**Aim** – To verify MALUS’S LAW and to find BREWSTER’S ANGLE

**Apparatus** - Laser source, optical bench or bread board, polarizers with mount, photodetector, prism mounted on rotating table.

**Observation-**

*MALUS’S LAW*

|  |  |
| --- | --- |
| ANGLE (in degree) | INTENSITY |
| 0 | 0.5 |
| 40 | 0.4 |
| 55 | 0.3 |
| 69°12' | 0.2 |
| 82°30' | 0.1 |
| 99°6' | 0.0 |
| 119°30' | 0.1 |
| 134°54' | 0.2 |
| 147°30' | 0.3 |
| 163°30' | 0.4 |
| 176°12' | 0.5 |

Refer to Graph 1.0

*SINGLE POLARISER*

|  |  |
| --- | --- |
| ANGLE(in degree) | INTENSITY |
| 0° | 1.4 |
| 5° | 1.3 |
| 16° | 1.2 |
| 24° | 1.1 |
| 32° | 1.0 |
| 39° | 0.9 |
| 45°54' | 0.8 |
| 85°6' | 0.9 |
| 108°48' | 1.0 |
| 133°60' | 1.1 |
| 149°48' | 1.2 |
| 164°30' | 1.3 |
| 178°48' | 1.4 |

Refer to graph 2.0

*BREWSTER’S ANGLE:*

The Brewster’s angle was found to be:- 56.31°

**Graphs:**

Graph 1.0

Graph 2.0

**Understanding-**

*Malus’s law:-*

When the light is pass through the polariser the component of the electric field parallel to the pass axis is only allowed to pass. The light which we have now is plane polarised and it is pass through another polariser which is often referred as an analyser. We adjust the analyser till we get the maximum intensity and then we rotate it by 5° till we get minimum and a graph between intensity vs angle is plotted.

We observed the maximum because the pass axis of both the polariser are parallel and we get a minimum when the pass axis are perpendicular.

*Brewster’s angle:-*

When light is incident on a glass screen some of it is transmitted and some of it is reflected. At a certain angle the transmitted and reflected light are polarised perpendicular to each other. The angle of incidence at this point is called BREWSTER’S ANGLE.

**Conclusion-**

*Malus’s law:-*

The observed intensity is directly proportional to cosine squared of the angle between the pass axis of the two polarisers.

*Brewster’s angle:-*

The Brewster’s angle was experimentally found to be:- 56.31°

The minimum intensity was recorded at an angle= 225°18’