

F. ICT enabled Tools Used by Teachers for effective teaching-learning process.

E-Content Study Materials/ Soft Copy of Self-made Study Materials in PDF/PPT Format Provided to Learners

Details of PPT and PDF Shared by Faculties during 2022-2023:

Sl No.	Department	No. of PPTs Using Classes	No of PDF	Remarks
1	Education	32	76	Self-made materials in PDF
2	Chemistry	24	36	
3				

ICT enabled Classes (Smart class):

Sl No.	Department	No. of smart Classes
1	Chemistry	08
2	Bengali	08

Online Classes/ Interaction through YouTube channel, Whatshop, Google meet etc.

List of E-Content on YouTube Channel by Faculties During 2022-2023:

Sl No.	Name of Faculty	Department	Topic	Youtube link
1	Dr. Sudipta Tarfdar	Bengali	Abanindronather Godyoriti/ 2d sem Bengali Hons 2020 part-5	https://youtu.be/RyoxSvVY_q0
2	Dr. Sudipta Tarfdar	Bengali	Abanindronather Godyoriti/ 2d sem Bengali Hons 2020 part	https://youtu.be/cRbO0luD5PE
3	Dr. Sudipta Tarfdar	Bengali	Abanindronather Godyoriti/ 2d sem Bengali Hons 2020 part-3	https://youtu.be/gxYYp6OIRiE
4	Dr. Sudipta Tarfdar	Bengali	Abanindronather Godyoriti/ 2d sem Bengali Hons 2020 part-2	https://youtu.be/7wsg_g1LmKo
5	Dr. Sudipta Tarfdar	Bengali	Abanindronather Godyoriti/ 2d sem Bengali Hons 2020 part-1	https://youtu.be/pOALyjdP2LQ
6	Dr. Sudipta Tarfdar	Bengali	Tragedy-1 Sem-IV (Hons.)	https://youtu.be/qaLWMkqQ5kA
7	Dr. Sudipta Tarfdar	Bengali	Vivekanonder Godyarity / Bengali part-1 Sem-II (Hons.)	https://youtu.be/ZCr0figSnOw
8	Dr. Jasmeet Singh	English	Chronicle of a Death Foretold Part -5	https://youtu.be/HlOopaOHM-g
9	Dr. Jasmeet Singh	English	Chronicle of a Death Foretold Part -4	https://youtu.be/VEK9j3tKoZY
10	Dr. Jasmeet Singh	English	Chronicle of a Death Foretold Part -3	https://youtu.be/ghQL4B0TG80
11	Dr. Jasmeet Singh	English	Chronicle of a Death Foretold Part -2	https://youtu.be/XuXNJIMerC4

12	Dr. Jasmeet Singh	English	Chronicle of a Death Foretold Part- 1	https://youtu.be/JdL9r2iVCTA
13	Dr. Jasmeet Singh	English	Bertolt Brecht Part- 1	https://youtu.be/x-Tn1APkVHE

Details of Social Media (Blog , WhatsApp/Telegram) used by faculties

Links of WhatsApp/Telegram Links of Faculties During 2022-2023:

Sl No.	Department	Class	No. of Participants	WhatsApp/Telegram Links
1	Education	4 th and 5 th Sem. Gen. Group-A	115	https://chat.whatsapp.com/ljfVsN3sF5HGyRAHPLPZlZ
2	Education	4 th and 5 th Sem. Gen. Group-B	190	https://chat.whatsapp.com/BCxHSluENU85YPpLpatwTX
3	Education	4 th and 5 th Sem. Gen. Group-C	114	https://chat.whatsapp.com/Jud7djWiFtF75yOSM10rQb
4	Education	4 th and 5 th Sem. Gen. Group-B	125	https://chat.whatsapp.com/Ft8VbiEfaBKkiUceVvaACG
	Education	5 th Sem. Hons	37	https://chat.whatsapp.com/J8qVeNG084mA40sVwYtbuD
5	Education	1 st Sem. Hons.	42	https://chat.whatsapp.com/LMhT3Gectv26W9u2D373YX
6	Education	6 th Sem Hons	30	https://chat.whatsapp.com/C9GQdkttyv17zFUfZ2Fd8P
7	Education	6 th Sem Gen group-A	214	https://chat.whatsapp.com/KLs1U6hObxG8iQhuvytodV
8	Education	6 th Sem Gen group-B	113	https://chat.whatsapp.com/DiS5P8FbUdmGRfHqA4YY0z
9	Education	6 th Sem Gen group-C	102	https://chat.whatsapp.com/CrCEznrCvOeKDNqEBXUm4d
10	Sanskrit	1 st Semester Honours	13	https://chat.whatsapp.com/EdSqOkzN6EpGMDY5Ulu5xe
11	Sanskrit	3 rd Semester Honours	12	https://chat.whatsapp.com/KM2aiaj52vQ9IXQ4SYd8oS
12	Sanskrit	5 th Semester Honours	13	https://chat.whatsapp.com/BBuuHTsHZUv2dqUbrnr46R
13	Sanskrit	2 nd Semester Honours	11	https://chat.whatsapp.com/EdSqOkzN6EpGMDY5Ulu5xe
14	Sanskrit	4 th Semester Honours	12	https://chat.whatsapp.com/KM2aiaj52vQ9IXQ4SYd8oS
15	Sanskrit	6 th Semester Honours	13	https://chat.whatsapp.com/BBuuHTsHZUv2dqUbrnr46R
16	Sanskrit	1 st Semester General	24	https://chat.whatsapp.com/ExnV0q6TWJolsmhG6XPWek
17	Sanskrit	3 rd Semester General	28	https://chat.whatsapp.com/BBuuHTsHZUv2dqUbrnr46R
18	Sanskrit	5 th Semester General	28	https://chat.whatsapp.com/EAAmuVPoRd0BHBhQNi7xDO
19	Sanskrit	2 nd Semester General	24	https://chat.whatsapp.com/ExnV0q6TWJolsmhG6XPWek
20	Sanskrit	4 th semester General	28	https://chat.whatsapp.com/BBuuHTsHZUv2dqUbrnr46R
21	Sanskrit	6 th Semester General	28	https://chat.whatsapp.com/EAAmuVPoRd0BHBhQNi7xDO
22	Chemistry	6 th Sem Honours	13	https://classroom.google.com/c/NTYzNTUzMjE3NjE3?cjc=wca6amp

