

C.U.SHAH UNIVERSITY

Winter Examination-2015

Subject Name : Chemistry - IV

Subject Code : 4SC03CHC2

Branch : B. Sc. (Chemistry)

Semester : 3

Date :05/12/2015

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)**
- a) Define electron affinity. (1)
 - b) Define electronegativity. (1)
 - c) What can we decide from principle quantum number and angular quantum number? (1)
 - d) Which orbital is not possible in the following set: (1)
4f, 5d, 6g, 7h, 4h, 6d
 - e) Which of the following orbitals has highest energy? (1)
1) 6s 3) 5d
2) 4d 4) 4f
 - f) What is the general oxidation state of Lanthanide series? (1)
 - g) Define Lanthanons. (1)
 - h) What is the electronic configuration of La? (1)
 - i) Classify endo and exo process (1)
 - j) Arrange the following in decreasing order of electron affinity: (1)
N, P, As, Sb
 - k) Arrange the following in increasing order of their first IP (IP_1): (1)
Na, Mg, Al, Si, P, S, Cl, Ar
 - l) Which of the following has highest difference of IP_2 ? (1)
1) Na, Ne 3) Kr, Rb
2) Cs, Xe 4) Ar, K
 - m) Define: isobar (1)
 - n) Draw the shapes of d orbital. (1)



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

- Q-2 Attempt all questions (14)**
- a) Explain the position of hydrogen in periodic table and its resemblance with alkali metals and halogens. (7)
 - b) Explain the factors on which ionization energy depends. (7)
- Q-3 Attempt all questions (14)**
- a) Discuss preparation for various types of fluorides, oxofluorides and oxides of xenon. (7)
 - b) Define pseudohalides and discuss reaction of pseudohalides and pseudohalogens. (7)
- Q-4 Attempt all questions (14)**
- a) Give any five properties of diboranes. (5)
 - b) Discuss bonding in B_2H_6 . (5)
 - c) Draw and discuss the structure of boron nitride (BN). (4)
- Q-5 Attempt all questions (14)**
- a) Explain the effect of Lanthanide contraction. (7)
 - b) Discuss the separation of Lanthanide elements. (7)
- Q-6 Attempt all questions (14)**
- a) Give the applications of Lanthanides and their compounds. (5)
 - b) Explain preparation and extraction methods of Thorium (ThO_2). (5)
 - c) Write a short note on nuclear fuels in India. (4)
- Q-7 Attempt all questions (14)**
- a) Discuss covalent radius and crystal radius. (5)
 - b) Explain spatial position of hydrogen and its resemblance with carbon. (5)
 - c) If electron affinity and ionization potential of an element are 3.5 and 13 respectively, calculate electronegativity in Pauling scale. (4)
- Q-8 Attempt all questions (14)**
- a) Explain the structure and chemical properties of hydrazine. (7)
 - b) Define interhalogen compounds. Write a short note on various types of interhalogens. (7)

