Solution
~~Løsning~~ 1

a) se fig. 3.2 i B & G. s. 31

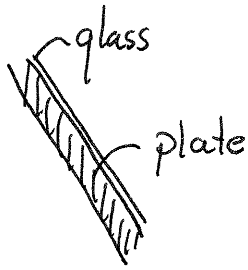
b) $\Delta I = \frac{\partial I}{\partial T_s} \Delta T_s$ compensation of temp. due to ΔI.

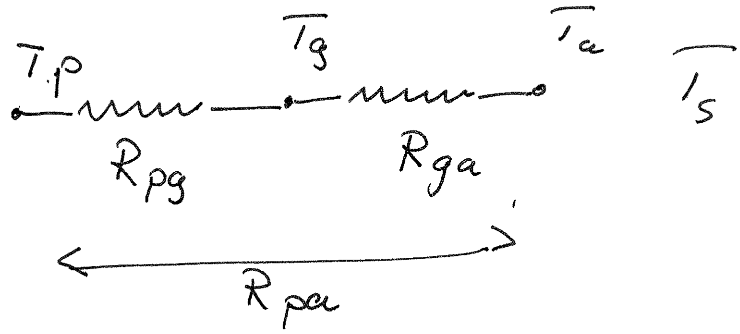
c) Positive feedback: increased sea water temp → less uptake of CO_2 → increased temp.

Negative feedback: melting of sea ice ⇒ lower albedo (more clouds, less transmission).

Solution 2

a)



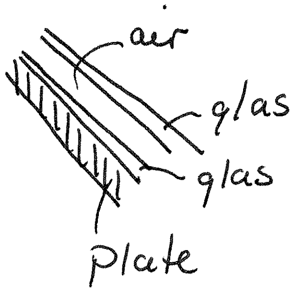


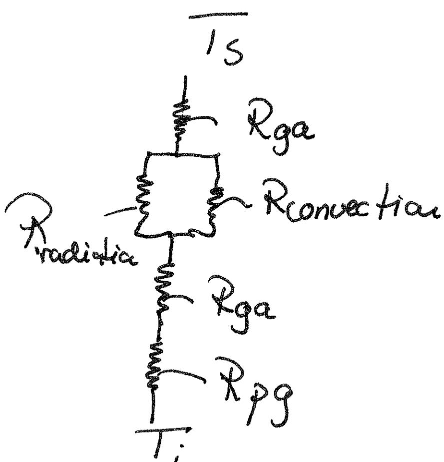
b) $T_g = T_a + \left(\frac{R_{ga}}{R_{pa}}\right) \cdot (T_p - T_a)$

Heatflow P, ΔT temp-gradient, R ~~heat~~ termal resistance.

$$P = \frac{\Delta T}{R}$$

c)





Solution 3.

a) Fig. 11.2 p. 284 T&W

b) ex 15.1 p. 377 T&W

$$E_0/A = \rho_r C_r (z_2 - z_1)(T_2 - T_1)/2 = \rho_r C_r G \frac{(z_2-z_1)^2}{2}$$

$$= 5.42 \times 10^{17} \, J km^{-2}$$

Solution 4

a) efficiency $\varepsilon = \frac{out}{in}$.

1) Excess photon energy (33%) $(h\nu - E_g)$
2) Photon energy < band gap 23%)
3) voltage factor $F_V = \frac{eV_B}{E_g}$ 20%

⋮

p. 164 – 166.

⋮

b)

c) $CIE(\lambda) = \int_{290}^{400nm} F(\lambda) \cdot I(\lambda) \, d\lambda$

$UV_{index} = 40 \cdot CIE\ dose$. Number 0 - 20

Well define, include biological effect. Standarized.