# Government General Degree College, Chapra
## Physics (General)
## 4th Semester internal examination, 2023-24

**Total marks: 15** **Duration: 40 min**

Answer any **three** questions: 3X5=15

1. What is meant by circular polarization of light? Provide an example of a natural source of circularly polarized light.
2. Explain the concept of a waveguide and its importance in communication systems. What is the significance of the cutoff frequency in waveguides?
3. Differentiate between TE and TM modes in a rectangular waveguide. Discuss the advantages of using optical fibers over traditional metallic waveguides.
4. Explain how Maxwell's equations contribute to our understanding of the propagation of light as an electromagnetic wave.
5. Define the Poynting vector. Explain its significance in describing the energy flow of electromagnetic waves.
6. Derive the relationship between the speed of light, wavelength, and frequency of an electromagnetic wave. Also, explain how the speed of light changes in different media.
7. Discuss the concept of polarization of electromagnetic waves. How does the polarization of light change upon reflection and transmission?
8. Explain the phenomenon of dispersion in electromagnetic waves. How does the speed of propagation vary with frequency in dispersive media? Provide an example of a naturally occurring dispersive medium.
9. Describe Brewster's angle. How is it related to the polarization of light upon reflection?