



Department of
Chemistry
(2016-2021)

B.B. ARTS, N.B. COMMERCE AND B.P. SCIENCE COLLEGE, DIGRAS
DEPARTMENT: CHEMISTRY (2016-21)

1. A) Teaching Staff:

Name of the Faculty	Qualification	Designation
Dr. R. R. Wankhade	M.Sc., M. Phill., SET, Ph.D.	Professor and Head
Miss. P. M. Sonparote	M. Sc, M.Phil.	Associate Professor
Mr. B. G. Maske	M. Sc, B.Ed, SET, NET	Assistant Professor
Miss. P. P. Raut	M.Sc., SET, GATE	Assistant Professor
Dr. S. P. Mote	M.Sc., PhD.	Assistant Professor

B) Non- Teaching Staff

Name of the Faculty	Designation
Mr. Sumangal D. Jagtap	Laboratory Assistant
Mr. Premsing B. Rathod	Laboratory Attendant
Mr. Sagar K. Chaure	Laboratory Attendant

2. Programme offered and its outcomes

Level		Programme offered
Degree	UG	B.Sc. Part 1, 2 & 3
	Research	Ph.D. (Chemistry)
Certificate	Career Oriented Program	Water Parameter Testing
	Value Added Program	Water Analysis, Soil Analysis.

Program Outcomes

1. Students will disciplinary knowledge
2. Students will be able to explain why chemistry is an integral activity for addressing social, economic and environmental problems
3. Development of students' personality and intellectual capacity will take place.
4. Students get communication skill.
5. Students will be able to design and carry out scientific experiments as well as accurately record and analyzed results of the experiments.
6. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

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3. Awards and Achievements: Students

S.N.	Year	Name of Students	Class	Activity	Rank
1	2017	Mr. Dashrath M. Chavhan	Ph.D.	-----	Awarded
2	2017	Mr. Ganesh D. Thorat	Ph.D.	-----	Awarded
3	2018	Ku. Pallavi D. Tayade	BSc II	University Level Seminar Competition	3 rd
4	2019	Mr. Ganesh R. Patil	Ph.D.	-----	Awarded

4. Research Papers published:

Year	Name of Faculty	No. of Research Papers Published in Journals	
		International	National
2016-17	Dr. R. R. Wankhade	01	Nil
	Miss. P. M. Sonparote	Nil	Nil
	Mr. B. G. Maske	Nil	Nil
2017-18	Dr. R. R. Wankhade	03	Nil
	Miss. P. M. Sonparote	02	Nil
	Mr. B. G. Maske	01	Nil
2018-19	Dr. R. R. Wankhade	05	Nil
	Miss. P. M. Sonparote	02	Nil
	Mr. B. G. Maske	01	Nil
2019-20	Dr. R. R. Wankhade	02	Nil
	Miss. P. M. Sonparote	02	Nil
	Mr. B. G. Maske	04	Nil
	Miss. P. P. Raut	Nil	Nil
	Dr. S. P. Mote	01	Nil
2020-21	Dr. R. R. Wankhade	03	Nil
	Miss. P. M. Sonparote	02	Nil
	Mr. B. G. Maske	04	Nil
	Miss. P. P. Raut	Nil	Nil
	Dr. S. P. Mote	03	Nil
Total		36	Nil

5. Major Equipments

Sr. No.	Equipments	Quantity
1	Oven	01
2	Centrifuge	01
3	Colorimeter	03
4	Conductometer	03
5	PH meter	02
6	Potentiometer	02
7	Water analysis kit	01
8	Electronic Balance	01
9	Computer	01
10	Printer	01
11	Refrigerator	01
12	Polarimeter	01

