First Year B.Sc Optometry Degree Regular/Supplementary Examinations
January 2022
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. Give the theory of Newton's rings. How Newton's rings can be used to find • the wave length of sodium vapour lamp   • the refractive index of water.

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

2. Distinguish between Fresnel's and Fraunhoffer's class of diffraction.
3. Explain holographic construction and reconstruction processes.
4. Describe the working of a helium neon laser.

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

5. Explain total internal reflection in an optical fibre with the help of a diagram.
6. Define double refraction. Give an example.
7. Explain the power of a lens. How do you correct astigmatism.
8. Explain Rayleigh's criteria for resolution.
9. Obtain grating equation. Explain the physical parameters.

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

10. The size of the obstacle in order to observe diffraction of light must be of the order of the …………. of light used.
11. Sugar is a ……………… rotatory optically active substance.
12. Plane polarized light can be produced by ………………… prism.
13. ……………….. pumping method is used in a ruby laser.
14. The spherical shape of rain drop is due to

Q P Code: 116013   **Section B – Chemistry**   **Marks: 40**

Essay: **(10)**

1. Explain the hybridization and structure of Methane, Ethane, Ethene and Ethyne

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

2. Discuss optical isomerism of lactic acid
3. Discuss the geometrical isomerism of Fumaric acid and maleic acid
4. What happens when benzene is treated with - (1) ethyl bromide in the presence of anhydrous $AlCl_3$ (2) acetyl chloride in the presence of anhydrous $AlCl_3$ and nitrating mixture at 600C. Give equation

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

5. What are emulsions. How are they classified.
6. Name two water soluble vitamins and fat soluble vitamins
7. What are artificial hormones. Give examples
8. What are monosaccharides. Name two monosaccharides
9. Explain the uses of benzene

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

10. A substance that stabilises an emulsion is called ---------------
11. Rf value in chromatography is --------------------
12. Explain the chemical name of vitamin C
13. The separation of racemic mixture into its d and l components is called-----------
14. Cellulose is a polymer of ---------------

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