## U.G. 4th Semester Examination - 2021

# CHEMISTRY

**[HONOURS]**

**Course Code : CHEM-H-CC-P-8**

**[PRACTICAL]**

Full Marks : 20 Time : 2 Hours

*The figures in the right-hand margin indicate marks.*

Answer any **four** questions: 5×4=20

1. a) Define ionic strength. Calculate ionic strength of 0.5 M **KCl** solution.

   b) What is effect of ionic strength on the rate of **Persulphate–Iodide** reaction? 2+3

2. a) Calculate the degree of freedom of **phenol-water** system at critical solution temperature (CST).

   b) Draw the phase diagram of phenol-water system. What is the value of CST for **phenol water** system at 1 atm pressure? 2+3

3. a) What is redox indicator?

   b) Write down the ionic balanced equation for the titration of **Mohr's salt** solution against standard $\mathbf{K_2Cr_2O_7}$ solution. Which indicator is used for the titration of Mohr's salt solution against standard $\mathbf{K_2Cr_2O_7}$ solution? 2+3

4. Write down the principle, cell setup and cell reaction of determination of $\mathbf{K_{sp}}$ of **AgCl** by potentiometric titration of $\mathbf{AgNO_3}$ solution against standard **KCl** solution. 5

5. a) Draw and explain the titration curve of **oxalic acid** against **NaOH** (pH metric titration).

   b) Draw and explain the titration curve of **HCl** against **NaOH** (pH metric titration). $2\frac{1}{2}+2\frac{1}{2}$

6. a) What is solubility product ($\mathbf{K_{sp}}$) of sparingly soluble salt?

   b) Write down the expression of solubility of $CaF_2$ in water and in a solution containing 0.1M **NaF**. 2+3

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