[Total No. of Questions - 9] [Total No. of Printed Pages - 2] (2125)

15441

B. Pharmacy 2nd Semester Examination

Pharmaceutical Chemistry-II (Physical Chemistry) (OS)

HBP-106

Time : 3 Hours **Max. Marks : 80**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting at least one from each section. Section E is compulsory.

SECTION - A

1. (a) Derive Vander Waal's equation. (8)

   (b) Show that $T_c = \frac{8a}{27Rb}$ (8)

2. (a) What do you understand by optical rotation and specific rotation? How will you determine the specific rotation of a substance? Explain the principle of instrument used. (8)

   (b) Explain viscosity and coefficient of viscosity. Describe the principle and apparatus used for the measurement of coefficient of viscosity. (8)

SECTION - B

3. (a) Derive Duhem Margules equation. (8)

   (b) Define ideal and non ideal solutions. Prove that for ideal solution $\Delta H_{mix}=0$ and $\Delta V_{mix}=0$. (8)

4. (a) Derive Gibbs Helmholtz equation. (8)

   (b) Derive phase Rule Thermodynamically. (8)

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SECTION - C

5. (a) Distinguish between physical adsorption and chemisorption. (8)

   (b) What is B.E.T. equation? How we can test the validity of the reaction? (8)

6. (a) Explain two basic laws of photochemistry. (8)

   (b) Explain Fluorescence, Phosphorescence and Photosensitization with suitable examples. (8)

SECTION - D

7. (a) Derive mathematically the equation for the rate constant of 2nd order reaction

   $A + B \rightarrow$ Product (8)

   (b) Explain the enzyme catalysis in detail. (8)

8. (a) What are the postulates of quantum mechanics? Based on the postulates of quantum mechanics, derive Schrodinger wave equation. (8)

   (b) Apply Schrodinger ν wave eqn. to a particle in one dimensional box and obtain the expression, for the Eigen function and Eigen value of energy. (8)

SECTION - E (Compulsory)

9. (a) Define Fluidity.

   (b) Collision frequency, explain.

   (c) Explain Eigen values and Eigen functions.

   (d) What are Isotonic solutions? Give examples.

   (e) Explain equivalent cend.

   (f) Distinguish between Homogeneous and Heterogeneous catalysis with suitable examples.

   (g) Define 2nd law of Thermodynamics.

   (h) Explain Refractive Index. (2×8=16)