Q- You have obtained a diffraction pattern on a distant screen from a plane diffraction grating consisting of alternate transparent and opaque lines with widths a and b respectively. How will the pattern be affected if the widths a and b are interchanged? Consider
(a) Change in intensity
(b) Absent wavelengths in a composite beam.

(a) Change in intensity

Only if a = b, the net area through which the light transported through the transparent lines and hence the intensity of the pattern will remains the same. If a is not equal to b, the intensity will changes accordingly. If the width of the transparent line a > b the width of the opaque line, then by interchanging a and b the intensity of the whole pattern will reduce and vice versa.

(b) Absent wavelengths (composite beam)
In a diffraction grating the condition for the maximum intensity is given by

$$(a+b)\sin\theta = n\lambda$$

For the central maxima n = 0 and we get maximum for all wavelengths at $\theta = 0$.
For the higher order maximums (n = 1, 2, … ) the angle for the maximum intensity depends on the wavelength $\lambda$ and hence the maxima for different wavelength will be at different angles and we get the spectrum of composite light.
Now if the path difference between the rays from the extreme ends of one single slit is $\lambda$, then the intensity of light is zero. It is because in such a case the slit can be divided into two halves and hence the path difference between the corresponding points on the two halves will be $\lambda/2$ which results in zero intensity. The conditions for minimum intensity, therefore is

$$a\ \sin\theta = \lambda$$

Thus the missing wavelengths in the spectrum of light depends on the width of the transparent line and hence by interchanging a and b the wavelengths missing in first or second order spectra will be different.