Roll No. ....

5253

B. Sc. EXAMINATION

(Sixth Semester)

CHEMISTRY

Paper XIX (CH-305)

Physical Chemistry

Time : *Three Hours*   *Maximum Marks* : 26

Note : Q. No. 1 is compulsory. Attempt *Five* questions in all, selecting *two* questions from each Section.

Compulsory Question

1. Short Answer Type :

   (a) What is meant by even parity (g) ?

   (b) Explain photosensitization with one example.

(c) Why equimolar solutions of NaCl and canesugar do not have same osmotic pressure ?

(d) Camphor is used as a solvent in Rast method. Give suitable reason.

(e) Calculate the degree of freedom of sulphur at transition point.

(f) What is Eutactic point ? $1\times6=6$

Section A

2. (a) Explain the selection rules for transition in electronic spectroscopy of molecules.

   3

   (b) What does the symbol $^3\Sigma_g^-$ signify as used in electronic spectroscopy ? 2

3. (a) Calculate the value of an Einstein of energy for radiation of wavelength 4240 Å.

   2

   (b) Briefly explain fluorescence and phosphorescence using Jablonski diagram.

   3

4. (a) For the photochemical reaction $A \rightarrow B$, 1.0×10^{-5} moles of B were formed on absorption of 6.0 joules at 3600 Å. Calculate quantum efficiency. 3

(b) Write short notes on the following : 2

(i) Photo-inhibitors

(ii) Franck-Condon principle.

Section B

5. (a) Thermodynamically derive the relationship between mol. weight and elevation in boiling pt. 3

(b) The latent heat of fusion of ice is 79.7 cal/g. Calculate the molal depression constant of water. 2

6. (a) Define Gibbs phase rule. How can you derive it thermodynamically ? 2.5

(b) Draw labelled phase diagram of water system. 2.5

7. Write short notes on the following :

    (a)   Desilverisation of lead   1

    (b)   Triple point in phase diagram   1

    (c)   Van't Hoff factor   1

    (d)   Raoult's law.   2