23	Chemistry	4 th Sem Honours	7	https://classroom.google.com/c/NTAzMTExMTUwOTA5?cjc=kggu5p4
24	Chemistry	5 th Sem Honours	13	https://classroom.google.com/c/NTAzMTExMDEzNzc0?cjc=u4ioh2t
25	Chemistry	1 st Sem Honours	4	https://classroom.google.com/c/NTAzMTExNjAzNTEz?cjc=bln5xej
26	Chemistry	Sem-3 Honours	7	https://classroom.google.com/c/NTM5Mjl2MTY4NDY0?cjc=mk4pfku
27	Chemistry	Sem-5 Honours	13	https://classroom.google.com/c/NDk3NTk3MzgwNjc?cjc=zcnocci

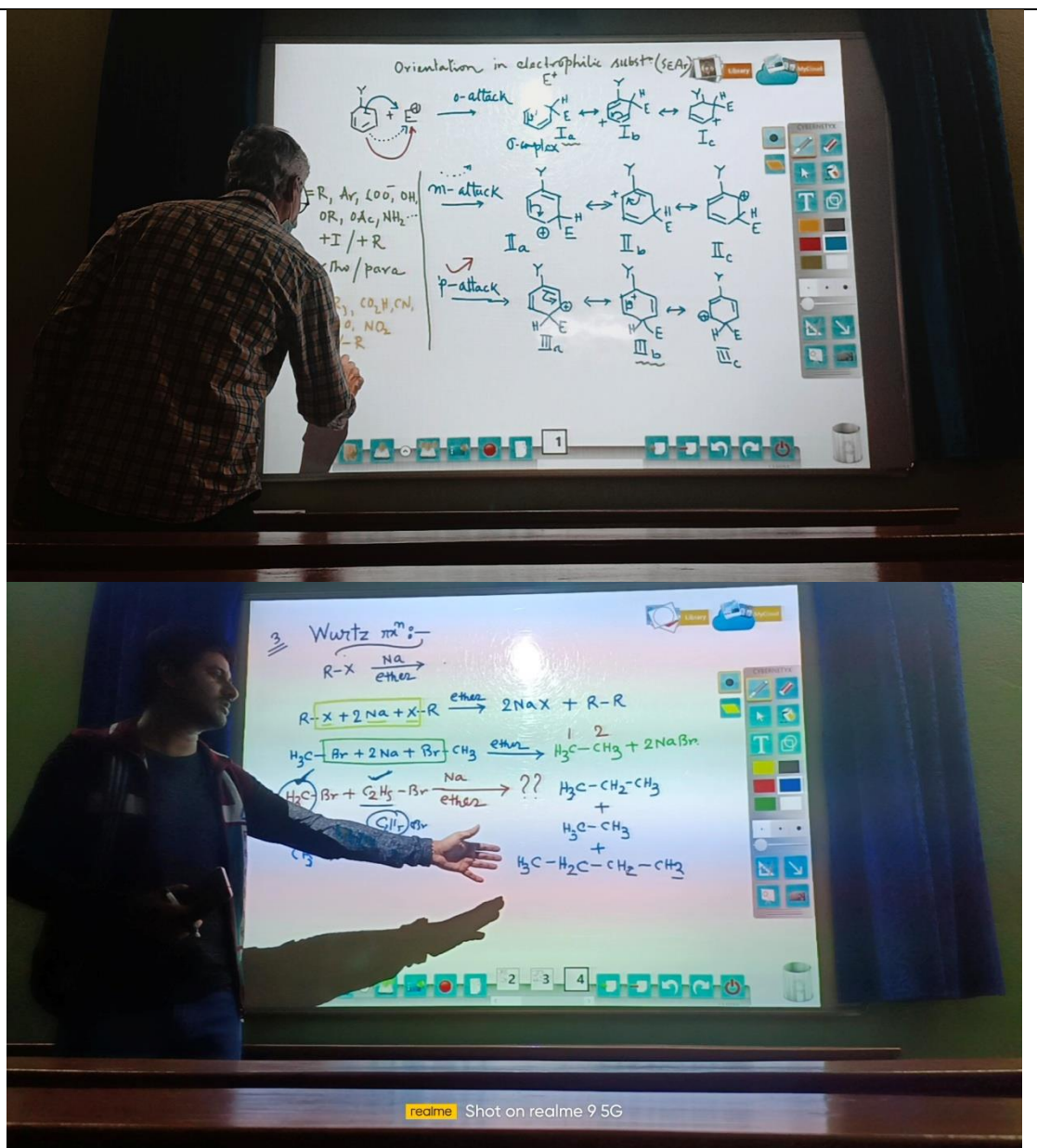
Details of Online Class Link

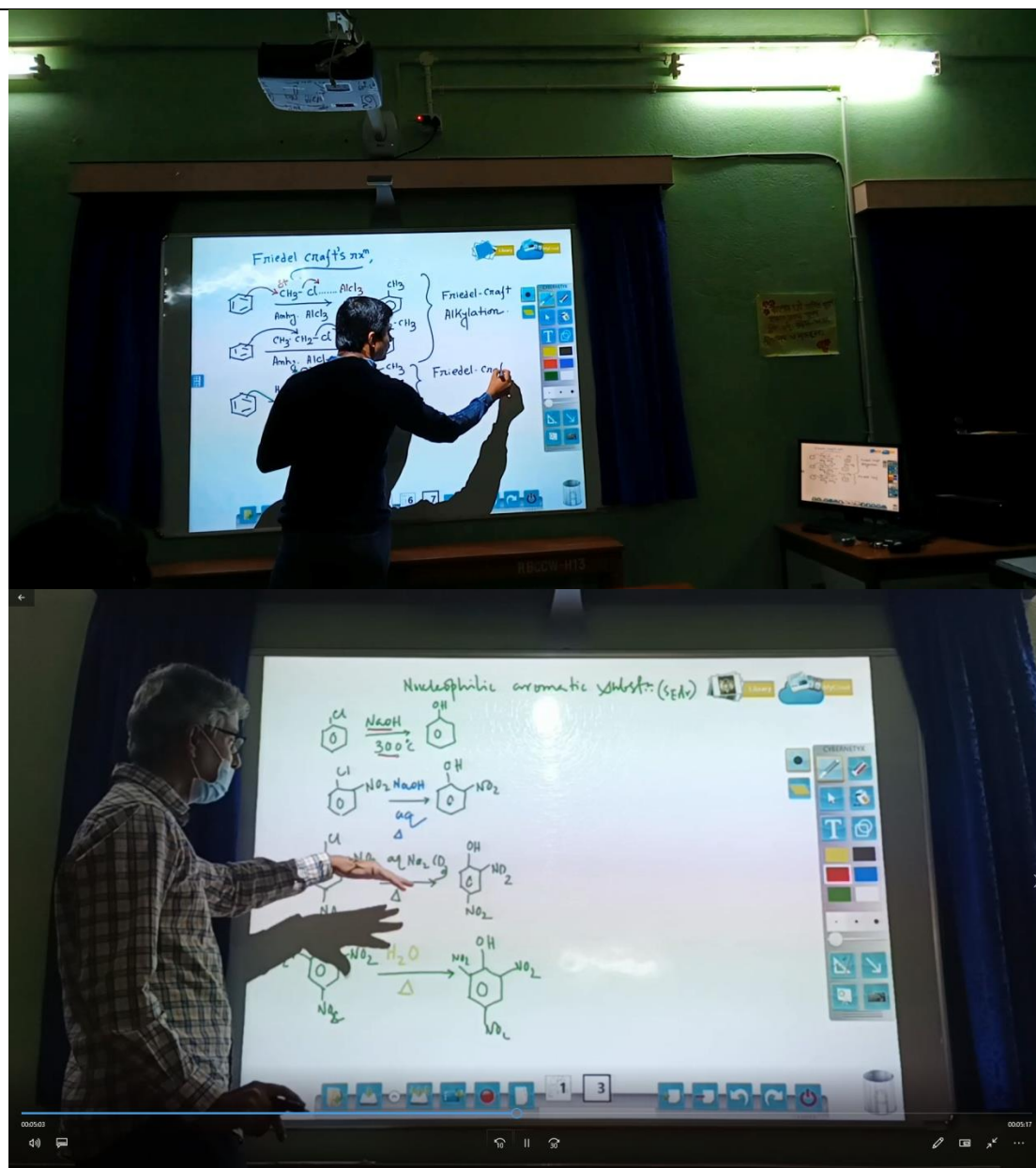
Sl No.	Department	Class	Google class code	Meeting URL	Remarks
1	Education	B.A. 2 nd semester		https://meet.google.com/vfm-wjgxcfe	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
2	Education			https://meet.google.com/aek-ctib-jpm	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
3	Education	B.A. 4 th Semester		https://meet.google.com/ygg-iiectiy	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
4	Education	B.A. 1 st Semester		https://meet.google.com/svd-ijdm-yxo	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
