

First Year B.Sc Optometry Degree Supplementary Examinations
December 2017
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 the monochromatic aberrations in the image formed by a single lens with respect to a certain position of the object. Explain the first order theory and the third order theory. Explain the tangent condition of elimination of distortion.

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

2. What are cardinal points. Show that the nodal planes are planes of unit angular magnification.
3. Explain dispersion without deviation and deviation without dispersion
4. Describe the working of a solid state ruby laser.

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

5. List four remarkable features of principal planes.
6. Explain what do you understand by modes and numerical aperture in fibre optics.
7. Compare a convex lens and a zone plate.
8. Obtain an expression for the resolving power of a grating.
9. Explain how Newton's rings change • if a plane mirror is placed in place of glass plate below the lens and • white light is used.

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

10. A plane polarized light wave is a wave in which the oscillates in a given constant orientation.
11. Brewster windows are used inlasers.
12. Crystals that exhibit are called anisotropic crystals.
13. Calcite and are examples of uniaxial crystals.
14. The visibility of interference fringes is a function ofonly.

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

1. What is a buffer solution. What are different types of buffer. Discuss their buffer action.

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

2. Explain the resonance effect.
3. Discuss the molecular orbital structure of benzene.
4. What are carbohydrates. How are they classified.

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

5. How will you convert benzene to acetophenone. Name the reaction.
6. What are the biological functions vitamin C.
7. Which of the following are optically active. Why.
 - 2-chloropropane
 - 2-chlorobutane
 - 3-chloropentane
8. Discuss the optical isomerism of lactic acid.
9. The preparation of sulphapyridine.

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

10. The optical isomers that are mirror images are called_____
11. Benzene reacts with methyl chloride in the presence of anhydrous $AlCl_3$ to form _____
12. The metal present in vitamin B_{12} is _____
13. In thin layer chromatography mobile phase is _____
14. A carbon atom which is linked to four different atoms or group of atoms is called _____