6. ACADEMIC AND CO-CURRICULAR ACTIVITIES

Year	Activity		
	CO- CURRICULAR ACTIVITY	EXTENSION ACTIVITY	INNOVATIVE ACTIVITY
2016-17	Poster Competition	Guest Lecture on Topic: Polymers & Its Uses.	Excursion at Water Filter Plant of Digras Nagar Parishad
	Quiz Competition	Guest Lecture on Chemistry & Our Society	Project of Water Analysis
			Reading Day Program
2017-18	Student Seminars	University Level Seminar Competition for BSc. III	Project of Water Analysis
	Chemistry Based GK Test	University Level Speech Competition: If 3 rd War Occurs?	
2018-19	Poster Competition	Intercollegiate Poster Competition	Visit to water purification plant at Arunavati Dam
	Quiz Competition	Certificate Course for BSc. II Students on Analysis of Physico-Chemical Parameters of Water	Making Ecofriendly Colours used in Holi Festival
2019-20	Poster Competition	Guest Lecture on Water Conservation & Roof Water Harvesting	Field Visit Water Purification Plant
		Guest Lecture on Single Used Plastic Ban	
2020-21	Online Student Seminar	State Level One Day Webinar on Challenges & Opportunities for College Students After Lockdown	
		University Level Online Seminar Competition	
		Online Guest Lectures:- ➤ Stereochemistry ➤ Co-ordination Compounds ➤ Electronic Displacement ➤ Molecular Spectroscopy	

7. DEPARTMENTAL ACTIVITY REPORT

A. Poster Competition



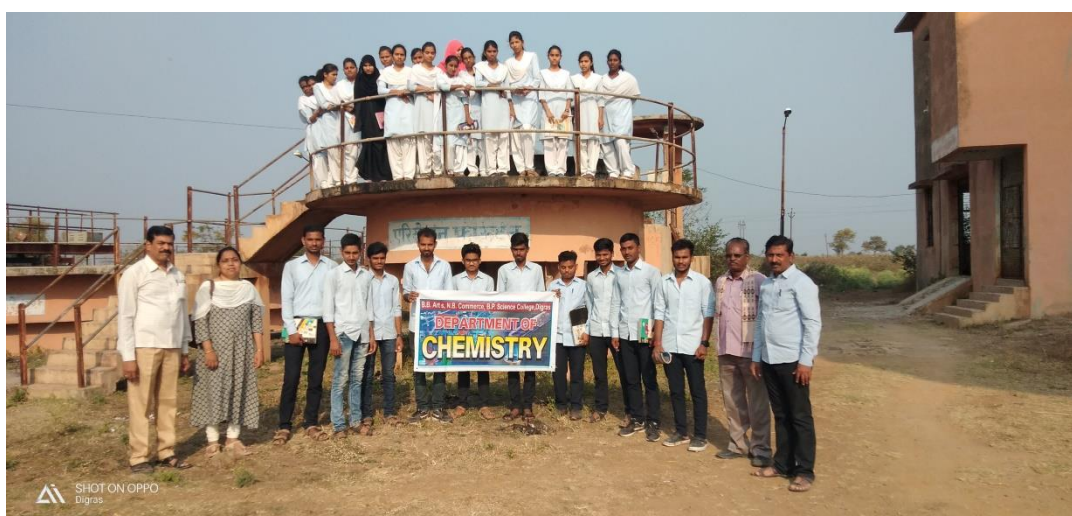
B. Programme of Roof Water Harvesting



C. Reading Day Program



D. Field Visit (Water Purification Plant, Digras.)



E. Guest Lecture



Online Guest Lectures 2020-21

Films & TV

Co-Ordination chemistry - PowerPoint

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Clipboard Paste New Slide Section Layout Reset Slides

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6 Coordination compounds or complex compounds

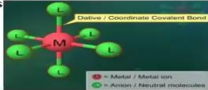
7 Coordination compound

8 Coordination compounds or complex compounds

➤ Coordination compound

Coordination compound

- Complex compounds are a special class of compounds in which the metal atoms (or) ions are bound to a number of anions (or) neutral molecules.
- In modern terminology, these compounds are called coordination compounds.
- Coordination compounds (or) complex compounds are a type of addition compounds.



