Taxonomic Hierarchy
Topic: Species concept

Reference: E content from biology discussion & other online available sources

History of Species Concept:
Species is the fundamental unit of taxonomic hierarchy. Davis (1978) called them "Building blocks" in Biological classification. In biological phenomena biosystematics concept is the oldest one. It is the lowest category of hierarchy which is consistently used and recognized by all the botanists. According to Stebbins (1977) is the basic unit of evolutionary process. It starts with the great Philosopher Plato who proposed concept of *eidola* or species and believed that all objects are shadows of the "eidola". Mayr (1957) suggested that variations in species are found and presented on typological species concept. Principle of logical division by Aristotle based in part upon Plato's idea was the basis of Taxonomy serving as schema upon which "species concept" is based. Species was considered to be a relative term applicable to various levels in a classification scheme. A logical relationship was also established between genus and species. Then species was defined on a priori basis and regarded as unchanging and fixed. After the knowledge of a number of organisms, people started facing difficulty as there are species which belong to different genera.

Typological Species Concept or Taxonomic species concept:
According to it species is "A very natural group of organisms; hence a natural taxon in classification has an invariant generalized or idealized pattern shared by all members of the group".

Biological Species Concept:
It was presented by Dobzhansky (1937). He suggested that "species is a group of interbreeding natural populations that are reproductively isolated from such other group."

Evolutionary Species Concept:
According to this concept, species is "a spatial, temporal lineage of populations that evolves separately from other lineages and has its own ecological niche".

Species as Individuals:

After the knowledge of some monotypic taxa, philosophical problems, biological and evolutionary problems like gene flow etc. the questions arises as whether species might not better be regarded as individuals rather than classes. The general accepted concept is, "species is a unit of taxonomic convenience, and that the populations, in the sense of a geographically constrained group of individuals with some unique amorphous characters, is the unit of evolutionary significance, species is regarded as real by most of the taxonomists.

Current Species Concepts:

A. Morphological Species Concept:
Morphologic species or **Morphospecies** concept is also called as classical **phenetic** species concept or Linnaean or classical species concept.

The concept suggests that:

- (a) Species are the smallest group that are consistently and persistently distinct and distinguishable by ordinary means.
- (b) It is easily recognized kind of organisms, and in macroscopic plants and animals their recognition should rest on simple gross observation (May be with hand lens only).
- (c) It is a community of a number or related communities, where distinctive morphological characters are one.

Morphological or classical species concept of readily recognized and morphologically defined species is practical and efficient system for information retrieval in most of the flowering plants. This concept is useful and meaningful even for those plants where hybridization is common (e.g., *Quercus*).

B. Biological Species Concept:
This concept is held conceptually by most researchers at the present time.

It has two aspects:

- (a) A group of interbreeding populations.
- (b) Reproductively isolated from other such group.

Utility of this concept is that it deals with reproductive isolations. Krakeberg (1969) stressed that the bio-species also differ in their ecological contexts.

Love (1954) accorded species status to morphologically indistinguishable **cytoplasms**.

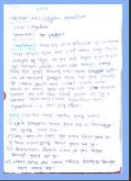
Grant (1966) used the biological species concept and created a new diploid species of **Gilia** (*Polemoniaceae*) experimentally through artificial relation over ten generations in 14 years.

PAGE 1 OF 3 937 WORDS ENGLISH (UNITED STATES)


Scanned hand written notes (Sample in Bengali for general stream)

← → ↻ ① File | C:/Users/USER/Downloads/Adobe%20Scan%2013%20Apr%202023.pdf

☰ Adobe Scan 13 Apr 2023.pdf 1 / 2 | - 67% + [] ↻



1



2

শালি

বিশ্বাসযোগ্য নাম : *Syzygium anomalicum*

কোষ : Myrtaceae

অন্যান্য নাম : মুকুট মুকুট

Morphology : শাখা গাছ 10-20 মিটার লম্বা হয়। শাখাগুলি
সামান্য লম্বাচারে থাকে এবং ১.৩মি মাস্থ্য থাকে। কোর্টেক্স
সামান্যই শুষ্ক হয়, এক-কোষ বিশিষ্ট কক্ষের দ্বারা আবৃত
হয়। পত্রবিশেষ বিশিষ্ট। পাতার পৃষ্ঠে অস্বাদু। পাতার
নীচে দিকে সুগন্ধী স্রাব থাকে। অনেক মুকুট মুকুট
এক এই আকারের মুকুট মুকুট হয়। পাতার
দুই। পত্রবিশেষ বিশিষ্ট নামে নামে - বাগান মনে।
আমের গা নব্বা মুকুট করে তবে ৫টি মুকুট অপরিণত
চলিয়ে এক গাট্টে যুক্ত বিশিষ্ট মুকুট এক মুকুট
দ্রব করে অংশ অংশ। নামে Hypanthium বলে।
Hypanthium - এ বেশ প্রচুর রয়েছে।

ব্যবহার : (i) শাখা আঁচলে বিশিষ্ট সুগন্ধি গন্ধ।
(ii) মুকুট মুকুট মুকুট আমের মুকুট করে যা বিশিষ্ট মুকুট
এই সুগন্ধি গন্ধে হয়।
(iii) শাখা, পাতা etc. মুকুট গাছ সামান্য বিশিষ্ট মুকুট হয়।
(iv) পাতার স্রাব শুষ্কী ক্রিয়ার মুকুট করা হয়।

Scanned hand written notes (Sample for Honours stream)

The image shows a PDF viewer interface with a sidebar on the left displaying page thumbnails (1, 2, 3) and a main window showing handwritten notes on glycolysis. The notes are dated APRIL 19, 01, and include the following content:

- Glycolysis**
- Starch $\xrightarrow{\text{Phosphorylase}}$ Glucose-1-P
- Glucose-1-P $\xrightarrow{\text{Phosphoglucomutase}}$ Glucose
- Glucose + H_2O $\xrightarrow{\text{Invertase}}$ Fructose
- Glucose $\xrightarrow{\text{Hexokinase}}$ Glucose-6-P (uses $\text{ATP} \rightarrow \text{ADP}$)
- Glucose-6-P $\xrightarrow{\text{Hexose-P-isomerase}}$ Fructose-6-P
- Fructose-6-P $\xrightarrow{\text{Fructokinase}}$ Fructose-1,6-bisphosphate (uses $\text{ATP} \rightarrow \text{ADP}$)
- Fructose-1,6-bisphosphate $\xrightarrow{\text{Phosphofruktokinase (PFK)}}$ Fructose-1,6-bisphosphate (uses $\text{ATP} \rightarrow \text{ADP}$)
- Preparatory Phase**
- Phosphorylation of Glucose & its conversion to α -D-3-P
- Fructose-1,6-bisphosphate

