Q7. Calculate the minimum number of lines required on grating that can just resolve the two sodium lines λ 1=5890A and λ 2=5893 A in third order.

Given:- λ_1=5890 x 10^{-8} cm, λ_2=5893 x 10^{-8}cm , m=3

Formula:- Resolving power =$\frac{\lambda}{d\lambda} = mN$

Solution:- $\lambda = \frac{\lambda_1+\lambda_2}{2} = \frac{(5890+5896)10^{-8}}{2}$ = 5893 x 10^{-8} cm

d= (5896-5890)x10^{-8} = 6x10^{-8} cm

$$N = \frac{\lambda}{m\, d\lambda} = \frac{5893 \times 10^{-8}}{3 \times 6 \times 10^{-8}} = 327$$

Ans:- Minimum of 327 lines are required on the grating.