Roll No._____ to be filled in by the candidate.

(For all sessions)

Chemistry (Essay Type)

Time: 2:40 Hours **Section - I** **Marks: 68**

2- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Why is actual yield less than theoratical yield?
ii. Define Fractional crystallization with example.
iii. Magnesium atom is twice heavier than that of carbon.
iv. Define (i) Stationary phase (ii) Distribution co-efficient
v. Give uses of Chromatography.
vi. Why absolute zero is unattainable?
vii. What is (i) Isotherm (ii) Partial Pressure
viii. What are the Faulty points of Kinetic theory of Gas?
ix. Give quantitatively statement of Charles law.
x. Give any two differences between Ideal and Non Ideal solution.
xi. Colligative properties are obeyed when solute is non-volatile and solution is dilute. Justify it.
xii. 23 gram sodium and 238 gram Uranium have equal number of atoms.

3- Write short answers of any eight parts from the following. **2 x 8 =16**

i. Distinguish between Isomorphism and polymorphism.
ii. Differentiate between continuous and line spectrum.
iii. How does polarizibility effect the strength of London Forces?
iv. What are the favourable conditions for ammonia synthesis on Industrial scale?
v. Why is it necessary to decrease the pressure in a discharge tube?
vi. Justify with examples that some reactions occur at higher rate and some may occur at moderate rate.
vii. Why positive rays are called canal rays?
viii. Why do crystals change their habit?
ix. How does the buffer solution act?
x. Radioactive decay is always a First order reaction.
xi. Define the terms (i) helix (ii) Deby Forces
xii. What is electromagnetic spectrum?

4- Write short answers of any six parts from the following. **2 x 6 =12**

i. Why atomic radii cannot be determined precisely?
ii. Define electrode potential.
iii. Name factors affecting ionization energy.
iv. Calculate Bond order of Helium molecule(He_2).
v. Define enthalpy of atomization and give an example.
vi. Define heat and give its units.
vii. Differentiate between galvanic and electrolytic cell.
viii. How is copper purified by electrolysis?
ix. Why cationic radii are smaller than its parent atom?

Section - II

NOTE: Answer any three questions from the following. **8x3=24**

5. (a) NH_3 gas can be prepared by heating two solids NH_4Cl and $Ca(OH)_2$.the mixture containing 100g of each.Calculate no. of grams of NH_3 produced. 4
   (b) Define and explain Hydrogen bondings by giving any two suitable examples. 4
6. (a) Define plasma and explain its four applications. 4
   (b) Explain the concept of orientation of orbitals by using magnetic quantum number. 4
7. (a) How ionization energy varies in periodic table? 4
   (b) What is internal energy?Discuss first law of thermodynamics. 4
8. (a) $N_2(g)$ and $H_2(g)$ combine to give $NH_3(g)$.The value of K_c in this reaction at 500°C is 6.0×10^{-2}.Calculate the value of Kp for this reaction. 4
   (b) Explain half life method for measurement of the order of a reaction can help us to measure the order of even those reactions which have fractional order. 4
9. (a) Explain elevation of boiling point with a graph. 4
   (b) Explain electrolysis of aqueous solution of salts. 4