

Second Year B.Sc Optometry Degree Examinations - October 2014

**Optometric Optics****Time : 3 hrs****Max marks : 80**

- **Answer all questions**
- **Draw diagram wherever necessary**

**Essays****(2x15=30)**

1. Derive the formula to find sphero-cylindrical equivalent for obliquely crossed cylinders, with neat diagrams and description.
2. Describe photochromic glass lenses. Mention the difference between photochromic plastic lenses and glass lenses. List the factors responsible for photochromic lens performance.

**Short notes****(5x5=25)**

3. Mention any five differences between soft and hard progressive addition lens design.
4. What is Fresnel prism. List out advantages and disadvantages
5. A lens is said to have a power of -4.25D in the vertical meridian and -2.50D in the horizontal meridian. Write out its prescription in the toric form with +4.00D base curve.
6. Compound 4□BU and 5□BO into a single resultant prismatic effect for the right eye by:□  
Graphical solution□ Mathematical calculation
7. Different types of bifocal lenses.

**Answer briefly****(10x2 = 20)**

8. What is image jump. Find the jump exerted by the lens, +2.50DS; Add +2.50D, 27mm segment diameter.
9. Define prism diopter and mention its unit.
10. Mention two differences between soft and hard designs of progressive addition lenses.
11. What is bad metal and strain in defects in material of the lens.
12. Define rotary prism and mention its application in optometric practice.
13. Name any two differences between individual batch process and the continuous flow process of manufacturing ophthalmic lenses.
14. Why lenses are manufactured in minus cylinder forms.
15. What is blocking and truing in the process of grinding ophthalmic lenses.
16. What are ghost images and mention the best method to reduce them.
17. List one use each of single layered antireflection, multilayered antireflection, oleophobic, and hard coating.

**One word answer****(5x1 = 5)**

18. The equation used to calculate reflectance of optical lens surface is \_\_\_\_\_.
19. When lightning strikes a bed of dry sand, the natural glass formed due to fusing of sand is \_\_\_\_\_.
20. Frames that are suitable for use as safety glasses must have \_\_\_\_\_ code written on them.
21. The central portion of the lens in which the prescription exists is called \_\_\_\_\_ of a lenticular lens.
22. The transposed form of the prescription +1.00DS/-5.00DC \* 20 degrees is -----.

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