

First Year B.Sc Optometry Degree Regular/Supplementary Examinations
August 2021
Physics & Chemistry
(2014 Scheme)

Time: 3 hrs

Max marks: 80

- Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers
- Indicate the question number correctly for the answer in the margin space
- Answer all parts of a single question together • Leave sufficient space between answers
- Draw table/diagrams/flow charts wherever necessary • 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. Explain the formation of Newton's rings in reflected light. Describe an experimental procedure to determine the wavelength of a monochromatic light by Newton's rings method.

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

2. Explain how a hologram is prepared and viewed
3. Describe the lasing action of a three level laser with reference to ruby laser.
4. Calculate the equivalent focal length of two thin co-axial lenses separated by a finite distance.

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

5. What is population inversion in a laser.
6. Differentiate between grating spectra and prism spectra.
7. What is the purpose of Canada balsam layer in a nicol prism
8. List any four types of monochromatic aberrations of a lens.
9. State Huygen's wave theory of light.

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

10. The attenuation in optical fibres is caused byand.....
11. The maximum number of orders available with a grating is directly proportional to
12. A spherical lens which is free from the defects of spherical aberrations and coma is called as.....
13. Polarization phenomenon cannot take place withwaves.
14. Chromatic aberration in an optical lens occurs due tophenomenon

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

1. Give a detailed account on the formation, stability and reactions (any two) of intermediates carbocation, carbanion and free radicals.

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

2. Explain the following with suitable example: geometrical isomerism, keto-enol tautomerism.
3. Give the open chain structures of glucose and fructose. Write the chemical reactions of glucose and fructose with Fehling's solution and phenyl hydrazine.
4. Explain the classification and functions of hormones.

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

5. Draw the structure of vitamin C. Give its function in the body.
6. What is meant by R_f value in thin layer chromatography. Explain its significance.
7. Discuss the buffer action of acetic acid – sodium acetate mixture.
8. Benzene on treatment with methyl chloride in the presence of anhydrous AlCl₃, a product is formed. Identify the product and explain the mechanism of the reaction.
9. Give a short account on the isolation of benzene.

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

10. Separation of racemic mixture is called
11. Benzene on treatment with nitrating mixture to produce
12. Sucrose is an example for Saccharide.
13. Colorimetric estimations are based on law.
14. Milk is an example of type emulsion.
