

Reg. No.: .....

**First Year B.Sc Optometry Degree Supplementary Examinations April 2018**  
**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. Give the theory of a plane transmission grating and describe how it is used to determine the wavelength of light.

**Short notes:**

**(3x5=15)**

2. Explain any three types of monochromatic aberrations of lenses.
3. What is the power of a lens. Calculate the power of two thin lenses of focal lengths  $f_1$  and  $f_2$  separated by distance,  $d$ .
4. Explain the working principle of optical fibres. Derive an expression for numerical aperture.

**Answer briefly:**

**(5x2=10)**

5. Explain optical activity of sugar solution.
6. What is zone plate and how it is made.
7. What is a photovoltaic photometer
8. Why are stationary waves named so
9. Define double refraction. Also give an example of doubly refracting uni-axial crystal.

**Fill in the blanks:**

**(5x1=5)**

10. The type of pumping used in ruby laser is.....
11. Colour exhibited by thin films is due to..... of light.
12. Abbe's sine condition is used to reduce.....
13. Light wave is an example of..... wave.
14. Light signals are transmitted through optical fibres by means of a physical phenomenon called as.....

**Q P Code: 116013**

**Section B – Chemistry**

**Marks: 40**

**Essay:**

**(10)**

1. What are colloids. How they are classified. Give any two methods for the preparation of gels. Explain any three applications of gels.

**Short notes:**

**(3x5=15)**

2. Explain the hybridization involved in the formation of ethane and ethyne.
3. Illustrate the terms racemization and resolution. Explain any two methods for resolution.
4. Give the mechanism of alkylation and nitration of benzene.

**Answer briefly:**

**(5x2=10)**

5. What is Tollen's reagent. Explain the reaction between glucose and Tollen's reagent.
6. Explain with example mutarotation in sugar molecules.
7. What are sulpha drugs. Give general structure and uses of sulpha drugs.
8. Give the structure and biological functions of vitamin A.
9. What is racemisation.

**Fill in the blanks:**

**(5x1=5)**

10. Homolytic fission of the covalent bond leads to the formation of .....
11. Number of asymmetric carbon atoms present in tartaric acid is .....
12. Endocrine glands secrete certain chemicals in our body called.....
13. Ascorbic acid is the alternate name of .....vitamin.
14. Buffer action of blood is due to ..... system

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