From Q_1, we have $A_1 = \dfrac{-(g_m R_D)}{(1+\frac{s}{w_p})^3}$

where $w_p = \dfrac{1}{R_D C}$.

With $K = 0.1$ the loop gain is

$$T = -KA_1 = \frac{0.1\,(g_m R_D)^3}{(1+jwR_D C)^3}$$

To find the edge of stability set $T = -1$.

$$(1+jwR_D C)^3 = -0.1\,(g_m R_D)^3$$

$$1 + 3jwR_D C - 3w^2 R_D^2 C^2 - jw^3 R_D^3 C^3 = -0.1\, g_m^3 R_D^3 \quad (1)$$

From the imag. part of this equation

$$3wR_D C - w^3 R_D^3 C^3 = 0$$

$$w = \frac{\sqrt{3}}{R_D C}$$ (same as the last question)

From the real part of Eq. (1)

$$1 - 3w^2 R_D^2 C^2 = -0.1\, g_m^3 R_D^3$$

Subst $w = \dfrac{\sqrt{3}}{R_D C}$

$$1 - 3\left(\frac{\sqrt{3}}{R_D C}\right)^2 R_D^2 C^2 = -0.1\, g_m^3 R_D^3$$

$$1 - 9 = -0.1\, g_m^3 R_D^3$$

$$80 = g_m^3 R_D^3$$

$$g_m R_D = (80)^{1/3} = 4.3$$

$\therefore$ For stability need $g_m R_D < 4.3$.

Values near 4.3 would be right at the edge so consider smaller values to obtain a less oscillatory response.