5	Education	B.A. 1 st Semester		https://meet.google.com/axt-adfb-ryu	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
6	Education	B.A. 1 st Semester		https://meet.google.com/rqj-qrkgnfu	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
7	Education	B.A. 1 st Semester		https://meet.google.com/sfc-pobdqkj	Collaborative Class between Sree Chaitanya Mahavidyalaya and RBC College for Women
8	Food and Nutrition	1 st Semester	ovnqdux	https://classroom.google.com/c/MTM4OTE4NTY5ODcz?cjc=ovnqdux	
9	Food and Nutrition	5 th Semester	etkda3t	https://classroom.google.com/c/MTQzNTU3NzMyNzgy?cjc=etkda3t	
10	Food and Nutrition	1 st Semester	s34dbbq	https://classroom.google.com/c/MTU5MTUwNTM0ODUw?cjc=s34dwbq	
11	Food and Nutrition	1 st Semester		https://classroom.google.com/c/NDMxNzk3NTkzNDIx?cjc=yblqvo3	
12	Food and Nutrition	1 st Semester	jk7olpe	https://classroom.google.com/c/NDU4NTczODQ0MzE4?cjc=jk7olpe	
13	Food and Nutrition	3 rd Semester	arhuwpd	https://classroom.google.com/c/MTcwMDYyNDEwOTI0?cjc=arhuwpdhttps://classroom.google.com/c/MTcwMDYyNDEwOTI0?cjc=arhuwpd	

