

# C. U. SHAH UNIVERSITY

## Winter Examination-2021

Subject Name: Inorganic Chemistry-I

Subject Code: 4SC03ICH1

Branch: B.Sc. (Chemistry)

Semester: 3

Date: 15/12/2021

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

**Q-1 Attempt the following questions: (14)**

- a) What is modern periodic law? (1)
- b) Define covalent radius? (1)
- c) Define *f*-block elements. (1)
- d) Give IUPAC name of elements have atomic number 109 and 111. (1)
- e) Write general formulae of boron hydride (1)
- f)  $B_2H_6 + A? \rightarrow B? + 6H_2$  (1)
- g) Define kinetic stability. (1)
- h) Give the equations of relation between formation constant ( $K_f$ ) and the standard Gibbs free energy change. (1)
- i) Full form of CFSE is..... (1)
- j) Give definition of actinides. (1)
- k) Which oxidation state shown by all the lanthanide metals? (1)
- l) What is general configuration of actinides? (1)
- m) \_\_\_\_\_ is the most important mineral containing lanthanides. (1)
- n) Give the oxidation states of Neodymium. (1)

**Attempt any four questions from Q-2 to Q-8**

**Q-2 (14)**  
Explain atomic radius and ionic radius.

**Q-3 (14)**  
**Attempt all questions**  
a) Write Stepwise formation of complex and stepwise formation constants (7)  
b) Discuss experimental determination of stability constant by spectrophotometric method. (7)

**Q-4 (14)**  
**Attempt all questions**  
a) Give preparation of Diborane ( $B_2H_6$ ). (06)  
b) Discuss the structure of Diborane. (08)



- Q-5** Explain factors affecting the stability of metal complexes (14)
- Q-6** **Attempt all questions** (14)  
a) Discuss the properties of actinides. (7)  
b) Explain kinetic stability of complex. (7)
- Q-7** **Attempt all questions** (14)  
a) Write electronic configuration, name and symbol of any ten lanthanides. (8)  
b) Discuss color of lanthanides. (6)
- Q-8** **Attempt all questions** (14)  
a) Discuss about ionic radii of lanthanide. (6)  
b) Write electronic configuration, name and symbol of any ten actinides. (8)

