

# C.U.SHAH UNIVERSITY

## Summer Examination-2016

Subject Name: Chemistry-IV

Subject Code: 4SC03CHC2

Branch: B.sc (Chemistry)

Semester: 3

Date: 26/04/2016

Time: 2:30 To 5:30

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)**
- Define: Ionization potential (1)
  - Arrange the following in increasing order of their first IP ( $IP_1$ ): (1)  
Li, Be, B, C, N, O, F, Ne
  - Electronic configuration of Gadolinium Gd is  $[Xe] 4f^7 5d^1 6s^2$ , now what is the configuration of  $Gd^{+2}$ ? (1)
  - Arrange the following in decreasing order of  $IP_1$ . (1)  
3d, 4d, 5d
  - Arrange the following in decreasing of Electron affinity. (1)  
N, P, As, Sb
  - Arrange the following in increasing order of acidity. (1)  
 $N_2O$ ,  $K_2O$ , ZnO
  - Define: Electronegativity. (1)
  - Define: Isotope (1)
  - What is the shape of p orbital? (1)
  - What is the electronic configuration of La? (1)
  - Classify endo and exothermic process for  $N^{-2} \rightarrow N^{-3}$ . (1)
  - Give one reaction for the preparation of  $XeF_6$ . (1)
  - Draw the structure of  $B_2H_6$ . (1)
  - Define: Actinide (1)

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

- Q-2 Attempt all questions (14)**
- Explain the position of noble gases in periodic table. (7)
  - Discuss the preparation and properties of  $XeF_2$ ,  $XeF_4$  and  $XeOF_2$ . (7)
- Q-3 Attempt all questions (14)**
- Explain Metallic radius and Van-der-waal's radius. (5)
  - Discuss the reactivity of pseudo halides and poly halides. (5)
  - If electron affinity and ionization potential of an element are 3.5 and 13 (4)



- respectively, then calculate electronegativity in Pauling scale.
- Q-4** **Attempt all questions** (14)
- A. Write various types of chemical reactions of hydrazine. (5)
  - B. Discuss the structure of borazole and boron nitride. (5)
  - C. Explain bonding in diborane. (4)
- Q-5** **Attempt all questions** (14)
- A. Discuss various types of method for the extraction of lanthanides from monazite mineral. (7)
  - B. Explain general properties of lanthanide. (7)
- Q-6** **Attempt all questions** (14)
- A. Discuss magnetic properties of actinides. (7)
  - B. Explain methods for the separation of actinide elements. (7)
- Q-7** **Attempt all questions** (14)
- A. Discuss various types of interhalogen compounds. (7)
  - B. Explain the position of hydrogen in periodic table and its resemblance with alkali metals and halogens. (7)
- Q-8** **Attempt all questions** (14)
- A. Explain general properties of actinides and comparison with lanthanides. (7)
  - B. Discuss the causes of lanthanide contraction. (7)

