

ΤΥΠΟΛΟΓΙΟ ΕΡΓΑΣΤΗΡΙΑΚΗΣ ΑΣΚΗΣΗΣ 5

$$t_{sol} = t_{std} + \frac{L_{std}-L_{loc}}{15^\circ/h} + \frac{E_t}{60min/h}$$

$$E_t = 9,87 \sin 2B - 7,53 \cos B - 1,5 \sin B$$

$$B = 360^\circ \frac{n-81}{364}$$

$$\delta = 23,45 \sin \left[\frac{360}{365} (284 + n) \right]$$

$$\omega = \frac{(t_{sol}-12)h}{24h} 360^\circ = (t_{sol} - 12) 15^\circ$$

$$\cos(\theta_z) = \sin \alpha = \sin \varphi \sin \delta + \cos \varphi \cos \delta \cos \omega$$

$$\sin \Psi = \cos \delta \frac{\sin \omega}{\cos \alpha}$$

$$\cos \theta = \sin \delta \sin \varphi \cos \beta - \sin \delta \cos \varphi \sin \beta \cos \Psi + \cos \delta \cos \varphi \cos \beta \cos \omega + \cos \delta \sin \varphi \sin \beta \cos \Psi \cos \omega + \cos \delta \sin \beta \sin \Psi \sin \omega$$

$$\cos \theta = \cos \delta \cos \omega \cos(\varphi - \beta) + \sin \delta \sin(\varphi - \beta)$$

$$E_o = 1 + 0,033 \cos \left(\frac{360 n}{365} \right)$$

$$G_{on} = G_o E_o = G_o \left[1 + 0,033 \cos \left(\frac{360 n}{365} \right) \right]$$

$$I_o = G_{on} \cos \theta_z = G_o \left[1 + 0,033 \cos \left(\frac{360 n}{365} \right) \right] (\sin \varphi \sin \delta + \cos \varphi \cos \delta \cos \omega)$$

$$I = I_b + I_d$$

$$k_t = \frac{I}{I_o}$$

$$k_d = \frac{I_d}{I} = \begin{cases} 1,00 - 0,249 k_t & \alpha v & k_t < 0,35 \\ 1,557 - 1,84 k_t & \alpha v & 0,35 < k_t < 0,75 \\ 0,177 & \alpha v & k_t > 0,75 \end{cases}$$