E-Book PDF (Sample)

The image shows a PDF viewer interface displaying the title page of an e-book. The viewer shows page 1 of 192 at 90% zoom. The title page content is:

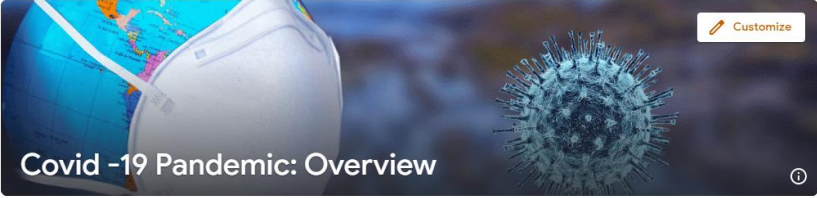
- intro_botany.pdf
- 1 / 192 | 90%
- Introduction to Botany**
- Alexey Shipunov
- Illustration of a plant with leaves and a seed pod.

Google Classroom

The screenshot shows the Google Classroom interface for a class titled "SEMESTER IV AND V HONOURS AND GENERAL". The browser address bar shows the URL: classroom.google.com/u/1/c/MTU3OTgzOTk3MjA4. The top navigation bar includes "Stream", "Classwork", "People", and "Marks". The main content area features a green header banner with the text "SEMESTER IV AND V HONOURS AND GENERAL" and a "Customise" button. Below the banner, the class code is "sjynd5". A message box says "Announce something to your class". The "Upcoming" section shows "No work due in soon" with a "View all" link. The "Stream" section contains two assignment cards from "RABINDRA MAHAVIDYALAYA" dated "25 Nov 2020", both titled "Cellular and Molecular Im..." and "PDF". There is also a comment input field and a "Add class comment..." button.

The screenshot shows the Google Classroom interface for a class titled "SEMESTER II AND III HONOURS AND GENERAL". The browser address bar shows the URL: classroom.google.com/u/1/c/MTU3OTgzOTk3MjA4. The top navigation bar includes "Stream", "Classwork", "People", and "Marks". The main content area features a green header banner with the text "SEMESTER II AND III HONOURS AND GENERAL" and a "Customise" button. Below the banner, the class code is "6qgeg4b". A message box says "Announce something to your class". The "Upcoming" section shows "No work due in soon" with a "View all" link. The "Stream" section contains three assignment cards from "RABINDRA MAHAVIDYALAYA" dated "25 Nov 2020" and "9 Nov 2020", all titled "Cellular and Molecular Im..." and "PDF". There is also a comment input field and a "Add class comment..." button.

☰ Covid -19 Pandemic: Overview Stream Classwork People Grades ⚙️



Covid -19 Pandemic: Overview Customize

Class code: qtqgd45

Upcoming: No work due soon View all

Announce something to your class


Dr. Jayita Saha posted a new material: Class Material on "COVID-19 PANDEMIC: OVERVIEW"

Posted Aug 4, 2020
You have to read the material before doing the assignment.

Drive file: Unknown File

7 class comments

☰ SEMESTER I and II (2020-21) HONOURS AND GENERAL Stream Classwork People Grades ⚙️



SEMESTER I and II (2020-21)
HONOURS AND GENERAL Customize

Class code: 74ej6dm

Upcoming: No work due soon View all

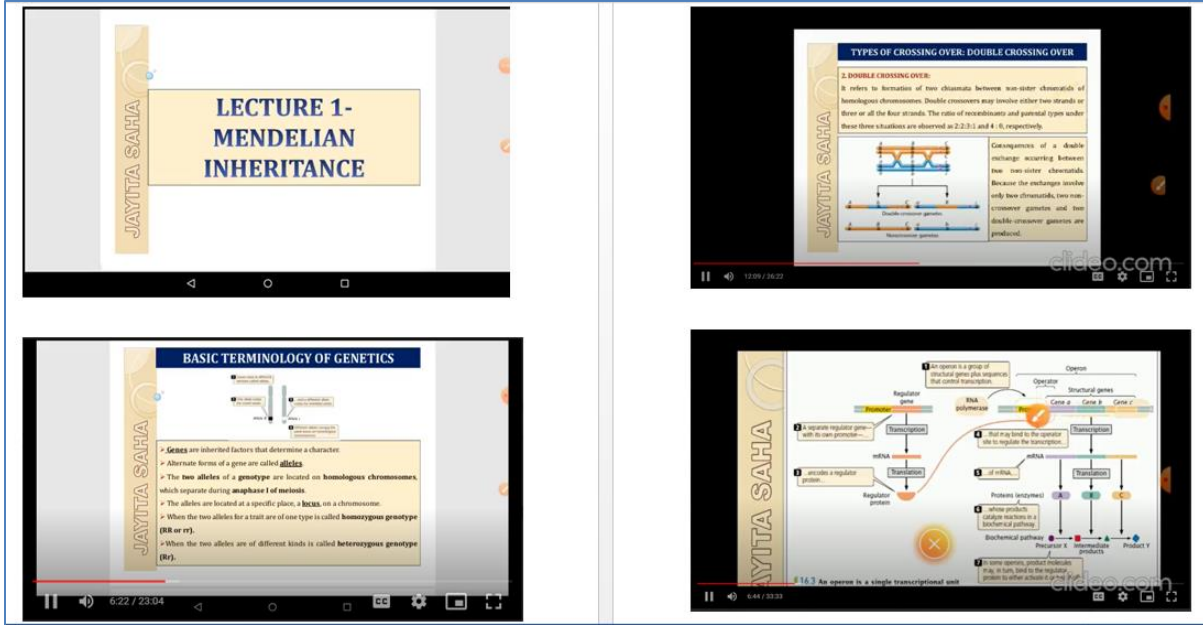
Announce something to your class

Dr. Jayita Saha posted a new assignment: SEM II [G] : Submission of Assignment
Jul 22, 2021 (Edited Aug 25, 2021)

