Sr.No.3294

Exam Code: 103206
Subject Code : 1329

B.A./B.Sc. - 6th Semester

(2721)

Paper : Chemistry (Physical Chemistry-IV)

Time allowed: 2 hrs. **Max. Marks: 35**

Note: There are EIGHT questions of equal marks. Candidates are required to attempt any FOUR questions.

Section-A

1. Write a note on
   (a) Heat capacity of solids (b) Compton effect (c) Photoelectric effect $(2\frac{1}{2}+2\frac{1}{2}+3\frac{3}{4})$
2. Derive the solution of Schrodinger wave equation for a particle in three-dimensional box. Explain degeneracy. $(8\frac{3}{4})$

Section-B

3. Drive solution of Schrodinger Wave equation for Simple harmonic oscillator. $(8\frac{3}{4})$
4. Drive Schrodinger Equation for Radial part of H-atom. $(8\frac{3}{4})$

Section-C

5. (a) Enlist and show all the symmetry elements present in pyridine. $(2\frac{1}{2})$
   (b) Derive Bragg's law in reciprocal space. $(3\frac{3}{4})$
   (c) Calculate the interplanar spacing (d_{hkl}) for cubic system between the 110 set of planes. Assume that a is the edge length of the unit cell. $(2\frac{1}{2})$
6. Elaborate the structure determination of KCl by powder XRD method. $(8\frac{3}{4})$

Section-D

7. (a) What do you understand from photochemistry? Enlist main applications of photochemistry. $(3\frac{3}{4})$
   (b) Draw and explain Jablonski's diagram. (5)
8. (a) Explain photosensitized reactions with at least 2 examples. $(3\frac{3}{4})$
   (b) Explain Grothus-Drapper and Stark-Einstein law of photochemistry. (5)

****