

**Q.P. Code: 125013**

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

**First Year B.Sc Optometry Degree Regular/Supplementary Examinations  
August 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. Define Gull Strand's Schematic and explain power calculation of optical components
2. Explain the reflection by a spherical mirror and derive the vergence equation. Sketch the imaging by convex and concave mirror

**Short notes**

**(5x5=25)**

3. Explain the law of refraction using Huygen's principle
4. Two lenses having focal lengths 50 cm and -25 cm are separated axially by a distance of 10 cm. Calculate the effective focal length
5. Explain the differences between fluorescence and phosphorescence
6. Explain the defects of images formed by a lens How they can be corrected
7. How presbyopia can be corrected. Explain with diagram

**Answer briefly**

**(10x2=20)**

8. How refractive index of a medium is related to wave length of light in that medium
9. Explain Fermat's principle
10. Explain paraxial approximation. Write the vergence equation in the case of a convex lens
11. Explain Abbe's number
12. Sketch the ray diagram of a Newtonian telescope
13. Sketch the formation of images formed by two cylindrical lenses in contact with their axis perpendicular to each other.
14. How spherical aberration in lenses can be minimised
15. Explain the following aberrations • coma • curvature of field
16. What are Zernike polynomials
17. Explain Lambert cosine rule in the photometry.

**Fill in the blanks**

**(5x1=5)**

18. The focal length of a lens is -75 cm The power of the lens is .....
19. Chromatic aberration can be eliminated by using ..... instead of a single lens
20. Length of compound microscope is .....
21. The values of real and apparent depth of a slab is 12 cm and 9 cm. The refractive index of slab is.....
22. The number of cardinal points of convex lens placed in water is .....

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