

**U.G. 3<sup>rd</sup> Semester Examination – 2020**  
**(BLENDED MODE)**  
**CHEMISTRY**  
**[PROGRAMME COURSE]**  
**Course Code: CHEMGP-3**  
**(Physical & Inorganic Chemistry)**  
**[Practical]**

Full Marks: 20

Time: 2 Hours

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

*Candidates are required to give their answers in their own words as far as practicable.*

**Group-A (Physical chemistry-II)**

1. Answer any **one** the following questions: **10 × 1 = 10**
- a. Define pH. What is Buffer capacity? Write down the chemical formula of an acid buffer and a basic buffer solution. Calculate the pH of the mixed solution obtained by mixing 100 mL 0.1(M) CH<sub>3</sub>COOH to 50 mL 0.1(M) NaOH solution. K<sub>a</sub> for CH<sub>3</sub>COOH = 1.8 × 10<sup>-5</sup>. How solubility changes with temperature? 2 + 2 + 4 + 2
- b. Define enthalpy of ionization and enthalpy of hydration. Write down the principle for the study of the solubility of benzoic acid in water. Write down the principle for determination of enthalpy of hydration of copper sulphate. 4 + 3 + 3

**Group-B (Organic chemistry-II)**

2. Answer any **one** from the following: **10 × 1 = 10**
- a. How can you identify oxalic acid, tartaric acid and succinic acid by chemical test? How can you differentiate benzoic acid and salicylic acid? What happens when neutral FeCl<sub>3</sub> is added to resorcinol? Explain with reactions. 4 + 3 + 3
- b. How can you differentiate methanol and ethanol? What is diazo-coupling reactions? How can you identify aniline by chemical test? What is Brady's reagent? Between acetone and benzaldehyde which one reacts faster with Brady's reagent? 3 + 2 + 2 + 3