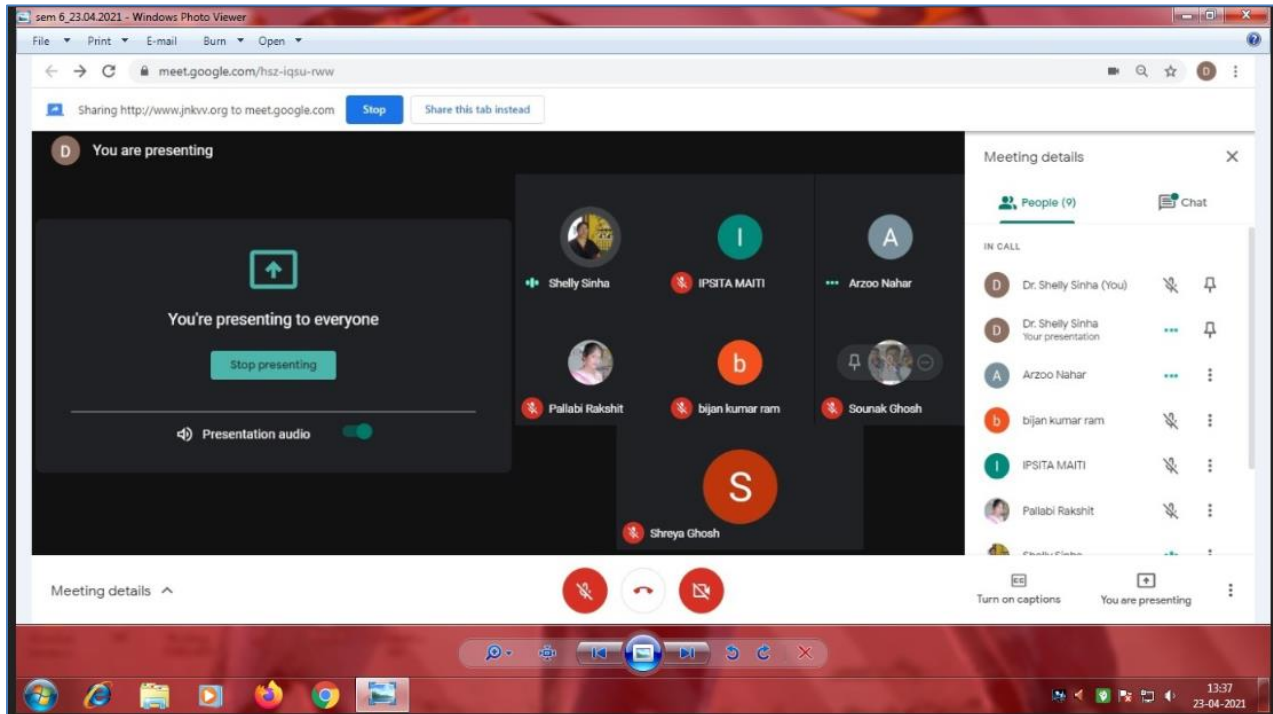
Dr. Jayita Saha posted a new assignment: SEM II [H] : Submission of Assignment
Jul 22, 2021 (Edited Aug 25, 2021)

Dr. Jayita Saha posted a new assignment: SEM II [G] : Submission of Assignment
Jun 6, 2021 (Edited Aug 25, 2021)

Screenshot of Video (Sample)



Google Meet



Department of Chemistry (2020-2021)

Snapshots/ screenshots of E-resources and techniques used

Screenshot (sample) of Resources

PPT Sample

Section 7.2
The Nature of Matter

PRESENTED BY
DR. SUCHETA JOY

Section 7.5
The Bohr Model and Why It's the Rutherford's MODEL

- It didn't explain WHY metals and metal compounds give off characteristic colors when they are flame tested
- It didn't explain why metals glow when heated – first red, orange yellow and then white
- It didn't explain the CHEMICAL properties of elements

Section 7.4
The Bohr Model

- Bohr's model gave hydrogen atom energy levels consistent with the hydrogen emission spectrum.
- Ground state – lowest possible energy state ($n = 1$)
- Bohr's model is incorrect. This model only works for hydrogen.
- Electrons do not move around the nucleus in circular orbits.

Electronic Transitions in the Bohr Model for the Hydrogen Atom

Electronic Transitions in the Bohr Model for the Hydrogen Atom

As n Increases, Transitions Diagrams Which Associate for the Experimental Spectrum

Section 7.5
The Quantum Mechanical Model of the Atom

SCHRODINGER'S THEORY

- He agreed that electrons have a specific amount of energy
- He believed that the distance between rungs on the ladder were not consistent – they get closer together as you move higher up
- Quantum – the amount of energy needed to move from one energy level to another

The electrons move in regions of probability around the nucleus called ORBITALS

Section 7.5
The Quantum Mechanical Model of the Atom

Quantum theory, also called wave mechanics, describes the arrangement and space occupied by electrons. Orbitals refers to the three dimensional regions in space where there is a high probability of finding an electron around an atom.

Chemistry Hons. SEM-IV
PHYSICAL CHEMISTRY
Applications of Thermodynamics-II
 By
Dr. Debasmita Sardar
 Assistant Professor
 Department of Chemistry
 Rabindra Mahavidyalaya
 Champadanga, Hooghly

10

Course Code- CC-8
 Course Title- Physical Chemistry-III (Theo)
Applications of Thermodynamics-II

11

Topics
Application of Thermodynamics - II

- Colligative properties: Vapour pressure of solution; Ideal solutions; Ideal dilute solutions and colligative properties; Raoult's law; Thermodynamic derivation using chemical potentials to derive relations between the four colligative properties, i.e., (i) relative lowering of vapour pressure, (ii) elevation of boiling point, (iii) Depression of freezing point, (iv) Osmotic pressure. Applications in calculating molar masses of solute; Abnormal colligative properties for dissociated and associated solutes in solution.
- Phase rule: Definitions of phase, component and degrees of freedom; Phase rule and its derivation; Phase diagram for water, CO₂, Sulphur
- First order phase transition and Clapeyron equation; Clausius-Clapeyron equation - derivation and use; Liquid vapour equilibrium for two component systems.

