Sl.No. M22209 **Course Code: 2740102/ 27417102**

VINAYAKA MISSION'S RESEARCH FOUNDATIONS, SALEM
(Deemed to be University)

B.OPTOMETRY DEGREE EXAMINATION – February 2020
First Year

GEOMETRIC OPTICS

Time: Three hours Maximum: 80 marks

I Choose the best answer (5 x 1 = 5)

1. Following affect the task visibility EXCEPT
   a) Size of task b) Likeability
   c) Illumination d) Glare

2. Relative illuminance ratio for task: immediate background: general background =
   a) 10:3:1 b) 3:10:1
   c) 1:3:10 d) 13:3:10

3. Snell's law is the
   a) Second law of refraction b) Second law of reflection
   c) Second law of dispersion d) Second law of polarization

4. Fibre optics principle
   a) Refraction b) Specular reflection
   c) Diffuse reflection d) Total internal reflection

5. The redistribution of atomic energy levels that takes place in a system so that laser action can occur is called as
   a) Population inversion b) Popular inversion
   c) Atomic inversion d) Retributions

II Fill in the blanks (5 x 1 = 5)

1.Coma is an _____ axis aberration.
2. Hyperopia occurs when the image falls_____ the retina.
3. _____ are used to measure the intensity of the light produced by an unknown source in terms of a standard source.
4. _____ is a method of light control using opaque medium.
5. Keplerian telescoped use _____ lens.

(p.t.o)

III Answer **ALL** questions: (10 x 2 = 20)

1. Define : Vergence
2. Derive only the expression for lateral displacement of emergent light ray refracted from a glass slab.
3. Define: temporal coherence.
4. Describe the term accommodation.
5. State the laws of reflection.
6. Define: Pincushion & Barrel distortion.
7. Define utilization factor.
8. What is luminous flux?
9. Mention 4 points for a Galilean telescope.
10. What is rectilinear propagation of light?

IV Write any **FIVE** answers of the following: (5 x 6 = 30)

1. Explain the image formation by a concave mirror with suitable diagrams
2. Differentiate Galilean and Keplerian telescope.
3. Write few applications of fibre optics.
4. What are the factors that affect a visual task?
5. Derive an expression for circle of least confusion.
6. Write a note on monochromatic aberrations.
7. Transposition: Write the following prescription in other +cyl forms
   a. +3.00DS*180/+2.50DC* 90
   b. -5.00DS/-2.00DC* 170

V Write any **TWO** essays of the following: (2 x 10 = 20)

1. Describe the cardinal points of the optical system.
2. Find the primary and secondary focal length for two convex lenses of power +5.00DS and +4.00DS separated by 4cm.
3. Write in detail on Ruby LASER.

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