PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION JUNE 2014
(Sixth Semester)

Branch – **CHEMISTRY**

PHYSICAL CHEMISTRY - II

Time : Three Hours   Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks $(10 \times 2 = 20)$

1. Define specific reaction rate.
2. Mention two differences between order and molecularity of a reaction.
3. Give one example for the study of kinetic parameters using volumetry and polarimetry.
4. Write the equation for the determination of order of a reaction by half-life method.
5. Give Arrhenius equation and explain the terms involved in the equation.
6. Define quantum yield.
7. What is antiferromagnetism?
8. Define magnetic moment.
9. State the phase rule.
10. Determine the number of components, number of phases and the degrees of freedom for the $CaCO_3 \rightleftharpoons CaO\ (s) + CO_2\ (g)$.

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks $(5 \times 5 = 25)$

11 a   Derive the integration of rate expression for third order reaction.
                           OR
    b   Define the following terms in chemical kinetics :
        i) Temperature coefficient of a reaction.
        ii) Rate expression of a reaction.
        iii) Molecularity of a reaction.

12 a   How is order of a reaction determined by Oswald's isolation method?
                           OR
    b   Discuss the study of kinetic parameters using potentiometric method.

13 a   Differentiate between primary and secondary reactions.
                           OR
    b   How is quantum yield determined?

14 a   Derive Debye equation.
                           OR
    b   Derive Claussius – Mosotii equation.

15 a   Discuss the phase diagram of a two component system.
                           OR
    b   Draw and explain cooling curves.

Cont…

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 a   What are the factors influencing rate of a reaction?

   b   What are the characteristics of first order rate constant?

17 a   What are the characteristics of chain reactions?

   b   What are complex and consecutive reactions? Give an example for each.

18 a   Describe the effect of temperature on the rate of a reaction.

   b   Explain the theory of absolute reaction rate.

19 a   Discuss the Guoy's method.

   b   Give an three applications of magnetic susceptibility.

20 a   Derive the Gibb's phase rule equation.

   b   Discuss the phase diagram of water.

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