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Unit–IV

8. Explain nuclear size, nuclear spin, magnetic dipole moment and quadrupole moment (shape concept only). 8

9. Write notes on :

   (a) Geiger Nuttal law 4

   (b) Energy loss by beta particles (ionization). 4

B.Sc. 3rd Semester (Hons) New Scheme

Examination, December–2015

CHEMISTRY

Paper–III

Physics Optional

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt five questions in all.* ***Question No. 1 is compulsory.*** *Attempt* ***one*** *question from each unit. All questions carry equal marks.*

Compulsory Question

1. (a) Show that a phase charge of π occurs when reflection takes place from the surface of denser medium. 1

   (b) In a Fresnel's biprism experiment, the distance of eye piece from slit is 100 cm and distance between two virtual sources are found to be 0.3 mm and 1.2 mm. in two conjugate position of the lenses. If the width of one fringe is 0.0982 cm. Find the wavelength of light used. 2

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(c) What is dispersive power of grating ? 1

(d) Give two differences betwen Fresnel and Fraunhoffer differaction. 1

(e) What do you mean by double refraction ? 1

(f) How Polarization by Scattering occurs ? 1

(g) What do you mean by nuclear stability ? 1

Unit–I

2. Discuss the biprism method of producing interference fringes. How can it be used to find thickness of mica sheets ? 8

3. Describe Michelson's interferometer. How can we find the wavelength of monochromatic light using Michelson interferometer ? 8

Unit–II

4. (a) Discuss Rayleigh criterion of resolution. Derive an expression for resolving power of telescope. 6

(b) Calculate the angular seperation of two points on moon that can be resolved by a 500 cm telescope. The eye is most sensitive to wavelength 5500 A°. 2

5. Discuss Fraunhoffer's Diffraction at double slit. Find the position of maxima and minima in the diffraction pattern. 8

Unit–III

6. (a) Define specific rotation. Describe the construction and working of a half shade polanmeter. 6

(b) A sugar solution in a tube of length 20 cm produces optical rotation of 13° with light of wavelength λ = 6000 A°. Find the strength of solution. Given specific rotation of sugar is 65°. 2

7. (a) Give construction and working of Nicol prism. 6

(b) State and Explain Malus law. 2