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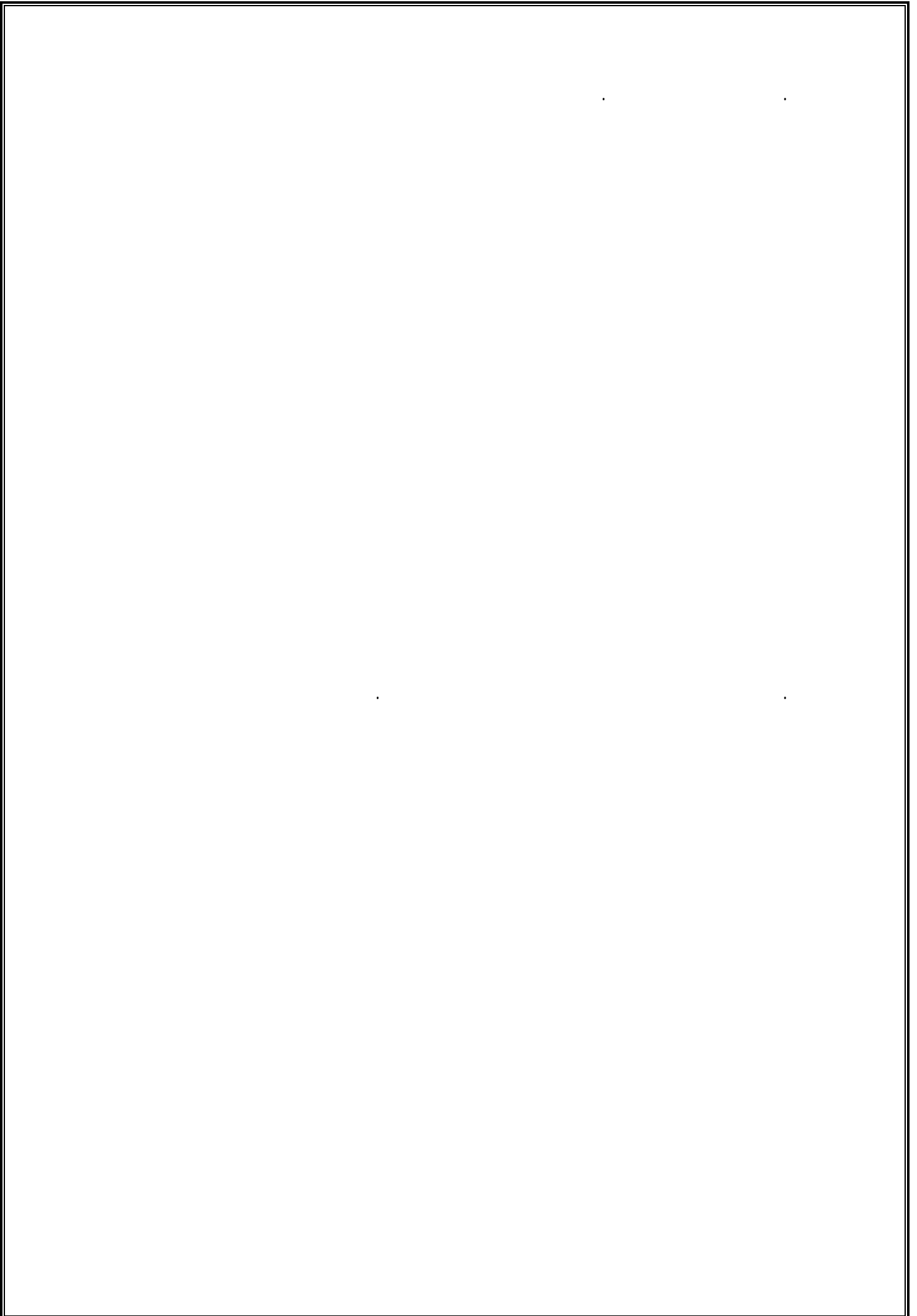
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$8 \leq t_a \text{ (hr)} \leq 12$