12

Ideal Solution

15

Ideal Solution

16

Ideal & Non-ideal Solution
Ideal solutions and Non-ideal solutions

Ideal solutions The solutions that obey Raoult's Law over the entire range of concentrations are known as ideal solutions.	Non-ideal solutions When a solution does not obey Raoult's Law over the entire range of concentration, then it is called non-ideal solution.
$\Delta_{mix} H = 0$ and $\Delta_{mix} V = 0$ The intermolecular attractive forces between solute molecules and solvent molecules are nearly equal to those present between solute and solvent molecules i.e. A-A and B-B interactions are nearly equal to those between A-B	$\Delta_{mix} H \neq 0$ and $\Delta_{mix} V \neq 0$ The intermolecular attractive forces between solute molecules and solvent molecules are not equal to those present between solute and solvent molecules i.e. A-A and B-B interactions are not equal to those between A-B

17

Vapour Pressure

the pressure exerted by a vapor on a liquid when they are in equilibrium

Vapour Pressure & Boiling Point

- Normal state
 - Vapour state

20

Vapour Pressure

- Normal state
 - Vapour state

21

Colligative Properties

Colligative properties are characteristics of a solution that depend on the ratio of the number of solute particles to solvent particles.

Freezing Point Depression	Boiling Point Elevation
Osmotic Pressure	Vapour Pressure Lowering

22

PDF Sample

Illustrations

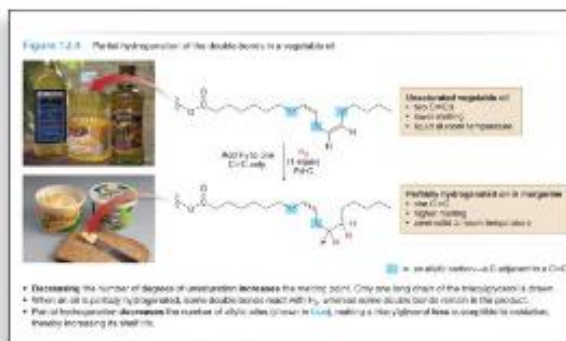
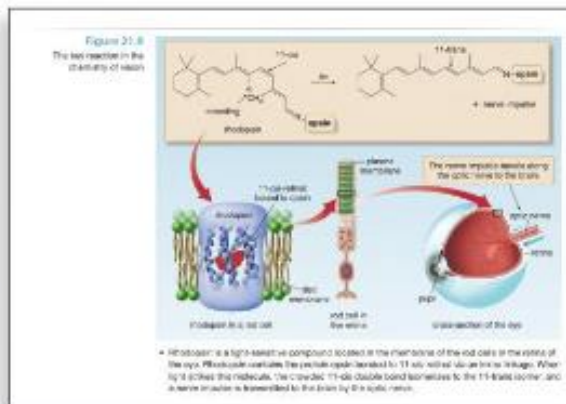
Organic Chemistry is supported by a well-developed illustration program. Besides traditional skeletal (line) structures and condensed formulas, there are numerous ball-and-stick molecular models and electrostatic potential maps to help students grasp the three-dimensional structure of molecules (including stereochemistry) and to better understand the distribution of electronic charge.

"I believe that dissecting the text gives students time to understand and to digest, step-by-step, each concept presented, rather than memorize them. This helps students in achieving better results faster. . . . The quality of the illustrations is very good, without unnecessary explanations that could make them confusing. The language is easy to follow, the concept easy to understand."

—Camelia Gogonea, Cleveland State University

Micro-to-Macro Illustrations

Unique to *Organic Chemistry* are micro-to-macro illustrations, where line art and photos combine with chemical structures to reveal the underlying molecular structures giving rise to macroscopic properties of common phenomena. Examples include starch and cellulose (Chapter 5), adrenaline (Chapter 7), partial hydrogenation of vegetable oil (Chapter 12), and dopamine (Chapter 25).



Class Materials

Slides Outline

11 Calculating osmotic pressure

- The total gas law states:
- But only n is $n = \frac{PV}{RT}$
- When n is in the $\frac{PV}{RT}$ portion of particles and P is the osmotic pressure
- Note: osmotic pressure is not the same as the total pressure

12 Osmotic pressure and molecular mass

- Molar mass can be computed from any of the colligative properties
- Osmotic pressure provides the most accurate determination because of the magnitude of Π (≈ 1000 atm) at given molar concentrations (e.g., 0.1 M) compared to other colligative properties (e.g., 0.1 M)

13 Determining molar mass

- A solution contains 20.0 mg insulin in 5.00 ml develops an osmotic pressure of 12.5 mm Hg at 300 K
- $M = \frac{\Pi}{RT}$
- Insulin is a protein with a molar mass of 5.8×10^4 g/mol

14

Determining molar mass

- A solution contains 20.0 mg insulin in 5.00 ml develops an osmotic pressure of 12.5 mm Hg at 300 K

$$M = \frac{\Pi}{RT}$$

$$M = \frac{12.5 \text{ mmHg} \cdot \frac{1}{760 \text{ mmHg}}}{0.0821 \frac{\text{L} \cdot \text{atm}}{\text{mol} \cdot \text{K}} \cdot 300 \text{ K}} = 6.68 \times 10^{-4} \text{ M}$$

Class taken by Dr. Sucheta Joy, Assistant Professor, department of Chemistry on colligative properties

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35

36

37

Molecular Polarizability

The size of the induced dipole μ , depends both on the magnitude of the applied field, E , and on the ease with which the molecule can be distorted.

$$\mu = \alpha E$$

where α is the polarizability of the molecule.

Polarizability is anisotropic

Least polarizability

Greatest polarizability

- Electrons forming the bond are less easily displaced by the field across the bond axis
- Electrons forming the bond are more easily displaced by the field along the bond axis

Class taken by Dr. Debasmita Sardar, Assistant Professor, department of Chemistry on Raman Spectroscopy

The Quantum Mechanical Model of the Atom

THERE IS A SET OF FIVE DIFFERENT *D* ORBITALS.
THERE IS A SET OF SEVEN *F* ORBITALS.
EACH ORBITAL REGARDLESS OF ITS SHAPE HOLDS 2 ELECTRONS.

