

Reg. No.: .....

**First Year B.Sc Optometry Degree Supplementary Examinations**  
**February 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 diffraction in a plane transmission diffraction grating. Derive the grating equation. What is grating element.

**Short notes:**

**(3x5=15)**

2. How do you check the optical planeness of glass plates using air-wedge.
3. Explain the production of plane polarized light by a nicol prism.
4. Describe the working of a solid state ruby laser.

**Answer briefly:**

**(5x2=10)**

5. Distinguish between step index and graded index optical fibre.
6. Define optical activity. What are optically active substances.
7. Explain the colours exhibited by thin soap bubbles.
8. Explain spherical aberration. How do you correct it.
9. Define Fermat's principle in optics.

**Fill in the blanks:**

**(5x1=5)**

10. Interference of light shows the ..... nature of light.
11. Holography is ..... photography.
12. Spherical aberration can be removed using ..... lens.
13. Astigmatism can be corrected by ..... Lens.
14. The double refraction and total internal reflection are utilized in ..... prism.

**Q P Code: 116013**

**Section B – Chemistry**

**Marks: 40**

**Essay:**

**(10)**

1. Discuss optical isomerism of tartaric acid

**Short notes:**

**(3x5=15)**

2. Explain inductive effect
3. Illustrate Friedel Crafts alkylation and acylation reaction with suitable example
4. Why the Vit A, Vit C is essential to us. Give the chemical names of Vit A, B<sub>1</sub>, B<sub>2</sub> and Vit C

**Answer briefly:**

**(5x2=10)**

5. Draw the geometrical isomers of 2- butene and name them
6. Explain the terms homolysis and heterolysis
7. Give a laboratory test to illustrate the reducing action of fructose.
8. What are hormones. Why are they called chemical messengers.
9. Give two applications of thin layer chromatography.

**Fill in the blanks:**

**(5x1=5)**

10. ----- is an example of emulsion
11. The disease beriberi is caused by the deficiency of vitamin-----
12. Starch is a ----- saccharide
13. Bromine water oxidation of glucose gives -----
14. A reactive intermediate species in which carbon bears a negative charge is called -----

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