

**First Year B.Sc Optometry Degree Supplementary Examinations****April 2019****Physics & Chemistry  
(2014 Scheme)****Time: 3 hrs****Max marks: 80**

- Answer all questions
- Write section A and section B in separate answer books (32 Pages). Do not mix up questions from section A and section B.

**Q P Code: 115013****Section A – Physics****Marks: 40****Essay:****(10)**

1. Discuss in detail Fraunhofer diffraction due to a single slit

**Short notes:****(3x5=15)**

2. Derive an expression for the focal length of a zone plate
3. Explain the first order theory of monochromatic aberrations
4. Briefly illustrate the production of spectrum by different methods

**Answer briefly:****(5x2=10)**

5. What is a Brewster's window
6. Explain quantum theory of light
7. What is Rayleigh's scattering
8. What are the uses of optical fibres
9. What is Lagrange's law

**Fill in the blanks:****(5x1=5)**

10. Wavelength of a laser beam can be considered as a standard of.....
11. In a Newton's ring experiment, the diameter of the rings formed is.....
12. He-Ne laser employs a .....level system
13. Diffraction of light was discovered by.....
14. Fraunhofer diffraction can be observed with.....slit

**Q P Code: 116013****Section B – Chemistry****Marks: 40****Essay:****(10)**

1. Explain optical activity. Which type of organic molecule exhibit this property. Discuss the optical isomerism of lactic acid and tartaric acid

**Short notes:****(3x5=15)**

2. Give the mechanism of nitration and halogenation of benzene
3. Explain the shape of methane on the basis of the concept of hybridization
4. Explain the term inductive effect. Give its significance

**Answer briefly:****(5x2=10)**

5. Explain the principle of column chromatography
6. What is meant by carbanion
7. Why vitamin A is essential for us
8. Give the uses of benzene
9. What is meant by inversion of cane sugar

**Fill in the blanks:****(5x1=5)**

10. Among glucose, fructose, sucrose ----- is a ketohexose
11. Reaction of benzene with methyl chloride in presence of anhydrous aluminium chloride yields -----
12. Stereoisomers that are not mirror images of each other are called -----
13. Attacking electrophile in an aromatic nitration reaction is ----- ion
14. The general formula of alkyne is -----

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