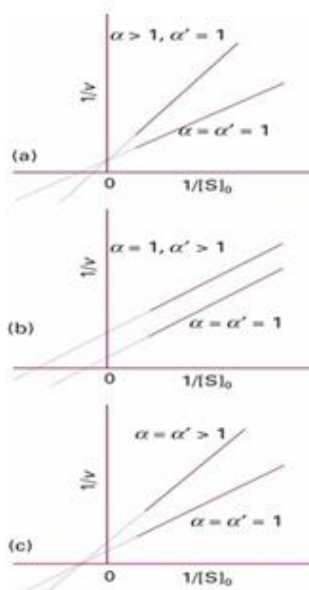
d orbitals

f orbitals

Figure 3-17
Investigating Chemistry, First Edition
© 2007 W.H. Freeman and Company

Return

Class taken by Dr. Dr. Sucheta Joy, Assistant Professor, department of Chemistry on atomic structure



- Lineweaver–Burk plots characteristic of the three major modes of enzyme inhibition:
- (a) competitive inhibition,
- (b) uncompetitive inhibition, and
- (c) non-competitive inhibition, showing the special case $\alpha = \alpha' > 1$.

$$[E]_0 = \frac{K_M[ES]}{[S]_0} \alpha + [ES] \alpha' = [ES] \left(\frac{\alpha K_M}{[S]_0} + \alpha' \right)$$

Class taken by Dr. Sucheta Joy, Assistant Professor, department of Chemistry on photochemistry


Slides Outline


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- 7

1. Prevention of Waste/By-Products

It is better to prevent waste/By Products than to treat or clean up waste after it is formed.

- ✓ Carry out a synthesis in such a way so that formation of waste (by-products) is minimum or absent.
- ✓ Cost involved in the treatment and disposal of waste adds to the overall production cost.
- ✓ The unreacted starting materials also form part of the waste.
- ✓ If discharged causes pollution and requires expenditure for cleaning-up.

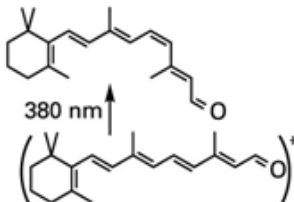




- ❖ An Ounce of Prevention is Worth a Pound Of Cure.
- ❖ A Chemist in a Green Chemistry lab is Performing Pollution Prevention on a Molecular level .

Class taken by Mrs. Subhra Dholey, SACT, department of Chemistry on green chemistry

Table 23.1 Examples of photochemical processes

Process	General form	Example
Ionization	$A^* \rightarrow A^+ + e^-$	$\text{NO}^* \xrightarrow{134 \text{ nm}} \text{NO}^+ + e^-$
Electron transfer	$A^* + B \rightarrow A^+ + B^-$ or $A^- + B^+$	$[\text{Ru}(\text{bpy})_3^{2+}]^* + \text{Fe}^{3+} \xrightarrow{452 \text{ nm}} \text{Ru}(\text{bpy})_3^{3+} + \text{Fe}^{2+}$
Dissociation	$A^* \rightarrow B + C$	$\text{O}_3^* \xrightarrow{1180 \text{ nm}} \text{O}_2 + \text{O}$
	$A^* + B-C \rightarrow A + B + C$	$\text{Hg}^* + \text{CH}_4 \xrightarrow{254 \text{ nm}} \text{Hg} + \text{CH}_3 + \text{H}$
Addition	$2 A^* \rightarrow B$	$2 \left(\text{CH}_2=\text{CH}-\text{CH}=\text{CH}_2 \right)^* \xrightarrow{230 \text{ nm}} \text{Cyclobutane}$
	$A^* + B \rightarrow AB$	
Abstraction	$A^* + B-C \rightarrow A-B + C$	$\text{Hg}^* + \text{H}_2 \xrightarrow{254 \text{ nm}} \text{HgH} + \text{H}$
Isomerization or rearrangement	$A^* \rightarrow A'$	

* Excited state.

Table 23-1
Atkins Physical Chemistry, Eighth Edition
 © 2006 Peter Atkins and Julio de Paula

Class taken by Dr. Sucheta Joy, Assistant Professor, department of Chemistry on photochemical process

Scanned hand written notes

For anharmonic oscillator, find the expression for dissociation energy (D_0) and dissociation energy (D_e) in terms of $\bar{\omega}_e$ and x_e .

Quantised vibrational energy

$$E_v = (v + \frac{1}{2})\bar{\omega}_e - (v + \frac{1}{2})^2 x_e \bar{\omega}_e \quad (1)$$

For max value of quantisation Energy

$$\frac{dE_v}{dv} = 0 \quad (2)$$

From (1) $\frac{dE_v}{dv} = \bar{\omega}_e - 2(v + \frac{1}{2}) \cdot 1 \cdot \bar{\omega}_e x_e$

$$= \bar{\omega}_e - 2v \bar{\omega}_e x_e - \bar{\omega}_e x_e$$

$$= \bar{\omega}_e (1 - 2v x_e - x_e) \quad [\bar{\omega}_e \neq 0]$$

From (1) & (2) $1 - 2v x_e - x_e = 0$

$$1 - x_e = 2v x_e \quad \therefore v_{max} = \frac{1 - x_e}{2x_e} = \frac{1}{2x_e} - \frac{1}{2}$$

$$E_{v,max} = (v_{max} + \frac{1}{2})\bar{\omega}_e - (v_{max} + \frac{1}{2})^2 \bar{\omega}_e x_e = (\frac{1}{2x_e} - \frac{1}{2} + \frac{1}{2})\bar{\omega}_e - (\frac{1}{2x_e} - \frac{1}{2} + \frac{1}{2})^2 \bar{\omega}_e x_e$$

$$E_{v,max} = \frac{\bar{\omega}_e}{4x_e} = D_e$$

$D_0 = D_e - E_{zero pt} = \frac{\bar{\omega}_e}{4x_e} - [\frac{1}{2}\bar{\omega}_e - \frac{1}{4}\bar{\omega}_e x_e]$

$$D_0 = \frac{\bar{\omega}_e}{4x_e} - \frac{1}{2}\bar{\omega}_e (1 - \frac{1}{2}x_e)$$

Class taken by Dr. Debasmita Sardar, Assistant Professor, department of Chemistry on IR Spectroscopy

RMV Online: For Chemistry Sem-II (Acid base) Part-2

Watch later Share

H_2SO_4 H_2SO_3
 Oxidation no. of Sulfur +6 +4

With the increase of positive oxidation state of the central atom, for a particular series of oxoacids, the acidic strength increases. i.e. the acidic strength of oxoacids increases with the increase of the positive oxidation state of the central atom.

