

Second Year B.Sc Optometry Degree Supplementary Examinations - May 2014

Optometric Optics

Time : 3 hrs

Max marks : 80

- Answer all questions
- Draw diagram wherever necessary

Essays**(2x15=30)**

1. Define sag of a lens. And answer the following aspects on sag for a lens:
 - With neat diagrams and description derive the approximate sag relationship: $s = y^2F / 2000 (n-1)$
 - With diagrams, mention the formula to find the central thickness of bi-convex, plano convex, positive meniscus, bi-concave, plano-concave and negative meniscus lens.
2. Describe the parts of a spectacle frame. Mention the different type of metal and plastic materials used for making spectacle frames and briefly explain each. Explain the boxing system with the help of a neat diagram.

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

3. What is prismatic effect. Derive an equation to find the decentration relationship.
4. Name the common design problems of progressive addition Lens. What are patient's basic visual characteristics and requirements that need to be assessed once the patient is motivated for progressive addition lens.
5. A -10.00DS lens is made up in lenticular form using a 10mm aperture. The lens is mounted at a dioptrical distance of +40.00D from the eyes center of rotation. Calculate the angular field of view.
6. Explain the manufacturing process and the tests to find out the effectiveness of heat Toughened lenses.
7. Mathematical sign convention and mechanical sign convention

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

8. Mention the refractive index and density of crown glass and CR 39.
9. "Most optical media used for spectacle lenses are isotropic". What do you infer from this statement.
10. Mention briefly on following lens defects:
 - Tarnish
 - Greyness
11. Contrast filters and gradient lenses
12. Define glare and list the types.
13. How chromatic aberration is eliminated in a recumbent prism.
14. Refractive index of a lens.
15. List any four advantages of plastics over glasses lenses.
16. What is a pantoscopic tilt. What is the usual pantoscopic tilt.
17. Name any two ocular effects each of ultra violet radiation and infrared radiation.

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

18. When recumbent prisms are provided to subjects with a pair of spectacles, the prisms rotate their fields through _____.
19. Catoptric power is also known as _____ power of a spectacle surface.
20. When the lower, nasal portion of a lens shape is removed to allow for a better fit, it is called a _____ lens shape.
21. If a lens has an index of refraction of 1.98, what is the ideal index of refraction for a single-layer antireflection coating.
22. Divide the 12▲ BD in left eye before both the eyes.