14	Food and Nutrition	3 rd Semester	jiwjuap	https://classroom.google.com/c/MTU4NTQ5NDY0NDEy?cjc=jiwjuap https://classroom.google.com/c/MTU4NTQ5NDY0NDEy?cjc=jiwjuap	
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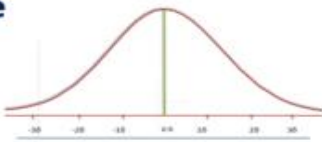




ICT enabled Smart Classes taken by Faculties:

Department of Chemistry
ICT enabled Smart Classes:





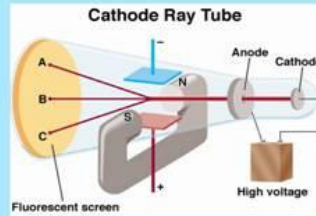
PPTs Made and Taken Classes through PPTs by Faculties

<p>EDUCATIONAL SOCIOLOGY: Concept, Nature & Scope</p> <p>SEMESTER II EDCACOR03T: EDUCATIONAL SOCIOLOGY</p>  <p>SOCIOLOGY</p> <p>Presented By Dr. Jagabandhu Behera Rishi Bankim Chandra College For Women</p>	<p>MICRO TEACHING AS A STRATEGY FOR TEACHER PREPARATION অনু-শিক্ষণ শিক্ষক তৈরির একটি বিশেষ কৌশল</p> <p>Class: B.A. Part-II (Hons) Paper: IV Group: B Unit: III Name of the Paper: Educational Technology & Educational Management</p>  <p>Presented By Dr. Jagabandhu Behera Assistant Professor of Education RBC College For Women</p>
<p>Creativity: Concept, Nature, Process, Factors & Techniques of Devt. of Creativity</p>  <p>Presented By Dr. Jagabandhu Behera Rishi Bankim Chandra College For Women Naihati, North 24 Pgs.</p>	<p>Properties of Normal Probability Curve</p>  <p>By Dr. Jagabandhu Behera Assistant Professor Department of Education Rishi Bankim Chandra College For Women Naihati, West Bengal</p>
<p>LEVEL OF TEACHING</p> <p>Paper Code: EDCACOR04T Paper Title: Pedagogy Topic: Levels of Teaching Class : B.A. 2nd Semester (Hons.)</p>  <p>Class taken by Dr. Jagabandhu Behera Asst. Prof. of Education, RBC College For Women, Naihati</p>	<p>Constructivist Approach to Teaching and Quality Education</p> <p>Constructivism Constructivism is a learning theory that states that people generate knowledge and meaning for themselves by interacting with their environment.</p> <p>Presented By Dr. Jagabandhu Behera Assistant Professor of Education RBC College For Women, Naihati. West Bengal</p> 
<p>“সর্বোচ্চ শিক্ষা কেবল আমাদের তথ্য ব্যবহার করে না, সর্বোচ্চ শিক্ষা তাই যা সৃষ্টির সকল বিষয়ের সাথে সামঞ্জস্যের বন্ধনে আবদ্ধ করতে শেখায়” ---- রবীন্দ্রনাথ ঠাকুর</p>  <p>Educational Thoughts of Rabindranath রবীন্দ্রনাথ ও তাঁর শিক্ষা চিন্তা</p> <p>Presented By Dr. Jagabandhu Behera Assistant Professor of Education, RBC College For Women, Naihati. West Bengal</p>	<p>Sampling: Types, Process & Techniques</p> <p>Sampling Design</p>  <p>Presented By Dr. Jagabandhu Behera Assistant Professor RBC College For Women</p>

Atomic Structure

All **matter** is composed of **atoms**.

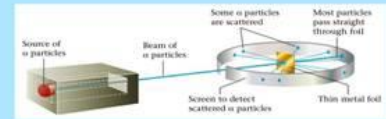
Understanding the structure of atoms is critical to understanding the properties of matter



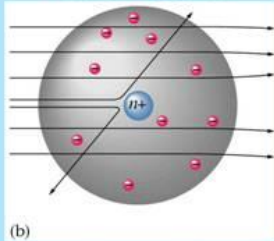
A = alpha
B = gamma
C = beta

J.J. Thomson, measured mass/charge of e^-
(1906 Nobel Prize in Physics)

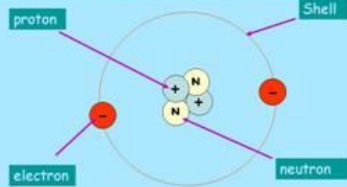
Rutherford's experiment.



