



12DD 44 – I (09)

B.Sc. I Semester Degree Examination, November/December 2012
Paper – I : CHEMISTRY

Time : 3 Hours

Max. Marks : 80

Instructions : 1) Question paper has **four** Sections. **All** Sections are **compulsory**.

2) Answers for **all** Sections should be written in the **same** answer book.

SECTION – A
(Inorganic, Organic and Physical)

1. Answer **any ten** of the following : (10×2=20)

- a) What is meant by Aufbau's principle ?
- b) What is atomic radius ?
- c) Define an indicator ?
- d) Give the electronic configuration of element with atomic number 14 and 25.
- e) What are carbocations ? Give example.
- f) Write the structure of :
 - i) 2-ethyl-3-methyl hexane
 - ii) 1-Hexene.
- g) State Markownikoff's rule.
- h) What are free radicals ?
 - i) State the law of corresponding states.
- j) What are liquid crystals ?
- k) What is Hardy-Schulze law ?
 - l) Define the term plane of symmetry.
- m) What is gold number ?
- n) Define root mean square velocity.
- o) What is called standard solution ?

SECTION – B
(Inorganic)

2. Answer **any two** of the following : (2×4=8)

- a) Discuss the Pauli's exclusion principle.
- b) What is ionisation energy ? Explain its trend in the periodic table.

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- c) Explain the terms :
- Normality
 - Molarity
 - Equivalence point.

3. Answer **any two** of the following : (2×6=12)
- Explain the shapes of s, p and d atomic orbitals.
 - Explain Ostwald's theory of acid-base indicator with example.
 - Define electronegativity.
 - Explain Pauling scale of electro negativity.

SECTION – C
(Organic)

4. Answer **any two** of the following : (2×4=8)
- Write a note on electrophiles and nucleophiles.
 - Give the free radical mechanism of chlorination of methane.
 - How is chloroprene synthesised ? Give its uses.
5. Answer **any two** of the following : (2×6=12)
- Give any three general method of synthesis of alkanes.
 - How do you account for the acidity of alkynes ?
 - What is peroxide effect ? Explain with an example.

SECTION – D
(Physical)

6. Answer **any two** of the following : (2×4=8)
- Derive Bragg's equation.
 - Explain any four applications of colloids in detail.
 - How are root mean square velocity, average velocity and most probable velocity of a gas are related to one another ?
7. Answer **any two** of the following : (2×6=12)
- Derive a relation for the critical constants in terms of Vander Waals constants.
 - State the law of symmetry and explain the elements of symmetry in a cube.
 - Write a note on liquid crystals.