THE AMERICAN COLLEGE, MADURAI

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (2nd Cycle) by NAAC with Grade "A", CGPA – 3.46 on a 4-point scale

Backlog Arrear Examination, March 2021

Course Code: PGP 5424/PGP 5440/PGP 5524/ PGP 568 **Time: 3 hrs**
Course Title: Matrix, Fourier Optics and Non-Linear Optics **Mark: 75**

Answer any FIVE Questions **5 x 15 = 75**

1. Derive Translation and Refraction Matrix using Gaussian optics.
2. Describe Rayleigh – Sommerfeld formulation of diffraction by a plane screen and derive Rayleigh – Sommerfeld diffraction formula.
3. Describe the formation of twin images from a Gabor hologram and also discuss its limitations.
4. Discuss the propagation of plane waves in anisotropic media.
5. Discuss the index ellipsoid in the presence of external electric field and derive the linear electro optic tensor.
6. Discuss the theory of Raman-Nath diffraction and explain its different order of diffraction.
7. Using self focusing phenomena, obtain the critical power of the emerging beam.

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