Actual Results.



HELIUM ATOM



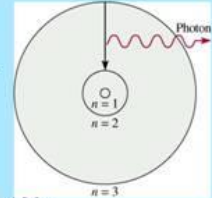
Bohr's Model of the Atom (1913)

- e^- can have only specific (quantized) energy values
- light is emitted as e^- moves from one energy level to a lower energy level

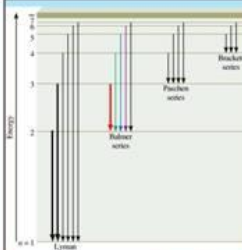
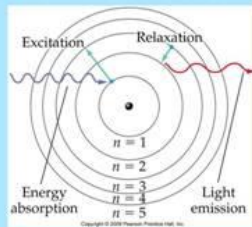
$$E_n = -R_H \left(\frac{1}{n^2} \right)$$

n (principal quantum number) = 1, 2, 3, ...

R_H (Rydberg constant) = $2.18 \times 10^{-18} \text{ J}$



The Bohr Model of the Atom



Bohr showed the energy a H atom can have is equal to:

$$E_n = -R_H \left(\frac{1}{n^2} \right)$$

$$E_{\text{photon}} = \Delta E = E_f - E_i$$

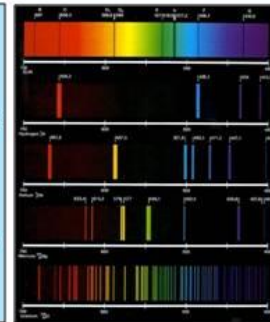
$$E_f = -R_H \left(\frac{1}{n_f^2} \right)$$

$$E_i = -R_H \left(\frac{1}{n_i^2} \right)$$

$$\Delta E = R_H \left(\frac{1}{n_i^2} - \frac{1}{n_f^2} \right)$$

R_H is the Rydberg constant

n is the principal quantum number



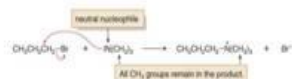
Line spectrum of some elements

Nucleophilic Substitution Reaction

- Negatively charged nucleophiles like HO^- and HS^- are used as salts with Li^+ , Na^+ , or K^+ counterions. Since the identity of the counterion is usually inconsequential, it is often omitted from the chemical equation.



- When a neutral nucleophile is used, the substitution product bears a positive charge.



The Leaving Group

- In a nucleophilic substitution reaction of R-X , the C-X bond is heterolytically cleaved, and the leaving group departs with the electron pair in that bond, forming X^- . The more stable the leaving group X^- , the better able it is to accept an electron pair.

- In comparing two leaving groups, the better leaving group is the weaker base.



Nucleophilic substitution occurs with leaving groups that are weak bases.

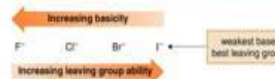
- For example, H_2O is a better leaving group than HO^- because H_2O is a weaker base.

The Leaving Group

- Left-to-right across a row of the periodic table, basicity decreases so leaving group ability increases.



- Down a column of the periodic table, basicity decreases so leaving group ability increases.



The Nucleophile

- Nucleophilicity parallels basicity in three instances:

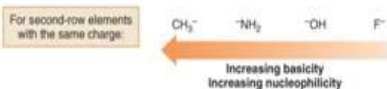
- For two nucleophiles with the same nucleophilic atom, the stronger base is the stronger nucleophile.

The relative nucleophilicity of HO^- and CH_3COO^- , two oxygen nucleophiles, is determined by comparing the pK_a values of their conjugate acids ($\text{H}_2\text{O} = 15.7$, and $\text{CH}_3\text{COOH} = 4.8$). HO^- is a stronger base and stronger nucleophile than CH_3COO^- .

- A negatively charged nucleophile is always a stronger nucleophile than its conjugate acid.

HO^- is a stronger base and stronger nucleophile than H_2O .

- Right-to-left across a row of the periodic table, nucleophilicity increases as basicity increases:



- In polar aprotic solvents, nucleophilicity parallels basicity, and the stronger base is the stronger nucleophile.

- Because basicity decreases as size increases down a column, nucleophilicity decreases as well.

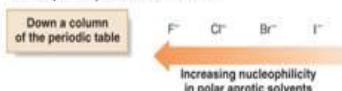
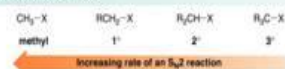


Table 7.4 Common Nucleophiles in Organic Chemistry

	Negatively charged nucleophiles			Neutral nucleophiles	
Oxygen	OH^-	OR^-	CH_3COO^-	H_2O	ROH
Nitrogen	N_3^-			NH_3	RNH_2
Carbon	CN^-	$\text{HC}\equiv\text{C}^-$			
Halogen	Cl^-	Br^-	I^-		
Sulfur	HS^-	RS^-		H_2S	RSH

- As the number of R groups on the carbon with the leaving group increases, the rate of an $\text{S}_{\text{N}}2$ reaction decreases.

