K26FY1325 Pages: 2 Reg No:.....
Name:.....

# Second Semester FYUGP Degree (Reg/Sup/Imp) Examination April 2026

# KU2DSCCHE111 - BASIC PHYSICAL CHEMISTRY AND FORENSIC CHEMISTRY

2024 Admission onwards

Time : 1.5 hours Maximum Marks : 50

## Section A

**Answer any 6 questions. Each carry 2 marks.**

1. What is the unit of rate constant for a reaction having order 3/2?
2. Differentiate between order and molecularity of a reaction
3. Write BET equation and indicate the terms.
4. Give one difference between adsorption and absorption.
5. Temperature is an intensive property. Comment on the statement.
6. What is a Lewis base.Give two examples for Lewis base .
7. What is permanganometry? Give an example for a permanganometric titration.
8. What is the primary goal of forensic science?

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## Section B

**Answer any 4 questions. Each carry 6 marks.**

9. Using Gibbs -Helmholtz equation, explain the conditions for a process to be spontaneous.
10. a) Cp is always greater than Cv. Why? b)Explain the state of chemical reactions when: (i) $\Delta G = 0$; (ii) $\Delta G < 0$; (iii) $\Delta G > 0$.
11. Write a short note on hydrolysis of salts.
12. Explain the principle of iodometry and iodimetry.
13. Explain the significance of blood spatter analysis in forensic science. How can blood patterns help reconstruct a crime scene?
14. Discuss the different types of fingerprints and their significance in forensic investigations.

## Section C

**Answer any 1 questions. Each carry 14 marks.**

15. (a) (a)Derive the integrated equation for the rate constant of a first order reaction.
(b)Describe the half-life method of determining the order of a reaction.

(b) What are the main postulates of the collision theory of bimolecular gaseous reactions? How does collision theory explain the effect of the temperature on the rate of a reaction?

16. (a) Discuss the important optical and kinetic properties of colloids.

(b) Explain the electrical double layer and zeta potential in colloids .

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