To

DATE:9/10/2025,

The Principal
Government Degree College
Rampachodavaram

Subject: Permission for Conducting Bridge Course

Respected Sir,

I respectfully request permission to conduct a Bridge Course in Inorganic Chemistry for I B.Sc. Chemistry Honours students. The course is planned for a duration of three weeks starting from 13-10-2025.

The objective of this bridge course is to strengthen the basic concepts of chemistry and to bridge the gap between intermediate and degree-level studies, thereby helping students to better understand the Semester-I syllabus.

I kindly request you to grant permission to conduct the bridge course.

Thanking you Sir.

Yours faithfully,

Department of Chemistry
Government Degree College
Rampachodavaram

GOVERNMENT DEGREE COLLEGE
RAMPACHODAVARAM, POLAVARAM DISTRICT, A.P
(Affiliated to Adikavi Nannaya University) Accredited by NAAC with " B " Grade

REPORT ON BRIDGE COURSE

Department of Chemistry
Government Degree College,
Rampachodavaram

Title of the Programme:

Bridge Course in Inorganic Chemistry

Target Group:

I B.Sc. Chemistry Honours Students

Course Duration:

2 Weeks

Course Starting Date:

13-10-2025

Objectives of the Bridge Course:

To bridge the gap between intermediate and degree-level chemistry.
To strengthen fundamental concepts in inorganic chemistry.
To prepare students for Semester-I syllabus.
To improve understanding of chemicalbonding, periodic properties, and metallurgy.

Course Content Covered:

Module 1: Basic Concepts

Structure of atom
Periodic table and periodic properties
Chemical bonding

Module 2: p-Block Elements

General properties

Study of Diborane, Borazine, and Silicones

Module 3: d-Block Elements

Electronic configuration

Oxidation states

Magnetic and colour properties

Module 4: f-Block Elements

Lanthanides and Actinides

Lanthanide contraction

Module 5: Metallurgy

Concentration of ores

Roasting and calcination

Extraction and refining processes

Methodology Adopted:

Classroom lectures

Interactive discussions

Blackboard and PPT teaching

Assignments and quizzes

Student Participation:

All the I B.Sc. Chemistry Honours students actively participated in the bridge course. Students showed keen interest and enthusiasm in learning the fundamental concepts.

Outcomes of the Programme:

Students gained clarity in basic chemistry concepts.

Improved understanding of inorganic chemistry topics.

Increased confidence in handling Semester-I syllabus.

Enhanced analytical and problem-solving skills.

Conclusion:

The Bridge Course conducted for I B.Sc. Chemistry Honours students for a duration of 2 weeks starting from 13-10-2025 to25-10-2025 was highly beneficial. It successfully helped students to strengthen their basics and prepared them for advanced topics in inorganic chemistry. The programme achieved its objectives effectively.

Sri.K.G.VENKATESH
LECTURER IN CHEMISTRY

PRINCIPAL

BRIDGE COURSE – STUDY MATERIAL

Inorganic Chemistry (Semester–I Foundation)

BASIC CONCEPTS

1. Structure of Atom

Atom consists of protons, neutrons, electrons

Atomic number (Z) = number of protons

Mass number (A) = protons + neutrons

Quantum Numbers:

Principal (n) → Energy level

Azimuthal (l) → Shape of orbital

Magnetic (m) → Orientation

Spin (s) → Electron spin

2. Periodic Table & Properties

Elements arranged based on atomic number

Trends:

Atomic size ↓ across period, ↑ down group

Ionization energy ↑ across period

Electronegativity ↑ across period

3. Chemical Bonding

Ionic Bond: Transfer of electrons

Covalent Bond: Sharing of electrons

Coordinate Bond: One atom donates electron pair

MODULE 2: p-BLOCK ELEMENTS

General Properties:

Located in groups 13–18

Show variable oxidation states

Important Compounds:

Diborane (B_2H_6)

Electron-deficient compound

Contains 3-center 2-electron bonds

Borazine ($B_3N_3H_6$)

Called “inorganic benzene”

Ring structure

Silicones

Polymers containing Si–O bonds

Used in lubricants, sealants

MODULE 3: d-BLOCK ELEMENTS

Characteristics:

Transition elements

Partially filled d-orbitals

Properties:

Variable oxidation states

Colored compounds

Magnetic nature

Form complexes

MODULE 4: f-BLOCK ELEMENTS

Lanthanides:

Atomic numbers 58–71

Show +3 oxidation state

Actinides:

Atomic numbers 90–103

Radioactive elements

Lanthanide Contraction:

Gradual decrease in atomic size

Due to poor shielding of f-electrons

MODULE 5: METALLURGY

1. Occurrence of Metals

Metals occur as ores

2. Concentration of Ores

Levigation: Gravity separation

Froth Flotation: For sulphide ores

Magnetic Separation: Based on magnetism

3. Extraction Processes

Calcination: Heating without air

Roasting: Heating with air

4. Refining Methods

Distillation

Electrolysis

Zone refining

SHORT QUESTIONS (PRACTICE)

1.Define atomic number.

What is ionization energy?

2.Define covalent bond.

3.What is Diborane?

4.Write any two properties of d-block elements.

5.What is lanthanide contraction?

6.Define ore.

7.What is calcination?

MULTIPLE CHOICE QUESTIONS (MCQs)

1.Atomic number represents:

a) Neutrons

b) Protons ✓

c) Electrons

d) Mass

2.Diborane is:

a) Electron rich

b) Electron deficient ✓

c) Ionic

d) Metallic

3.Transition elements belong to:

a) s-block
b) p-block
c) d-block ✓
d) f-block
4.Lanthanide contraction is due to:
a) Nuclear charge
b) Poor shielding of f-electrons ✓
c) Size increase
d) Ionization
5.Froth flotation is used for:
a) Oxide ores
b) Sulphide ores ✓
c) Metals
d) All

VERY SHORT NOTES (FOR REVISION)

Ionic bond = electron transfer
Covalent bond = electron sharing
Diborane = electron-deficient
d-block = colored compounds
f-block = inner transition elements
Metallurgy = extraction of metals

CONCLUSION

These study materials help students:
Build strong basics
Understand Semester-I topics easily
Improve exam performance

Sri.K.G.VENKATESH
LECTURER IN CHEMISTRY

PRINCIPAL