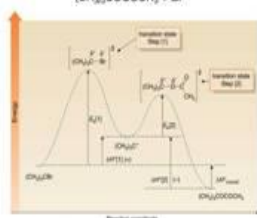
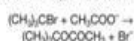


- Methyl and 1° alkyl halides undergo $\text{S}_{\text{N}}2$ reactions with ease.

- 2° Alkyl halides react more slowly.

- 3° Alkyl halides do not undergo $\text{S}_{\text{N}}2$ reactions. This order of reactivity can be explained by steric effects. Steric hindrance caused by bulky R groups makes nucleophilic attack from the backside more difficult, slowing the reaction rate.

An energy diagram for the $\text{S}_{\text{N}}1$ reaction

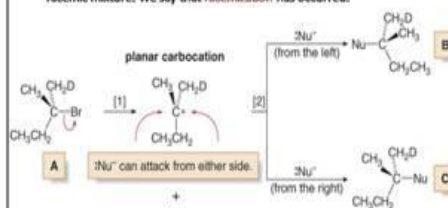


- Shows the $\text{S}_{\text{N}}1$ mechanism has two steps. First and rate energy barrier.
- $E_2 < E_1$ since Step (2) involves bond breaking and Step (2) involves bond formation.
- In each step only one bond is broken or formed, so the transition state for each step has one partial bond.
- The reaction is driven with $\Delta H_{\text{overall}}$ as a negative value, since the products are lower in energy than the starting materials.

Mechanisms of Nucleophilic Substitution—Stereochemistry

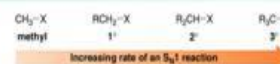
- Loss of the leaving group in Step [1] generates a planar carbocation that is achiral. In Step [2], attack of the nucleophile can occur on either side to afford two products which are a pair of enantiomers.

- Because there is no preference for nucleophilic attack from either direction, an equal amount of the two enantiomers is formed—a racemic mixture. We say that racemization has occurred.



- The rate of an $\text{S}_{\text{N}}1$ reaction is affected by the type of alkyl halide involved.

- As the number of R groups on the carbon with the leaving group increases, the rate of an $\text{S}_{\text{N}}1$ reaction increases.



- 3° Alkyl halides undergo $\text{S}_{\text{N}}1$ reactions rapidly.

- 2° Alkyl halides react more slowly.

- Methyl and 1° alkyl halides do not undergo $\text{S}_{\text{N}}1$ reactions.

- This trend is exactly opposite to that observed in $\text{S}_{\text{N}}2$ reactions.

Types of Research



Presented
By
Dr. Jagabandhu Behera
Rishi Bankim Chandra College For Women
Naihati, North 24 Pgs.

NCERT: Organizational Structures & Functions



National Council Of Educational
Research And Training

Presented
By
Dr. Jagabandhu Behera
Assistant Professor
RBC College For Women

Hypothesis: Concept, Sources, Types, Techniques & Criteria of Good Hypothesis



Presented
By
Dr. Jagabandhu Behera
Assistant Professor
RBC College For Women

প্রাচীন ভারতীয় শিক্ষা ব্যবস্থা



Presented by
Dr. Jagabandhu Behera
Asst. Professor of Education,
RBC College For Women

Class: B. A. 1st Semester (General)

Paper Code: DSC 1A (EDGCGOR01T) / GE 1(EDCHGE01T)
Paper Title: Philosophical Foundation of Education

Unit-I: Concept and Scope of Education
(শিক্ষার ধারণা এবং পরিধি)

- Concept, Nature & Scope of Education
(শিক্ষার ধারণা, প্রকৃতি এবং পরিধি)
- Factors of Education -
(Teacher, Pupil, Curriculum, Institution) -
শিক্ষার উপাদান (শিক্ষক, শিক্ষার্থী, পাঠ্যক্রম, প্রতিষ্ঠান)
- Interrelationship between the factors
(উপাদানগুলির মধ্যে আন্তঃসম্পর্ক)



Presented by
Dr. Jagabandhu Behera
RBC College For Women

বালন্দা বিশ্ববিদ্যালয় একটি প্রাচীন ভারতীয় শিক্ষা কেন্দ্র



Presented
by
Dr. Jagabandhu Behera
Asst. Prof. of Education,
RBC College For Women

Intelligence; Meaning & Nature (বুদ্ধির অর্থ/ধারণা ও বৈশিষ্ট্য)



Presented
by
Dr. Jagabandhu Behera
Asst. Professor of Education, RBC College For Women

অব্রূদ্ধিমূলক শিক্ষার ধারণা, বৈশিষ্ট্য, উপাদান ও নীতি Inclusive Education : Concepts, Characteristics, Components and Principles

Presented
by
Dr. Jagabandhu Behera
Asst. Professor of Education
RBC College For Women



Functions of Education (শিক্ষার কার্যাবলী)



Presented
by
Dr. Jagabandhu Behera
Asst. Professor of Education,
RBC College For Women

B.A. Semester-1 (Hons.) C 1: Educational Philosophy (EDCACOR01T) প্রকৃতিবাদ ও শিক্ষা (Naturalism & Education)



Presented
by
Dr. Jagabandhu Behera
Asst. Professor of Education
RBC College For Women

