

**Model Question Paper**  
**Electromagnetic waves and wave options - Part IV**  
12th Standard

**Physics**

Reg.No. : 

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I. Answer all the Questions.

II. Use blue pen only.

Time : 01:15:00 Hrs

Total Marks : 95

5 x 1 = 5

**Section-A**

- 1) Diffraction effect is pronounced more in sound than in light, because  
(a) Wavelength of sound is low (b) Wavelength of sound is high (c) Velocity of sound is low (d) Velocity of sound is high
- 2) The property of light used to find its transverse nature  
(a) Interference effect (b) diffraction effect (c) photoelectric effect (d) polarisation
- 3) Plane of polarisation is the plane  
(a) Parallel to optic axis (b) At which the vibrations are removed (c) Perpendicular to the directions of propagation of light (d) All the above
- 4) When a plane polarised ray is allowed to pass through an analyser, and the analyser is rotated through an angle  $90^\circ$ , then the intensity of the out coming ray  
(a) Remains the same (b) Change from maximum to zero (c) Changes from maximum to minimum (d) Changes from zero to maximum
- 5) According to Brewster's law  
(a)  $\mu = \tan^{-1} i_p$  (b)  $\mu = \cot i_p$  (c)  $i_p = \tan^{-1}(\mu)$  (d)  $\mu = (\tan i_p)^{1/2}$

**Section-B**

5 x 3 = 15

- 6) Mention any two uses of polaroids?
- 7) What are optically active substances? Give an example.
- 8) Distinguish between dextro-rotatory and laevo-rotatory substances?
- 9) On what factors does the amount of capital rotation depend?
- 10) Define specific rotation?

**Section-C**

5 x 5 = 25

- 11) Distinguish between interference and diffraction.
- 12) Write a note on pile of plates.
- 13) Explain the Hertz experiment.
- 14) Write a note on Fraunhofer lines.
- 15) State the uses of polaroids.

**Section-D**

5 x 10 = 50

- 16) Discuss the various theories of light.
- 17) State Huygen's principle. On the basis of wave theory, Prove the laws of reflection.
- 18) Explain the refraction of plane wavefront using wave theory.
- 19) What are Newton's rings? Explain the experimental setup and theory of formation of Newton's rings?
- 20) (i) Derive an expression for the radius of  $n^{\text{th}}$  dark ring in Newton's rings experiment. (ii) Using it, determine the (a) wavelength of light and (b) refractive index of the liquid.

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