$\text{H}_2\text{SO}_4 > \text{H}_2\text{SO}_3$

$\text{HNO}_3 > \text{HNO}_2$

In the case of formal charge, oxidation no. of the central atom of the oxoacid leads to an increase in acidic strength.

Oxidation no. of N: +5 +3

Oxidation no. of Cl: +7 +5

YouTube

0:07 2:34

Class taken by Dr. Rabiul Alam, Assistant Professor, department of Chemistry on acid-base

Evolution chart

$\nu_{C-H} \text{ (alk)} \rightarrow$	$2850-2950 \text{ cm}^{-1}$	} $\nu_{C-H} \text{ (alk)}$
$\nu_{C-H} \text{ (alkene)} \rightarrow$	$1600-3000 \text{ cm}^{-1}$	
$\nu_{C-H} \text{ (alkyne)} \rightarrow$	$2100-2260 \text{ cm}^{-1}$	} $\nu_{C-H} \text{ (alkyne)}$
$\nu_{C-H} \text{ (aromatic)} \rightarrow$	$3000-3100 \text{ cm}^{-1}$	
$\nu_{C=C} \rightarrow$	1640 cm^{-1}	} $\nu_{C=C}$
$\nu_{C=O} \rightarrow$	1700 cm^{-1}	
$\nu_{C-O} \rightarrow$	1050 cm^{-1}	} ν_{C-O}
$\nu_{C-N} \rightarrow$	1250 cm^{-1}	

Stretching

Aldehyde, ketone, acid	$1700-1725 \text{ cm}^{-1}$
Alkene	$1620-1680 \text{ cm}^{-1}$
Alkyne	$2100-2260 \text{ cm}^{-1}$
Alkyne (terminal)	$2100, 2260 \text{ cm}^{-1}$
Alkyne (internal)	$2100, 2260 \text{ cm}^{-1}$
Alkyne (sym. alkyn)	$2100, 2260 \text{ cm}^{-1}$
Alkyne (asym. alkyn)	$2100, 2260 \text{ cm}^{-1}$

Bending

$\nu_{C-H} \text{ (bend)}$	$1300-1450 \text{ cm}^{-1}$
$\nu_{C=C} \text{ (bend)}$	$1450-1600 \text{ cm}^{-1}$
$\nu_{C-O} \text{ (bend)}$	$1050-1300 \text{ cm}^{-1}$
$\nu_{C-N} \text{ (bend)}$	$1050-1300 \text{ cm}^{-1}$

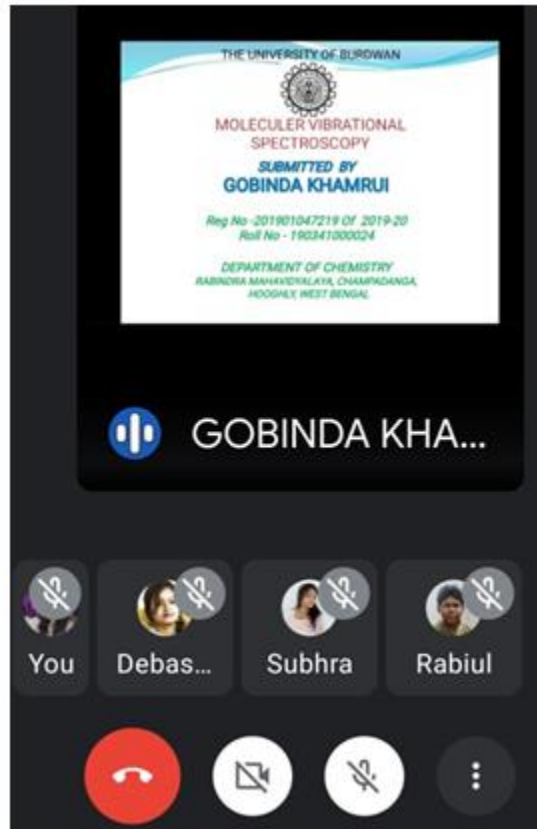
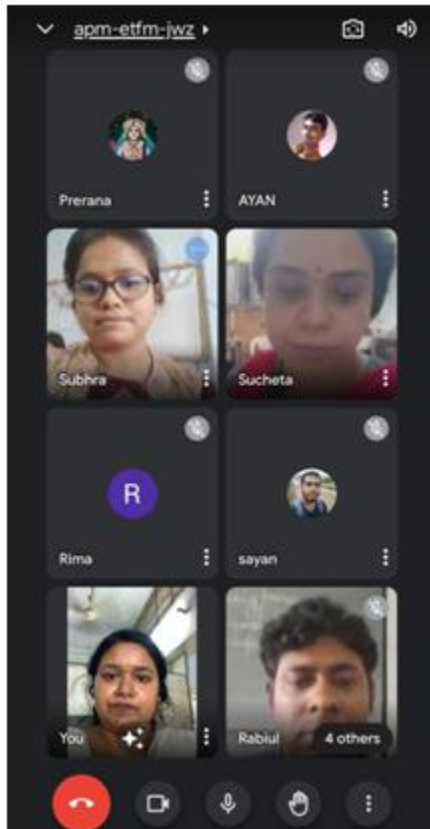
Diagrams:

Notes:

- This is also (1-0)
- having (1) change p leads dot (inductive effect)
- so stretching value for C-C is very high

Class taken by Mrs. Subhra dholey, SACT, department of Chemistry on stretching frequency

