

Reg. No.: .....

First Year BSc Optometry Degree Examinations November 2015

**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. Distinguish between spatial and temporal coherence. What is meant by optical pumping. Explain the working of a ruby laser.

**Short notes:**

**(3x5=15)**

2. State Lambert's Law .Explain the working of a photovoltaic photometer.
3. What are cardinal points. Explain with ray diagrams.
4. How will you produce and detect linearly polarized light.

**Answer briefly:**

**(5x2=10)**

5. State Fermat's principle.
6. "Newton's rings are circular." Why.
7. Explain Raman scattering.
8. What is first order theory.
9. What is presbyopia. How is it corrected.

**Fill in the blanks:**

**(5x1=5)**

10. The S.I. unit of power of a lens is .....
11. The blue color of sky is due to .....
12. ....is used to correct chromatic aberration.
13. Quantum theory of light was proposed by .....
14. The formula for the resolving power of a grating is .....

**Q P Code: 116013**

**Section B – Chemistry**

**Marks: 40**

**Essay:**

**(10)**

1. Explain addition, elimination and rearrangement reactions taking place in organic molecules with proper examples and mechanisms.

**Short notes:**

**(3x5=15)**

2. Define optical isomers. Explain the criteria for a molecule to show optical activity by taking lactic acid as example.
3. Explain the reactions •conversion of benzene into acetophenone •benzene into benzene sulphonic acid
4. Principle and applications of paper chromatography.

**Answer briefly:**

**(5x2=10)**

5. Draw the structure of penicillin and mention its use.
6. A solution containing  $\text{NH}_4\text{OH}$  and  $\text{NH}_4\text{Cl}$  will act as a buffer solution. Justify the statement.
7. Draw the open chain structures of glucose and fructose. Which is more reactive and why.
8. An unsaturated dicarboxylic acid with molecular formula  $\text{C}_4\text{H}_4\text{O}_4$  shows a M.P of  $135^\circ\text{C}$ . Its isomer shows a M.P of  $287^\circ\text{C}$ . Identify the compounds.
9. Hyperconjugation effect with example.

**Fill in the blanks:**

**(5x1=5)**

10. The geometry of a carbocation is .....
11. Number of oxygen atoms present in lactic acid is .....
12. The water soluble part of glucose is called .....
13. Retinol is a component of ..... vitamin
14. Colloidal solution having solid dispersion medium and liquid dispersed phase is known as.....

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