Q.P.Code 201013 **Reg. No.:..... .**

Second Year B.Sc Optometry Degree Supplementary Examinations - April 2013

Optometric Optics

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

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

Essays **(2x15=30)**

1. Explain the principles of single layer anti reflection coating and add a note on multi-reflection coating. An antireflection coating is required to deposit upon glass of refractive index 1.6. What must be the refractive index of the coating material in order to satisfy the amplitude condition. Assuming that the correct coating material can be obtained. What must be its thickness if it is desired to produce zero reflection for a wavelength of 555nm.
2. A -20.00DS lens is made up in lenticular form using a 20mm aperture. The lens is mounted at a dioptrical distance of +37.00D from the eyes center of rotation. Calculate the angular field of view. What diameter must a -1O.OODS lens be made to produce the same field of view as the -20.00D lens, assuming that the lenses are mounted at the same distance from the eye.

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

3. Explain the refraction of light rays through a convex spherical and piano-concave lens with the help of a neat figure
4. Mention the steps involved in taking binocular and monocular distance PD using a ruler.
5. Explain the conoid of sturms with a neat figure.
6. Mention briefly on the following lens defects:• Veins • Bubbles •Waves
7. Calculate the vertical and horizontal prismatic effects at the near visual points of the bifocal lens: OD: +2.00DS/-1.00DC*180 Add: +2.50D, 38 Segment. Assume that the near visual points lie 1Omm below and 2.5mm in from the distance optical centers and that the distance optical centers are 4mm above the segment tops.

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

8. Polycarbonate lenses
9. Transpose the prescription into its alternate forms:+1.25DC*85 / -1.50DC*175
10. Fresnel prisms
11. Nylon cord frames and half eyes
12. Laminated lens
13. Thermo elastic materials
14. Library and convertible temple
15. Geneva lens measure
16. List the ideal characteristics of a tinted lens.
17. Define segment height and geometrical inset

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

18. ---------- is the refractive index of CR-39 lens material
19. ----------is the decentration required to produce 6**A** BD on the right eye by a -7.00DS lens.
20. Frames that are suitable for use as safety glasses must have ---------- code written on them.
21. ---------- is the focal length of the lens power -2.50D
22. ---------- --- is the type of lenses suitable for presbyopic spectacle lens wearers using computers.

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