Google Classroom

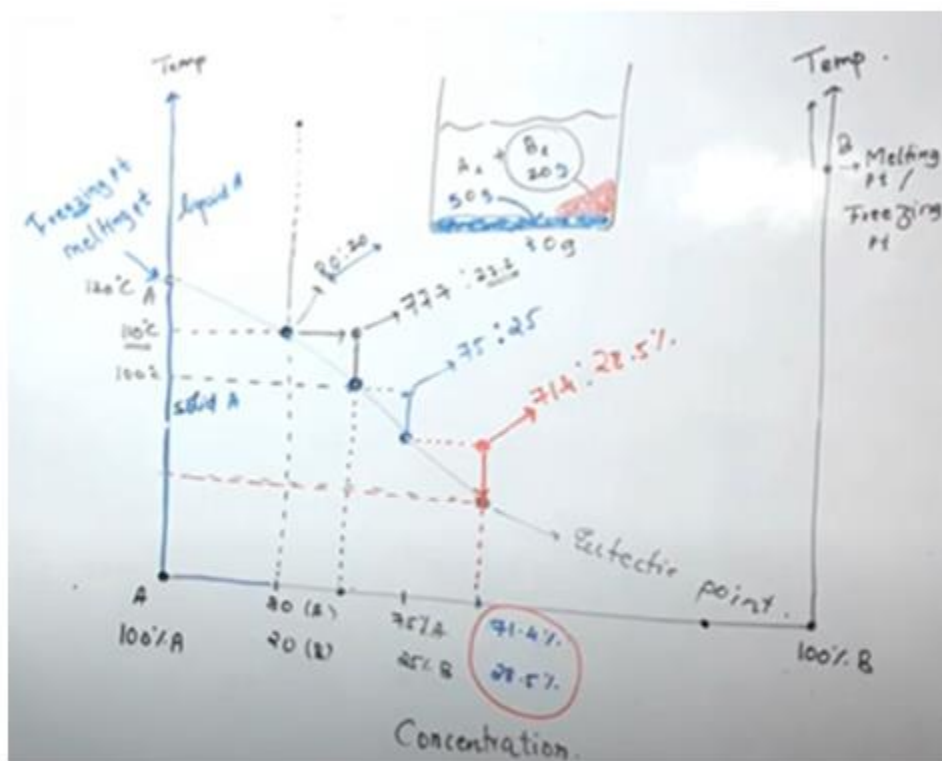


Deviation from ideal behaviour

$P_T = P_A + P_B$
 $P_A = P_A^0 \times x_A$
 Raoult's law

Ideal Soln

Class taken by Dr. Debasmita Sardar, Assistant Professor, department of Chemistry on solutions



Class taken by Dr. Debasmita Sardar, Assistant Professor, department of Chemistry on phase equilibrium

Students Review for online classes & uploaded class notes

 RMV Online

Home Library Login

Department of Chemistry



Teaching Learning Materials for Chemistry

By [Abir Mondal](#) on 2020-05-29 06:34:21

Online class is very very helpful and effective at the vital time

By [Abir Mondal](#) on 2020-05-29 06:33:42

Online class is very very helpful and effective at the vital time

By [Abir Mondal](#) on 2020-05-28 07:51:55

Online class is very very helpful and effective at the vital time

By [Abir Mondal](#) on 2020-05-28 07:50:59

Online class is very very helpful and effective at the vital time

By [Monisankar Mukherjee](#) on 2020-05-14 07:20:23

Thank u sir and ma'am .

← SJ class

Name ↑

- Absorption-1-28. 05.2020
Modified 30 May 2020
- Absorption-2-02. 06.2020
Modified 9 Jun 2020
- Absorption-3-05. 06.2020
Modified 9 Jun 2020
- Photochemistry-1-05. 05.2020
Modified 7 May 2020
- Photochemistry-2-07. 05.2020
Modified 7 May 2020
- Photochemistry-3-12. 05.2020
Modified 16 May 2020
- Photochemistry-4-14. 05.2020
Modified 16 May 2020
- Demer Spectroscopy: 1-28. 04.20

Practical Exam Viva (in presence of External)

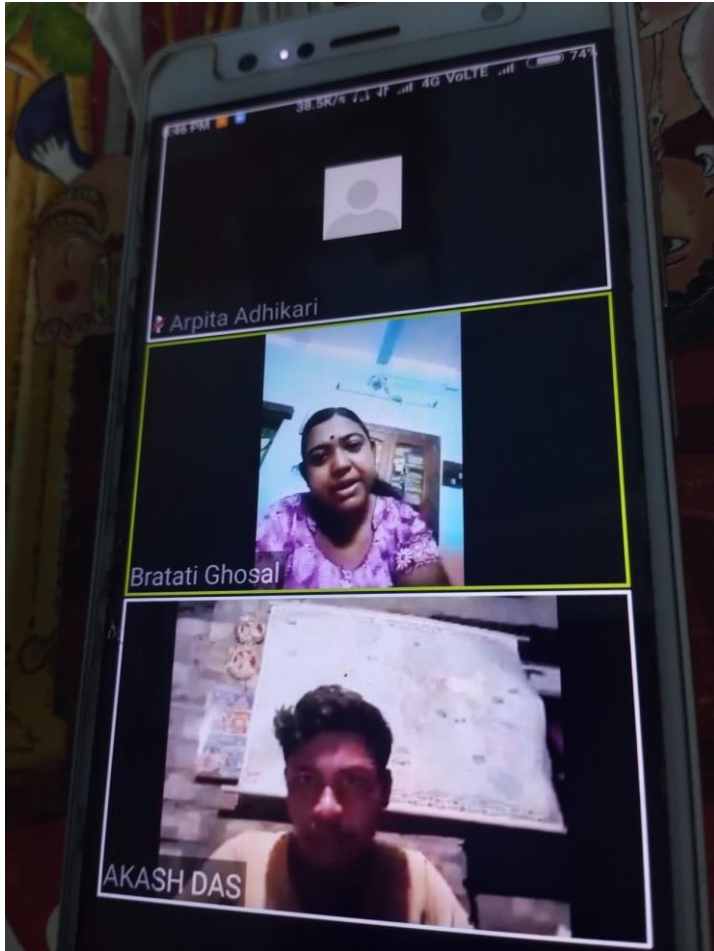
The screenshot shows a WhatsApp video call interface. The main video feed displays a handwritten calculation on a piece of paper. The text in the video includes:

$4x + 6(+2) = 0$
 $4x + 12 = 0$
 $4x = -12$
 $x = -3$

Other visible text in the video includes "Fe₃O₄ →", "Fe(OH)₂ →", "Fe₂O₃ →", "Fe₃O₄", and "(Foukian)".

