Class: Roll No:
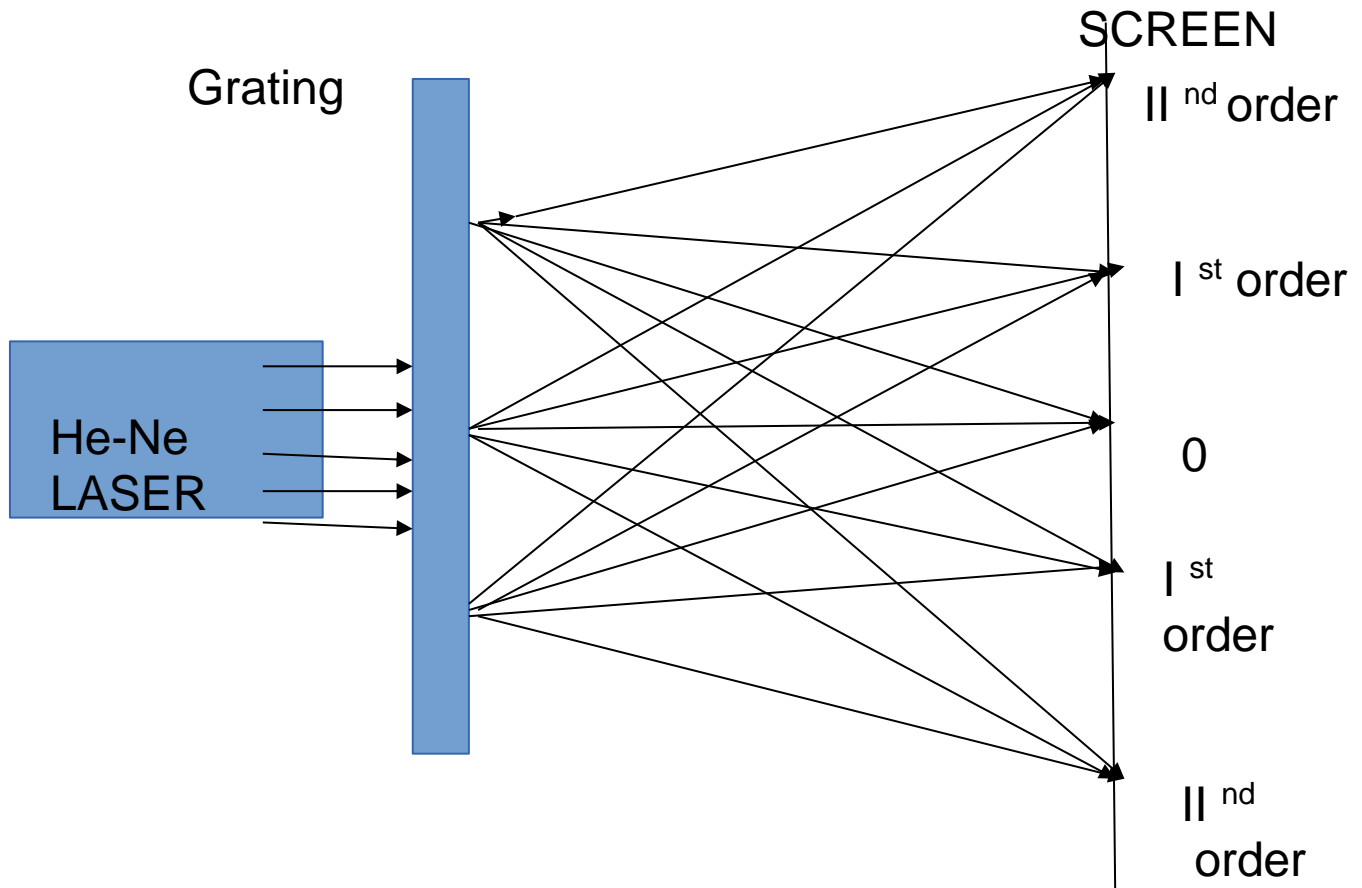
Experiment No:2
To Determine the Wavelength of He-Ne LASER using a Diffraction Grating.

Date Of Preparation:

Date of Submission:

Signature of Teacher:

Diagram:

SCHEMATIC DIG.FOR He-Ne LASER DIFFRACTION
THROUGH GRATING

EXPERIMENT NO. 2

AIM: **To determine the wavelength of the He-Ne LASER using a diffraction grating**.

APPARATUS: LASER light source (He-Ne laser), diffraction grating and a meter scale

THEORY: LASER stands for Light Amplification by Stimulated Emission of Radiation. In He-Ne LASER the active medium is a mixture of He and Ne, and it is a four-level laser. A grating is an arrangement of a number of identical parallel slits. When a beam of LASER light is incident normally on the surface of a grating it gets diffracted to form a diffraction pattern made of zero order, first order, second order and higher orders depending on the grating element. The angle of diffraction (Θ) or each order (m) with respect to the direction of non-diffracted beam, the grating element (d) and the wavelength of incident light (λ) are related by the equation known as GRATING EQUATION, viz. **d sinΘ = mλ**

OBSERVATION TABLE: Grating Element (d) = 2.54/15000 cm

Sr. No.	Distance of grating from the screen D(cm)	Order of diffraction (m)	Distance between two maxima of same order (2X)	X (cm)	tanΘ= X/D
1					
2					
3					

CALCULATIONS:

Sr. No.	Angle of Diffraction (Θ)	Sin (Θ)	Wavelength λ (Å)	Mean λ(Å)
1				
2				
3				

RESULTS:

Calculated wavelength of He-Ne LASER = _____(Å)

Standard wavelength of He- Ne LASER = 6328 (Å)

Percentage Error = _____