6) $C_d(t, t-\tau) = E\big(d(t)\, d(t-\tau)\big)$

$E\Big(\frac{1}{2} s(t)\big(1 + \cos(4\pi f_0 t + 2\phi)\big) \cdot \frac{1}{2} s(t-\tau)\big(1 + \cos 4\pi f_0 (t-\tau) + 2\phi\big)\Big)$

$= \frac{1}{4} E\big(s(t)\, s(t-\tau)\big) \cdot E\Big(\big(1 + \cos(4\pi f_0 t + 2\phi)\big) \cdot \big(1 + \cos(4\pi f_0 (t-\tau) + 2\phi)\big)\Big)$

$= \frac{1}{4} C_s(\tau) \cdot \Big[E(1) + \underbrace{E\big(\cos(4\pi f_0 t + 2\phi)\big)}_{=0}$ (7.2)

$+ \underbrace{E\big(\cos(4\pi f_0 (t-\tau) + 2\phi)\big)}_{0} + \underbrace{E\big(\cos(4\pi f_0 t + 2\phi) \cos(4\pi f_0(t-\tau) + 2\phi)\big)}\Big]$

$= \boxed{\frac{1}{4} C_s(\tau)\Big(1 + \frac{1}{2} \cos 4\pi f_0 \tau\Big)}$ independante de t.

(*) $E(\cos a \cdot \cos b) = E\Big(\frac{1}{2} \cos(a-b) + \frac{1}{2} \cos(a+b)\Big)$

$E\Big(\frac{1}{2} \cos 4\pi f_0 \tau + \underbrace{\frac{1}{2} \cos\big(4\pi f_0 (2t-\tau) + 4\phi\big)}_{=0}\Big)$

independant de ϕ

$E(\cdot) = \frac{1}{2} \int_0^{2\pi} \cos\big(4\pi f_0 (2t-\tau) + 4\phi\big) \frac{1}{2\pi} d\phi = 0$