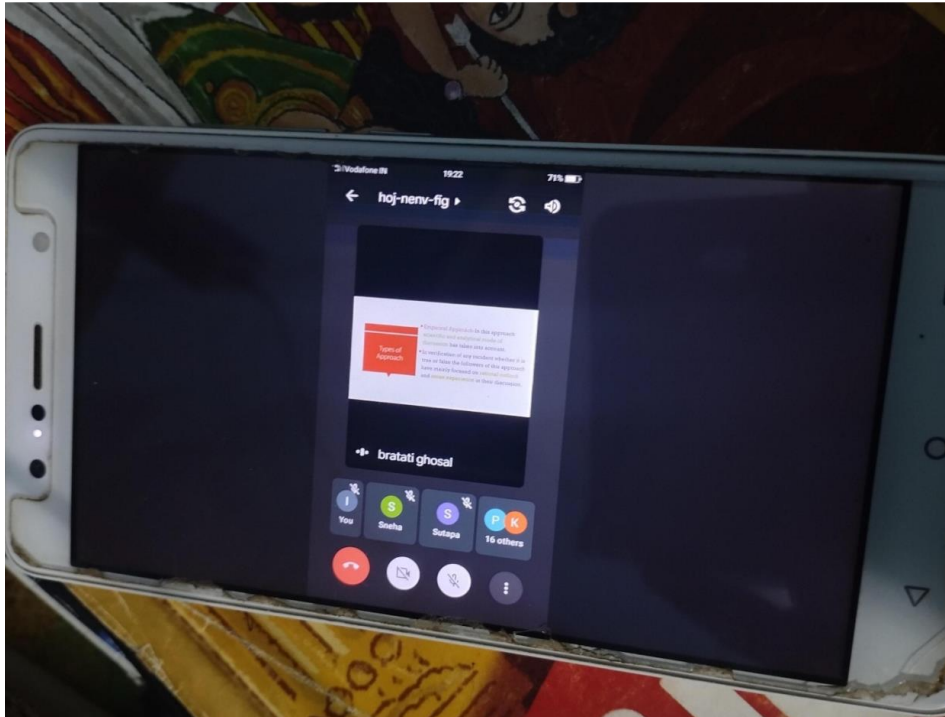
The call interface shows the name "sayan" at the bottom left of the video. Below the video are thumbnails for other participants: "Tanusri" (muted), "Asita..." (video on), and "Ananya" (muted). A name tag for "Ananya Sadhukhan" is overlaid on the bottom left, listing "Tripti Sadhukhan" and "Roll 200341000077". The bottom navigation bar contains icons for voice call, video call, microphone, and a menu.

Department of Political Science

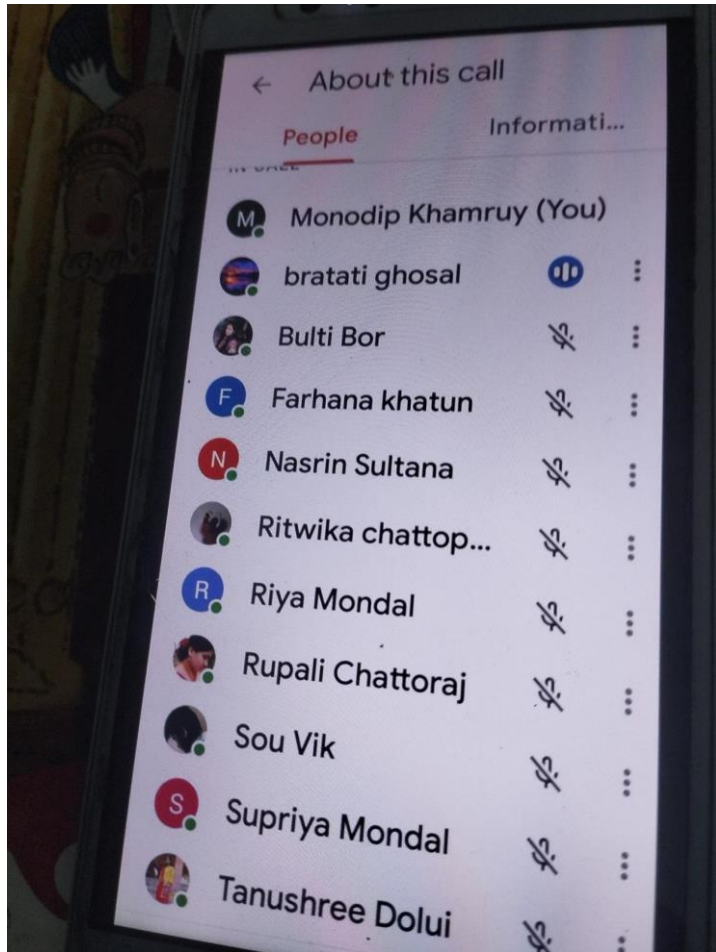


Online class taken by Bratati Ghosal, Assistant professor in Political Science for 6 th sem honours students (2020-21 session)

Online class for Semester-1 Hons students, taken by Bratati Ghosal, Assistant Prof.in Political Sc. (2020-21)



Online class for Political Science Sem-5 Hons students taken by Bratati Ghosal, Asst.professor for 2020-21



DEPARTMENT OF PHYSICAL EDUCATION (SESSION 2020-2021)

ONLINE CLASS - SEMESTER-1

CLASS TAKEN BY MR. ARABINDA MAITY , SACT, PHYSICAL EDUCATION

12:33 94%

← About this call

People Information

Search for someone

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In call

- Arabinda Maity (You)
Meeting host
- Alaka Hemram
- Farjana Khatun
- Krishnendu Mudi
- NEHA GHARA
- Pagli P
- PALLAB MANDAL
- Priti Poddar
- Rubina Parvin
- Sima Adak
- Smritikana Das
- Subhra Ghosh


12:36

VoLTE LTE1 LTE2 94%


← nis-ejcm-hmo ▶





Tanushree


Krishnendu



PALLAB

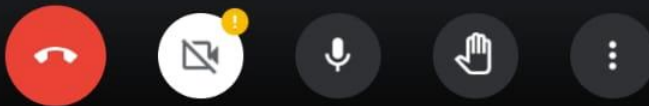

NEHA


Alaka


Pagli


You


Priti
9 others



Topic: Renaissance in Italy.

Semester- III Honours

Paper- CC- VI

Lecture delivered by Prof. *Sujata Bandyopadhyay*, Department of History, Rabindra Mahavidyalaya, Champadanga in 2020.

<https://www.youtube.com/watch?v=EJZaz7YRsiw>

Rests of the departments also have followed the similar techniques to conduct classes and evaluate student performance. (Screenshots are not attached.)