SEMESTER - I

DSC 1A (EDCGCOR01T) / GE 1(EDCHGE01T)

PHILOSOPHICAL FOUNDATION OF EDUCATION

Unit-I: Concept and Scope of Education

- a. Concept nature and scope of Education
- b. Factors of Education

শিক্ষার উপাদান
(Factors of Education)

Presented
by
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সামাজিক গোষ্ঠী (Social Group)

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by

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Social Change: Meaning, Nature, Types Theories, and Factors



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শিক্ষাকে প্রভাবিত করে এমন কিছু উপাদান Factors of Learning



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বৈচিত্র্যের মধ্যে একতা



Class : 2nd Semester (Hons.)
Paper Code: EDCACOR03T
Paper Title: Educational Sociology
Topic: Unite in Diversity (বৈচিত্র্যে একতা)

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COGNITIVE DEVELOPMENT



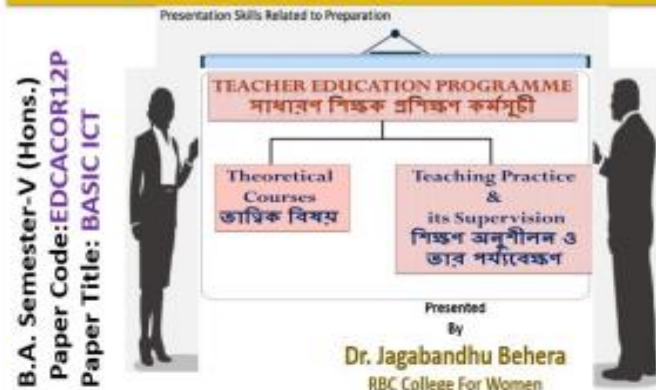
Class : 1st Semester (Hons.)
Paper Code: EDCACOR02T
Paper Title: Educational Psychology
Topic: Piaget's Cognitive Development Theory

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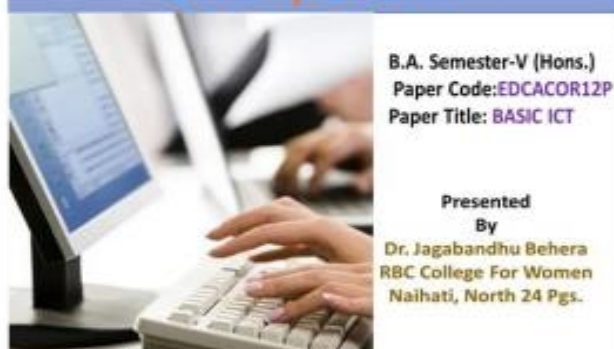
Components of Computer System & their Functions



PPT Preparation & Oral Presentation with PPT



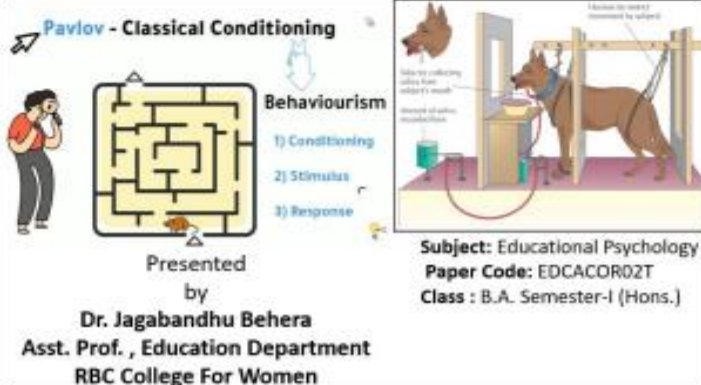
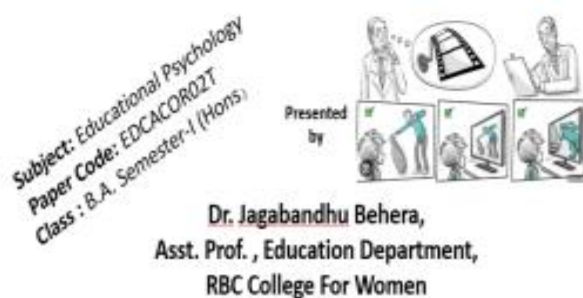
DTP Operation



Excel Operation



Overview of Learning Theory



1.1 Definitions and discovery

Lanthanides: 58-71 **Ln**
 Actinides: 90-103 **An**
 Parent elements La and Ac often included in **Ln** and **An**
 Rare earths: Sc, Y, La + Ce-Lu

Discovery of rare earths

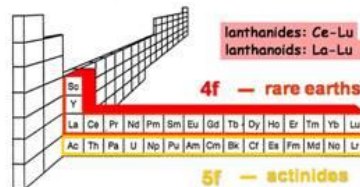
1794 (Y) - 1947 (Pm)

Discovery of actinides

1789 (U) - 1971 (Lr)

Naturally occurring: Ac, Th, Pa, U, (Np, Pu)

