Exam Date & Time: 30-Sep-2020 (10:00 AM - 01:45 PM)

PSG COLLEGE OF ARTS AND SCIENCE

Note: Writing 3hrs: Checking & Inserting Image : 30mins + Grace Time : 15mins

BSc DEGREE EXAMINATION MAY 2020
(Sixth Semester)

Branch - CHEMISTRY

PHYSICAL CHEMISTRY-II [14CHU24]

Marks: 75 **Duration: 225 mins.**

SECTION A

Answer all the questions.

1) Write down the expression for rate of the following reaction in terms of A, B, M and N. $a\,A + b\,B \rightarrow m\,M + n\,N$. (2)

2) The rate of the reaction if found to be doubled when the concentration of a particular substrate is increased by four times. What will be the order of the reaction with respect to that substrate? (2)

3) Give an example for the kinetic study measured through conductometric methods. (2)

4) Give an example for a parallel reaction. (2)

5) What is dipole moment? Give its unit. (2)

6) What do you mean by antiferromagnetism? (2)

7) Give the activation energy profile diagram for an exothermic reaction. (2)

8) Explain chemi-luminescence with an example. (2)

9) Is it possible to have a quadruple point in the phase diagram of one component system? Why? (2)

10) What do you mean by congruent and incongruent melting points? (2)

SECTION B

Answer all the questions.

11) What do you mean by order and molecularity of a chemical reaction? Differentiate them. (5)

a) What do you understand by a pseudo-unimolecular reaction? Give examples. (5)

[OR]

b) Explain the graphical method for the determination of order of a chemical reaction. (5)

12) a) Describe the characteristics of chain reactions. (5)

[OR]

b) Describe the collision theory of bimolecular reaction. (5)

13) a) Bring out the differences between thermal and photochemical reactions. (5)

[OR]

b) How will you determine the dipole moment with the help of Clausius-Mossotti equation? (5)

14) a) What do you understand by paramagnetic, diamagnetic and ferromagnetic substances? Explain. (5)

[OR]

b) Derive Gibbs phase rule and explain the terms in it. (5)

15) a) Describe the phase diagram of simple eutectic system. (5)

[OR]

b)

SECTION C

Answer 3 out of 5 questions.

16) (a) Derive the rate expression for the first order reaction. (b) Give each one example for a zero, first and second order reactions. (10)

17) (a) How will you study the kinetics of Parallel Reactions? (b) Explain the half-life period method for the determination of order of a chemical reaction. (10)

18) Describe the various photo-physical phenomena with the help of Jablonski diagram. (10)

19) How did you measure the magnetic susceptibility with the aid of Guoy's Balance? Discuss the applications of magnetic susceptibility measurements. (10)

20) Apply the phase rule to sulphur system with the aid of its phase diagram. (10)

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