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$$ET = 9 \text{ mm/day} \quad ET_S = 980 \text{ mm} \quad R_n = 240 \text{ mm}$$

$$M_S = 110 \text{ mm} \quad d_i = 7.5 \text{ mm} \quad P_d = 75\%$$

$$ET_d = ? \quad ET_{dS} = ? \quad D_i = ? \quad F = ? \quad N_{\text{day}} = ?$$

$$LR = 8\% \quad Eu = 85\% \quad Tr = 1.10 \quad dg = ?$$

$$ET_d = ET \left[ \frac{P_d}{100} + 0.15 \left( 1 - \frac{P_d}{100} \right) \right] = 9 \left[ 0.75 + 0.15 (1 - 0.75) \right] = 9 \times 0.7875 \\ = \underline{7.0875} \text{ mm/day}$$

$$ET_{dS} = ET_S \left[ \frac{P_d}{100} + 0.15 \left( 1 - \frac{P_d}{100} \right) \right] = 980 \times 0.7875 = \underline{771.75 \text{ mm}}$$

$$D_i = (ET_S - R_n - M_S) \left[ \frac{P_d}{100} + 0.15 \left( 1 - \frac{P_d}{100} \right) \right] = (980 - 240 - 110) \times 0.7875 = \underline{496.125 \text{ mm}}$$

$$F = \frac{d_i}{ET_d} = \frac{7.5}{7.087} = 1.05 = \underline{1 \text{ day}}$$

$$N_{\text{day}} = \frac{ET_{dS}}{ET_d} = \frac{771.75}{7.087} = \underline{109 \text{ day}}$$

$$\therefore LR < 10\% \rightarrow \therefore dg = \frac{d_i \times Tr}{Eu}$$

$$\therefore dg = \frac{7.5 \times 1.1}{0.85} = \underline{9.706 \text{ mm}}$$

$$X = 2.74 T_a^{0.5}$$

$$Y = 0.5 T_a^{0.8}$$

$$= Y, X = T_a :$$

$$V = S_e \cdot S_L \cdot \frac{1}{4} = 1.5 \times 2.0 \times 0.75 = 2.25 \text{ m}^3$$

$$V_w = P_w \cdot V = 0.35 \times 2.25 = 0.7875 \text{ m}^3$$

$$\therefore 0.7875 = \pi (2.74 T_a^{0.5})^2 (0.5 T_a^{0.8}) \times 10^{-6}$$

$$T_a = 476 \text{ min} = \underline{7.93 \text{ hr}}$$

$$X = 2.74 (476)^{0.5} = \underline{60 \text{ cm}}$$

$$Y = 0.5 (476)^{0.8} = \underline{69.4 \text{ cm}}$$

$$q_e = \frac{V}{T} = \frac{48}{7.93} = \underline{6.05 \text{ Lit/hr}}$$

$$q_e = \frac{2\pi R^3 (\theta_f - \theta_i)}{3 \times 10 \times T_a}$$

$$(\theta_f - 0.05) = \frac{6 \times 3 \times 10^3 \times 7.93}{2\pi (60)^3} \quad \underline{\theta = 0.155}$$

(B)

المنكح ذو النوصة:

$$f_c = 3.6 \times 0.60 \times \frac{\pi}{4} (0.45)^2 \sqrt{2 \times 15 \times 9.81} = 5.893 \text{ L/hr}$$

المنكح مبادل المنكح:

$$5.893 = 3.6 \times 0.73 \times \frac{\pi}{4} d^2 (15)^{0.2} \sqrt{2 \times 9.81}$$

$$d = 0.612 \text{ mm}$$

المنكح الدراني:

$$5.893 = 3.6 \times 0.4 \times \frac{\pi}{4} d^2 (15)^{0.4} \sqrt{2 \times 9.81}$$

$$d = 0.631 \text{ mm}$$

المنكح دائري السيل ذو نوصات صالبي (مخيل تنديب):

$$5.893 = 3.6 \times 0.65 \times \frac{\pi}{4} d^2 \sqrt{\frac{2 \times 9.81 \times 15}{3}}$$

$$d = 0.569 \text{ mm}$$

المنكح ذو المسار الطويل:

$$5.893 = \frac{0.866 \times 15 \times d^4}{0.25}$$

$$d = 0.580 \text{ mm}$$

المنتج ذر الرصاص الطبيعي

$$6.5 = \frac{2.856(27) + 42.2 \times q_{20}}{100}$$

$$q_{20} = 5.448 \text{ L/hr}$$

المنتج ذر الرصاص المخلوب

$$5.8 = \frac{0.25(27) + 95.4 \times q_{20}}{100}$$

$$q_{20} = 5.678 \text{ L/hr}$$

عند تساوي نصيف المنتجين عند درجة  $T$

$$\therefore \frac{2.856T + 42.2}{100} \times 5.448 = \frac{0.25T + 95.4}{100} \times 5.678$$

$$2.74T + 40.47 = 0.25T + 95.4$$

$$\therefore \underline{T = 22^\circ\text{C}}$$

$$q_e = \frac{2.856(22) + 42.2 \times 5.448}{100} = \underline{5.72 \text{ L/hr}}$$