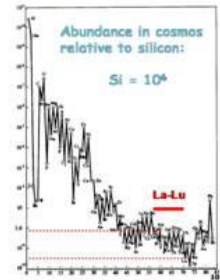
1.1 The chemistry of 4f elements



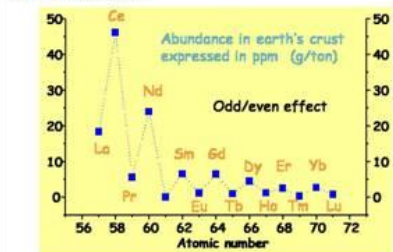
Yttrium was discovered in 1794 by Johan Gadolin, in Åbo (Turku)

1.2 Occurrence of 4f elements

The elements are "rare" but not rarer than many others, such as Au, Pt, Pd, Rh, for instance



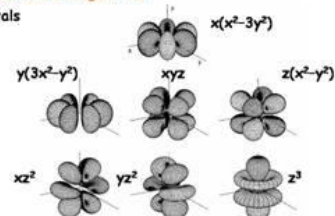
Natural abundance



1.3 Basic properties

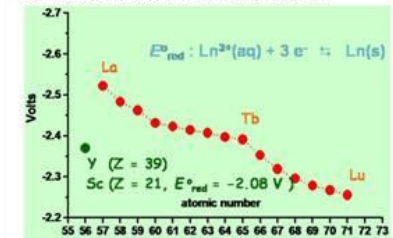
1.3.1 Electronic configuration

4f-orbitals

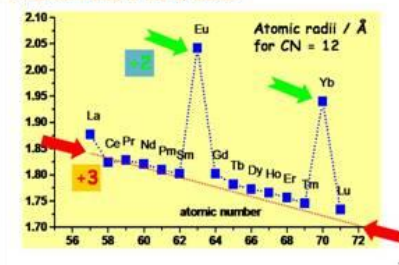


Oxidation states of 4f elements

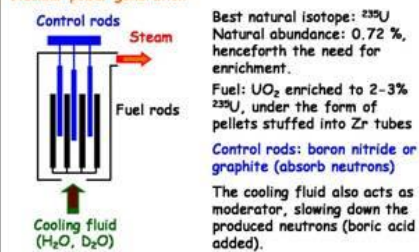
The more stable oxidation state of Ln is +3



Oxidation states in the 4f metals



Nuclear power generation



Pericyclic Reactions

Involves several simultaneous bond-making/breaking process with a cyclic transition state involving delocalized electrons.

The combination of steps is called a **concerted process** where intermediates are skipped.

If the symmetries of both reactant and product orbitals match the reaction is said to be **symmetry allowed** under the Woodward-Hoffmann Rules (these relate the electronic configuration of reactants to the type of pericyclic reaction and its stereochemical imperatives)

If the symmetries of reactant and product orbitals do not correlate, the reaction is **symmetry disallowed** and there are no low energy concerted paths

The Signs on the Outermost Lobes Must Match to Interact

- The lobes of like sign can be either on the same side or on opposite sides of the molecule.
- For a bond to form, the outermost π lobes must rotate so that favorable bonding interaction is achieved



Disrotatory and Conrotatory Orbital Rotation

If two lobes of like sign are on the same side of the molecule, the two orbitals must rotate in opposite directions—one clockwise, and one counterclockwise—Woodward called this a **disrotatory** opening or closure

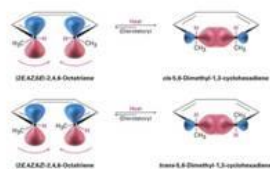


If lobes of like sign are on opposite sides of the molecule: both orbitals must rotate in the same direction, clockwise or counterclockwise—Woodward called this motion **conrotatory**



Ring Closure of Conjugated Trienes

- Involves lobes of like sign on the same side of the molecule and disrotatory ring closure



Rules for Cycloadditions – Suprafacial and Antarafacial

- Suprafacial cycloadditions take place when a bonding interaction occurs between lobes on the same face of one reactant and lobes on the same face of the other reactant

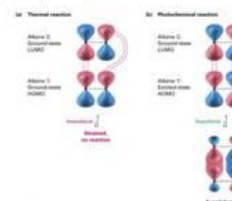


- Antarafacial cycloadditions take place when a bonding interaction occurs between lobes on the same face of one reactant and lobes on opposite faces of the other reactant (not possible unless a large ring is formed)



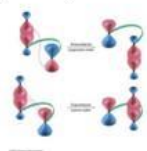
[2+2] Cycloadditions

- Only the excited-state HOMO of one alkene and the LUMO can combine by a suprafacial pathway in the combination of two alkenes

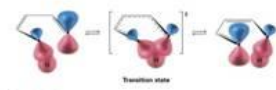


Sigmatropic Stereospecificity: Suprafacial and Antarafacial

- Migration of a group across the same face of the π system is a **suprafacial** rearrangement
- Migration of a group from one face of the π system to the other face is called an **antarafacial** rearrangement



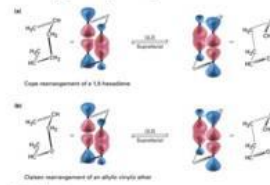
Orbital Picture of a Suprafacial [1,5]-H Shift



In a [1,5] sigmatropic rearrangement of a diene migration occurs to position 1 of the H group (the only possibility) and to position 5 of the pentadienyl group

Suprafacial [3,3] Cope and Claisen Rearrangements

- Both involve reorganization of an odd number of electron pairs (two π bonds and one σ bond)
- Both react by suprafacial pathways



[Signature]

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