A coordination compound contains a central metal atom or ion surrounded by neutral molecules or ions (ligand).

Example $[\text{Cu}(\text{NH}_3)_4]^{2+}$

Coordination compounds are widely distributed in minerals, plants and animals, they play many important biological functions.

Example; the pigment hemoglobin present in blood is a coordination compound of iron (Fe^{2+})

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Films & TV

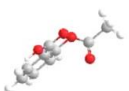
Topic of discussion

STEREOCHEMISTRY

By

Dr. Shob R. Khan M.Sc. Ph.D., NET (CSIR-JRF/SRF), SET

Department of Chemistry,
Hislop College, Nagpur, India.
E-mail: shoebrk@gmail.com



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Shri Shivaji College of Arts, Commerce & Science, Akola (MS)

Department of Chemistry

Reaccredited by NAAC with "A" Grade with CGPA of 3.24
Awarded CPE status (College with potential for excellence, lead college status by SGBAU)

Mr. Zamir Shekh
M.Sc., CSIR-NET, GATE
Assistant Professor



Molecular Spectroscopy

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Films & TV

Module 1 - Microsoft Word

File Home Insert Page Layout References Mailings Review View

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stabilizes the ion.

Ex. Decreasing order of stability

$$\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}^+} > \text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{H}}{\text{C}}^+} > \text{H}_3\text{C}-\overset{\text{H}}{\underset{\text{H}}{\text{C}}^+} > \text{H}-\overset{\text{H}}{\underset{\text{H}}{\text{C}}^+}$$

3. Stability of carbanions:-

The stability of carbanions decreases with increase in the number of alkyl groups since the electrons donating alkyl groups destabilize the carbanions by increasing the electron density.

$$\text{H}-\overset{\text{H}}{\underset{\text{H}}{\text{C}}}^- > \text{H}-\overset{\text{CH}_3}{\underset{\text{H}}{\text{C}}}^- > \text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{H}}{\text{C}}}^- > \text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}^-$$

4. Effect on Bond Length:

Since, the inductive effect leads to ionic character in the bond, the increase in -I effect usually decreases the bond length.

Increasing -I effect

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F. Students' Intercollegiate Seminar Competition 2017-18.





Online Intercollegiate Seminar Competition 2020-21



**B.B. ARTS, N.B. COMMERCE &
B.P. SCIENCE COLLEGE, DIGRAS**
Dist. YAVATMAL

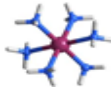
Department of Chemistry
Organized

University Level On-line Intercollegiate Seminar Competition
For B. Sc. III Semester- V Chemistry Students

Date: 23/12/2020 On Zoom

Prize
Ist 501/-
IInd 301/-
IIIrd 201/-

- No entry fee.
- Only one student to participate from each college.
- Each participant will be given 5 min. & 2 min. for interaction.
- Soft copies & PPT of seminar will be sent on e-mail chem.deptbnbscicollege@gmail.com
- Register on or before 22/12/2020.
- Registration link <https://forms.gle/bUmRppRkq3MpXkRh8>
- Contact : 9422558258, 7517913920, 9673536810, 7387272576, 9309515235





**Werner's Co-ordination
Theory & Its
Experimental
Verification**

Presented by : **Ku. Avanti Waghaye**
Lokmanya Tilak Mahavidyalaya, Wani.



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Quick Glance to the theories and their limitations :-

Werner Theory 1898

- 1. It fails to explain the magnetic properties shown by coordination compound.
- 2. It failed to explain the reason why all the elements don't form coordination bond.
- 3. It directional properties of bonds in coordination compound.
- 4. This theory does not explain the stability of the complex.
- 5. It does not explain the nature of the complex.

Sidgwick's theory 1927

- 1. The limitation of S.T is that when CMI accepts a pair from ligand, CMI may possess negative charge which can make whole complex negative.
- 2. It does not tell us the geometry of complex.

