8 a) $q(u) = \sin^2(\alpha U)$

Let separation of slits be d

Intensity at slits is maximum so, $q(U)$ is maximum at slit.

$\Rightarrow$ In terms of αU, separation is π for consecutive slits

$\Rightarrow \alpha d = \pi \Rightarrow \boxed{d = \frac{\pi}{\alpha}}$