**Question bank**

**B.Sc I year - Chemistry Paper –I**

**Section A**

**UNIT –I Essay Type (5 marks)**

1. Define diagonal relationship. Explain the diagonal relation between Be and A*l*.
2. Define diagonal relationship between Li and Mg.
3. How is diborane prepared? Discuss its structure.
4. Write two preparation methods for Borazole and draw its structure
5. Write the preparations and reactions of Hydrazine.
6. What are Silicones? Write any two preparation methods and their applications.
7. Write a detailed note on Phosphazine
8. What are pseudo halogens? Give examples. Discuss about their similarities

with halogens.

1. Write the structures with examples of different types of interhalogen

compounds.

1. Discuss types of oxides based on their nature with examples .
2. How are the oxides classified on the basis of amount of oxygen present in a

compound? Explain with suitable examples.

**Question bank**

**Section – B**

**UNIT- I (Short Answer type – 2 marks)**

1. What are Alkaline earth metals? Write electronic configuration of Alkaline

earth metals.

1. What is inorganic benzene? How do you justify it?
2. Write the general characteristics of IA group elements.
3. Explain any two preparations of silanes.
4. What is Banana bond? Explain its existence in electron deficient molecule.
5. Write a brief note on graphitic compounds.

**Osmania university papers**

**Chemistry (B.Sc., Paper – I)**

**October– 2013**

**Section – A**

**(Essay Answer Type)**

**Answer all questions, choosing any two bits from each question each bit carries 7 ½ marks**

**Section-A**

1.a. Describe he structure of ClF3 & IF5

b. Write any two methods of the preparation and properties of Hydroxylamine

c. Define organometallic compound classify them on the basis of metal carbon

bond.

d. What are silicones? Give a brief account of their industrial importance.

4.a. Explain de Broglie’s hypothesis.

b. Draw the molecular orbital energy diagram of O2 molecule. Ex. Plain its bond

order and magnetic character.

c. Discuss various types of Hybridizations.

d. Write note on Diastereomers and enantiomers.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. How is Borazole prepared? Discuss its structure.

**(OR)**

b. Explain pseudo halogens with examples.

6.a. Write the preparation and applications of silanes.

**(OR)**

b. Write any two methods of preparation of tri alkyl Aluminium and mention

any two of its applications.

11. a. Explain the R, S configuration with example

**(OR)**

b. Explain Recemic mixture with an example

12.a. Write the characteristic reaction of carbonate anion with an equation.

**(OR)**

b. Define solubility product of common ion effect.

**Chemistry (B.Sc., Paper – I)**

**March – 2013**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions, choosing any two bits from each question each bit carries 7 ½ marks**

1.a. Explain the structure of IF5 and IF7

b. Define diagonal relationship. Explain the diagonal relation between Be and

A*l*.

c. Write a note on sigma bonded covalent organometallic compounds

d. How is diborane prepared? Discuss its structure.

4.a. Write the Schrodinger’s wave equation. Discuss its significance.

b. Discuss the structure of CO molecule on the basis of molecule orbital theory.

c. Write a note on Enantiomers and diasteromers.

d. What is common ion effect? Explain with an example.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. What are Alkaline earth metals? Write electronic configuration of Alkaline

earth metals.

**(OR)**

b. What is inorganic benzene? How do you justify it?

6.a. Write the preparation of Grignard reagent and mention its applications.

**(OR)**

b. Write a brief note on graphtic compounds.

11. a. Classify the organic reagents with examples.

**(OR)**

b. Explain the Markovnikoff’s rule with an example.

12.a. Compare the bonding and antibonding molecular orbitals.

**(OR)**

b. Write a note on Solubility product.

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**Chemistry (B.Sc., Paper – I)**

**October – 2012**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer any two bits from each question. Each bit carries 7 ½ marks**

1.a. Define diagonal relationship between beryllium and Aluminium.

b. How diborane is prepared? Discuss its structure

c. Give one methods of preparation, three properties and structure of

hydroxylamine.

d. What are pseudo halogens? Give examples. Discuss about their similarities

with halogens.

4.a. Describe de-Broglie’s concept of dual nature of electron.

b. What are molecular orbitals? What type of molecular orbitals are formed from

s and p atomic orbitals?

c. What are diastereoisomers and enantiomers? Explain them with one example

each.

d. What is common ion effect? Explain its applications in qualitative analysis.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. How is Borazole prepared? Explain its structure.

**(OR)**

b. Classify the oxides based on the oxygen content.

6.a. Discuss the nature of the M-C bond in organometalic compounds.

**(OR)**

b. What is Grignard reagent? Write about any three synthetic applications of

Grignard reagent.

11. a. Write R and S configuration for

(i) Glyceraldehyde (ii) 2-methylbutane

**(OR)**

b. Write Schrodinger wave equation and explain various terms in it. What is the

significance of 2 ?

12.a. What is bond order? Calculate the bond order of NO and predict its magnetic

property.

**(OR)**

b. Give the classification of cations into Write a note on Solubility product.

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**Chemistry (B.Sc., Paper – I)**

**March - 2012**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions by choosing any two bits from each question. Each bit carries 7 ½ marks**

1.a. Write the structures with examples of different types of interhalogen

compounds.

b. Write the preparations and reactions of Hydrazine.

c. Explain the nature of bonding in Organometallic compounds with examples

d. How are the oxides classified on the basis of amount of oxygen present in a

compound? Explain with suitable examples.