VBT 1928

- 1. Does not discuss the electrons energies.
- 2. It does not talk about splitting of orbitals.
- 3. It focused highly on CMI and does not take ligands as a priority.

Crystal Field Theory:-

Discovered in year:- 1929

Discovered by:- Hans Bethe and Hansbrouck van Vleck

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DEPARTMENT OF CHEMISTRY

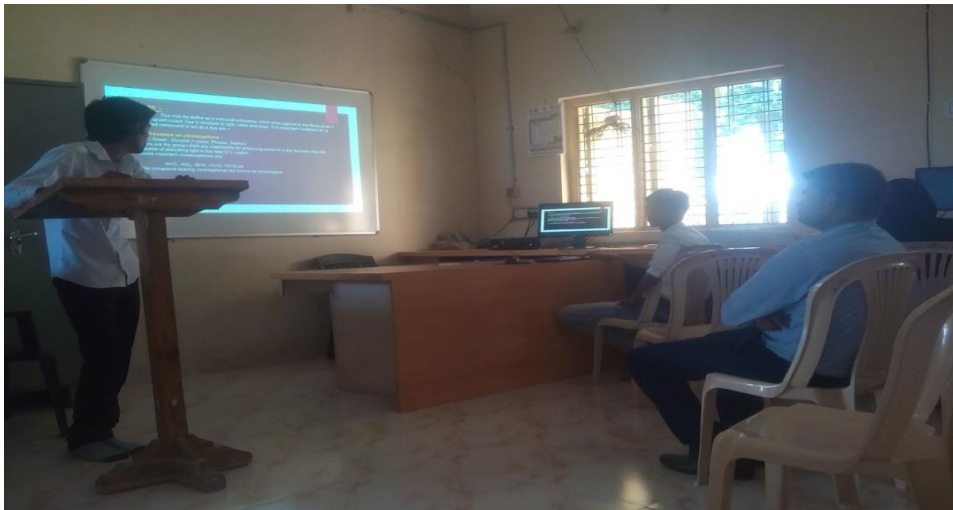
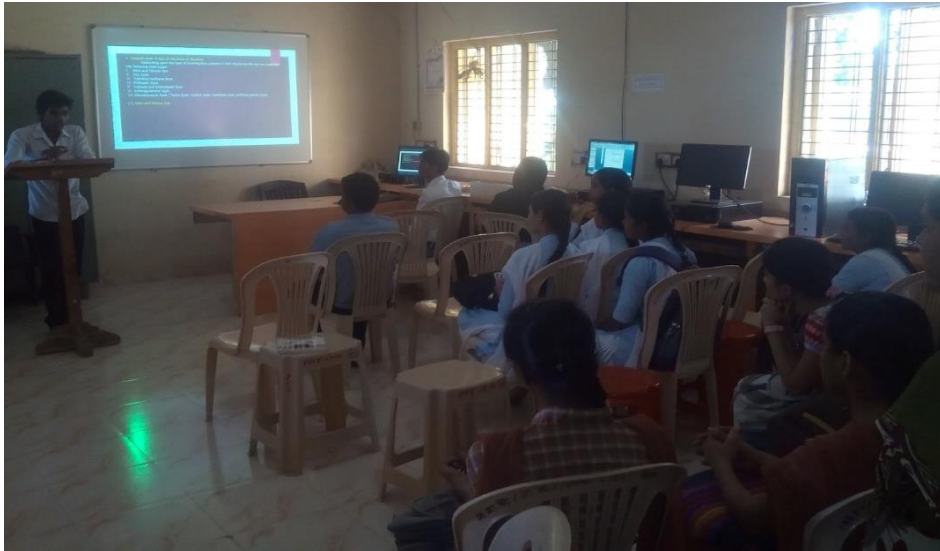
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G. Students Representation



H. Water Conservation: Speech & Poster Competition



I. Single Use Plastic Ban and Cotton Bag Distribution

