

Government General Degree College, Dantan-II

B. Sc General Part-II Internal Evaluation-2020

Subject: Chemistry (General)

Paper: II

F.M: 45

Time: 2 h

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Answer any **one question** from each group

**Group-A** (each carry 20 marks)

1. Explain the influence of complex formation and change of pH on red-ox potentials.
2. Discuss the electronic configuration, common oxidation states, inert pair effect in respect of the group 14 elements.
3. State Le chatelier principle. Explain the effect of temperature, pressure, concentration and addition of inert gas for the following equilibrium –  
 $N_2 + 3H_2 \rightleftharpoons 2NH_3$ .
4. (a) Acidity of anhydrous HF substantially increased in presence of  $SbF_5$ . – Explain.  
(b) Discuss the acid-base property of  $H_2SO_4$  in the solvent  $H_2O$  and HF.  
(c) Explain why  $SOCl_2$  would behave as an acid in liquid  $SO_2$ ?  
(d) Explain the acidity order of different oxoacids of chlorine.  
(e) Complete the following reaction according to the SHAB principle-  
(i)  $Li^+ + Cs^+ + F^- + I^- \rightarrow$  (ii)  $Cu^{2+} + H^+ + SO_4^{2-} + S^{2-} \rightarrow$

**Group-B** (each carry 25 marks)

1. (i) Write down Maxwell's distribution for the distribution of molecular speeds and discuss quantitatively its important features.  
(ii) Deduce an expression for the most probable speed.
2. (i) Distinguish between 'Order' and 'Molecularity' of reaction.  
(ii) Derive integrated rate equation for a second order reaction.
3. (a) Define specific conductance and molar conductance.  
(b) Explain the variation of equivalent conductance with dilution for strong and weak electrolytes.  
(c) What is transport number? Explain how transport number varies with temperature.
4. Derive thermodynamically the relation between elevation of boiling point and molality of solution and explain how the osmotic pressure of any solution is determined experimentally.