

Reg. No.: .....

**First Year B.Sc Optometry Degree Supplementary Examinations**  
**May 2023**  
**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:**

1. Explain with a neat diagram, the principle, construction and working of Ruby Laser

**(3x5=15)**

**Short notes:**

2. Explain Raman Scattering of Light
3. Draw and explain Fresnel's two mirror arrangement
4. What is an elliptically polarised light. How is it produced

**(5x2=10)**

**Answer briefly:**

5. What is double refraction. Give one example
6. What are the applications of Lasers in medicine
7. What is chromatic aberration. How is it eliminated
8. Explain the resolving power of a telescope
9. Explain spatial coherence

**Fill in the blanks:**

**(5x1=5)**

10. Life time of a metastable state is of the order of-----
11. Polarisation of light proves----- nature of light
12. A half wave plate is used to produce-----
13. To observe diffraction, size of the obstacle should be-----
14. The angle of biprism is-----

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**Q P Code: 116013**

**Section B – Chemistry**

**Marks: 40**

**Essay:**

**(10)**

1. Discuss and illustrate Inductive effect, electrometric effect and resonance effect in organic molecule.

**(3x5=15)**

**Short notes:**

2. Explain the terms plane polarised light, optical activity and specific rotation
3. Explain the biological functions and deficiency disease caused by vitamin A
4. Give the structure and names of products obtained when D-Glucose reacted with acetic anhydride, bromine water, Conc. $\text{HNO}_3$  and ammoniacal silver nitrate solution

**(5x2=10)**

**Answer briefly:**

5. Explain the basic principle of chromatographic technique. What are the stationary and mobile phases in paper chromatography.
6. Explain the terms homolysis and heterolysis
7. Explain the product obtained when benzene undergo nitration. Give the equation
8. Which vitamin carries the name sunshine vitamin. Why.
9. Give two applications of emulsion

**Fill in the blanks:**

**(5x1=5)**

10. ----- is an example of emulsifier
11. The disease beriberi is caused by the deficiency of vitamin-----
12. Stereoisomers that are not mirror images of each other are called -----
13. In benzene the state of hybridisation of C atom is -----
14. Friedel – Crafts alkylation reaction of benzene is an example of -----substitution reaction

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