4.a. Explain the four quantum numbers and their importance.

b. Draw the molecular orbital energy diagram of N 2 explaining the bond order

and magnetic character.

c. Discus the conformational isomerism of n-butane.

d. Define solubility product and common ion effect with an example.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. Write the preparation and structure of Borazole.

**(OR)**

b. Explain the structure of B2 H6.

6.a. Write the preparation and applications of silicones.

**(OR)**

b. Mention any four synthetic uses of organolithium compounds.

11. a. Write a note on Photoelectric effect.

**(OR)**

b. Write the structure of the following one the basis of Valence Bond theory.

Ni (CO)4 ; XeF2.

12.a. Write a note on Fischer and Newman projection formulae with an example.

**(OR)**

b. What are Asymmetric and Disymmetric molecules? Explain with one

example each.

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**Chemistry (B.Sc., Paper – I)**

**October – 2011**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions by choosing any two bits from each question. Each bit carries 7 ½ marks**

1.a. Define diagonal relationship between Be and A*l*

b. Explain preparation and properties of Hydrazine.

c. Write the synthesis and structure of Diborane.

d. Give two methods of preparation and any two synthetic applications of

metallic compounds.

4.a. Write about quantum numbers and their importance.

b. Construct the molecular orbital diagram for N2 molecule and calculate the

bond order.

c. Write the conformational isomers of n-butane and show the graphical

representation. And also write the order of stability of the conformers in

increasing order.

d. Define the solubility product, common ion effect and write the identificaition

and confirmation tests for Nitrate ion and ammonium ion.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. Write the general characteristics of IA group elements.

**(OR)**

b. Explain any two preparations and applications of silanes.

6.a. Write about inter halogen compounds.

**(OR)**

b. Write about the pseudo halogens.

11. a. What is Dipole moment and mention its units.

**(OR)**

b. Define the centre of symmetry. Give two examples.

12.a. What are Enantiomers and diastereoisomers? Give examples.

**(OR)**

b. What is an Asymmetric molecule and dissymmetric molecule? Give an

example for each.

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**Chemistry (B.Sc., Paper – I)**

**March – 2011**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions by choosing any two bits from each question. Each bit carries 7 ½ marks**

1.a. Define diagonal relationship between Li and Mg.

b. Write two preparation methods for Borazole and draw its structure

c. Give an account of Grignard Reagent with twc preparations and two

properties.

d. What are Silicons? Write any two preparation methods and their applications.

4.a. Write about Heisenberg’s uncertainty principle.

b. Explain the salient features of molecular orbital theory and draw the molecular

orbital diagram of O2

c. Explain the solubility product and common ion effect.

d. Give R. S configuration for the chiral centres in following structures according

to Cahn-Ingold-Prelog’s rule.

**Section – B**

**(Short Answer type)**

**Answer all questions**

5. a. What is Banana bond? Explain its existence in electron deficient molecule.

**(OR)**

b. Give an account of different types of inter halogens.

6.a. What are organo metallic compounds? Explain their classification.

**(OR)**

b. Write the preparation of 1o and 2o alcohols from Grignard reagent.

11. a. Write about de Broglie’s hypothesis

**(OR)**

b. Derive bond order in CO by constructing molecular orbital diagram.

12.a. Define the following:

(i). Racemic mixture (ii). Resolution with examples

**(OR)**

b. Explain the following

(i) Photoelectric effect (ii) Compton effect.

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**Chemistry (II B.Sc., Paper – II)**

**October – 2013**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions, choosing any two bits from each question each bit carries 7 ½ marks**

**1. a.**  What is lanthanide contraction and write a note on the consequences of

lantharide contraction.

b. Explain the tendency of formation of complex compounds and variable

oxidation states of d-block elements.

c. Explain the valency bond theory of bonding in metals given by Linus

pauling.

d. Define EAN. Show the structures of Ni (CO)4 and Fe (CO)5 and calculate

EAN of the metal atoms in these carbonyls.

**Section – B**

**Short answer type**

5.a. Explain the magnetic properties of transition elements.

**(OR)**

**b.** How do you separate lanthanides by ion-Exchange method.

6.a. Describe the structure and bonding in ferrocene.

**(OR)**

**b.** Describe the free electron theory of metals.

**Chemistry (II B.Sc., Paper – II)**

**March – 2013**

**Osmania University**

**Section – A**

**(Essay Answer Type)**

**Answer all questions, choosing any two bits from each question each bit carries 7 ½ marks**

**1. a.**  Describe the principle and process involved in separation of Lanthanides by

any one method.

b. Describe the variable oxidation states and electronic configurations and 3d

elements.

c. Explain bonding in meals on the basis of molecular orbital theory (band

theory of metals).

d. Define EAN. Show the structures of Ni (CO)4 and Fe (CO)5 and calculate

EAN of the metal atoms in these carbonyls.

**Section – B**

**Short answer type**

5.a. Give reasons why d-block elements have tendency of formation of complex

compounds.

**(OR)**

**b.** Explain lanthanide contraction and its effects.

6.a. What are metallocenes? Give an examples with structure. .

**(OR)**

**b.** Describe the free electron theory of metals.