

**Q.P. Code: 125013**

**Reg. No.:.....**

**First Year B.Sc Optometry Degree Regular/Supplementary Examinations  
February 2021**

**Paper III – Physical & Geometrical Optics**

**(2016 Scheme)**

**Time: 3 hrs**

**Max marks: 80**

- *Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers*
- *Indicate the question number correctly for the answer in the margin space*
- *Answer all parts of a single question together • Leave sufficient space between answers • Draw table/diagrams/flow charts wherever necessary*

**Essay:**

**(2x15=30)**

1. Derive the refraction at spherical surface. Derive vergence equation.
2. Derive the law of distances in the case of a convex lens. Derive the magnification produced by a convex lens in terms of distance of object and distance of image from the optic centre of the lens

**Short notes**

**(5x5=25)**

3. Sketch the ray diagrams of different imaging in the case of convex lens
4. Two lenses have focal length 25cm and -50 cm are kept in contact. What is the equivalent power of the combination.
5. Explain the terms depth of focus and depth of field
6. Discuss in detail about chromatic aberration in lenses. How chromatic aberration can be eliminated
7. Sketch the ray diagram of Newtonian telescope. Derive the expression for magnification produced.

**Answer briefly**

**(10x2=20)**

8. Compare the optical properties of crown and flint glasses.
9. How astigmatism can be reduced.
10. Explain achromatic doublet.
11. Distinguish between chromatic aberration and spherical aberration.
12. Write the expression for the deviation produced by thin prism.
13. Explain imaging due to two cylinders in contact with axis parallel.
14. Explain field stops and apertures.
15. Explain Huygen's principle.
16. Explain the terms reflectivity and transmittivity of a plane surface.
17. Explain the circle of least confusion.

**Fill in the blanks**

**(5x1=5)**

18. Distorsion is type of .....aberration
19. Length of a compound microscope is .....
20. Astigmatism can be corrected by ..... Of lens
21. Unit of power is .....
22. Velocity of light is maximum in the .....

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