Reg No:..... K25FY2413 C
Name :.....

Second Semester FYUGP Chemistry Examination
APRIL 2025 (2024 Admission onwards)
KU2DSCCHE111 (BASIC PHYSICAL CHEMISTRY AND FORENSIC CHEMISTRY)
(DATE OF EXAM: 2-5-2025)

Time : 90 min Maximum Marks : 50

Part A (Answer any 6 questions. Each carries 2 marks)

1. Differentiate between intensive and extensive properties with examples. 2

2. How will you relatively express the rate of a reaction 2NO(g) + O2(g) →2NO2(g) in terms of concentration of each species. 2

3. Why does the rate of reaction increase with temperature? 2

4. Write the Gibbs adsorption equation and indicate the terms. 2

5. Name the different factors on which the extent of adsorption depends. 2

6. What is a protective colloid? Give an example of a protective colloid? 2

7. What are the dispersed phase and dispersion medium in cloud?. 2

8. Why specifically use dilute H_2SO_4 and avoid other acids to intorudce acidity in permangometric titration. 2

Part B (Answer any 4 questions. Each carries 6 marks)

9. a)Define reversible and irreversible process b)At what temperature does the reaction $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(l)$ become spontaneous if $\Delta H = +1212$ kJ and $\Delta S = +140 JK^{-1}$ 6

10. How is the order of a reaction determined by a graphical method? 6

11. (a)Distinguish between the terms threshold energy and activation energy of a reaction and how are they related? (b)How will you evaluate activation energy of a reaction 6

12. Draw Langmuir adsorption isotherm and derive its equation. 6

13. a) Distinguish between lyophilic sols and lyophobic sols. b) Briefly explain factors that stabilize a colloid. 6

14. Explain the theory of adsorption indicators. 6

Part C (Answer any 1 question(s). Each carries 14 marks)

15. (a) Explain the theory of redox indicators and adsorption indicators 7

(b) Explain the role of fingerprint analysis in forensic science and its methods of detection. 7

16. (a) Give the relation connecting G with ΔH and ΔS. Also discuss the effect of temperature on the spontaneity of the reaction. 7

(b) Distinguish between heat capacity at constant volume (Cv) and heat capacity at constant pressure(Cp). Derive the relation between Cp and Cv. 7