Reg. No.: ……

First Year B.Sc Optometry Degree Supplementary Examinations
October 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. Explain the principle of optical pumping and stimulated emission of radiation. Explain the lasing action of helium- neon laser. How it is superior to ruby laser.

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

2. Explain the physical phenomena involved in the working of a nicol prism as a polarizer.
3. Describe an experimental procedure to test the optical planeness of glass plates.
4. Explain spherical aberration and astigmatism. How do you correct them.

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

5. Distinguish between Fresnel's and Fraunhofer's class of diffraction
6. Differentiate between step index fibre and graded index fibre.
7. What are coherent sources
8. Define simple harmonic motion.
9. Distinguish between interference and diffraction bands.

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

10. Holography records the ..... pattern of laser light.
11. The dispersive power of a plane transmission grating is defined as the ratio.....
12. Spherical shape of a rain drop is due to.....
13. In Huygen's wave theory, the locus of all points in the same state of vibration is called as.....
14. In an optical fibre the refractive index of cladding is .....than that of core

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

Essay: **(10)**

1. What are saccharides. Give their classification. Explain any two reactions of glucose, fructose and sucrose with proper equations.

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

2. Explain the following with suitable examples: nucleophilic substitution reactions, elimination reaction
3. Describe optical isomerism in lactic acid and tartaric acid.
4. Draw the structure and explain the biological functions vitamin C and vitamin B_1.

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

5. Differentiate between sol and gel. Give examples
6. Describe the following terms used in chromatography: elution, Rf value
7. Give a short account on hyper conjugation effect with example.
8. Benzene on treatment with acetyl chloride in the presence of anhydrous $AlCl_3$, a product is formed. Identify the product and illustrate the mechanism of the reaction.
9. Give an example for a rearrangement reaction involving carbocation.

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

10. Hybridization of a carbocation is ……..
11. 50% of dextro and 50% of laevo isomers constitute in a mixture called……
12. Amylose is linear polymer of ……
13. Example for an antibiotic is ……
14. Vitamin A is also known as .....

****