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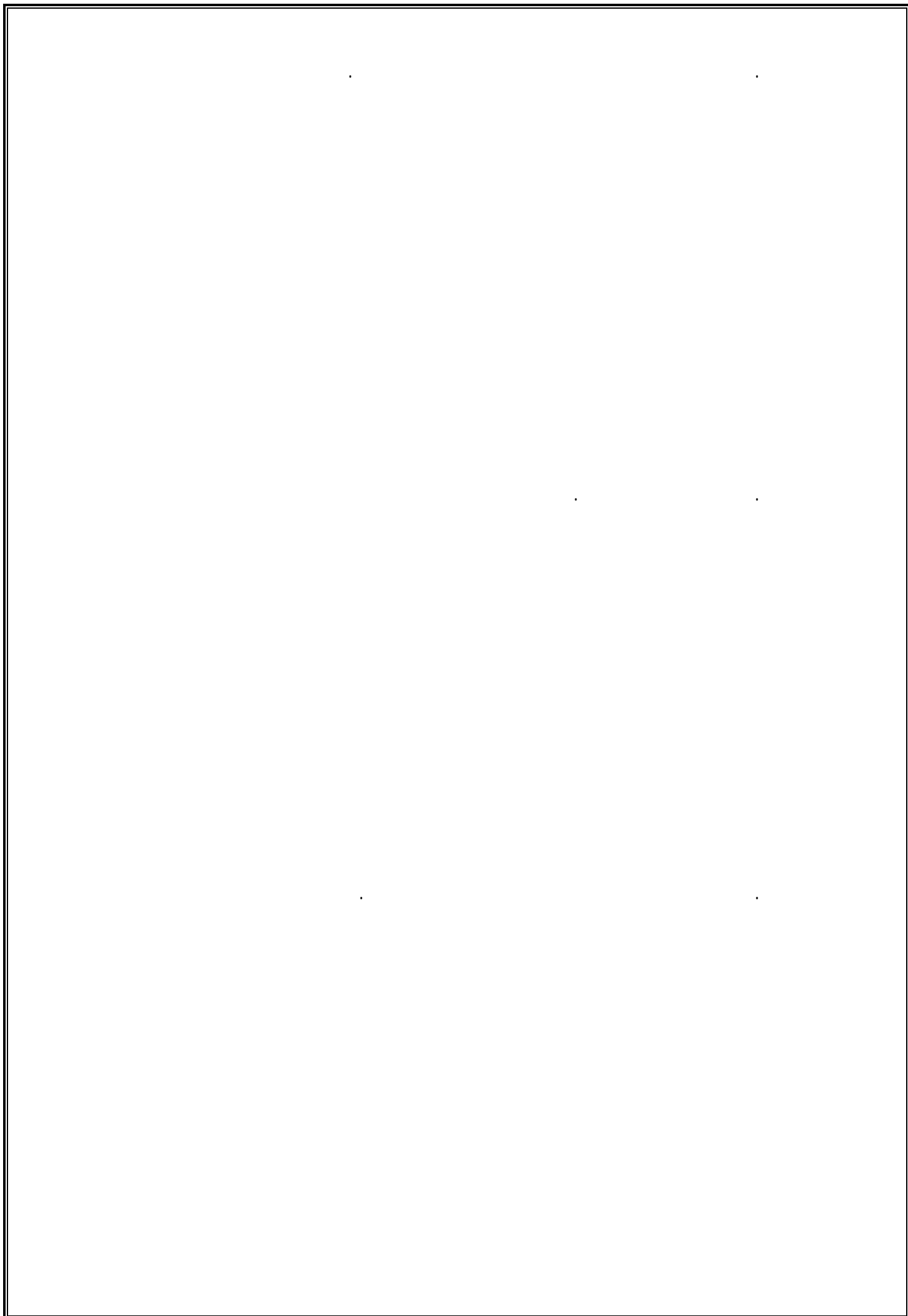
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$$LR_t = \frac{72 - 63}{72} \times 100 = 12.5\%$$

$$\therefore LR_t > 10\%$$

$$\therefore d_g = \frac{14 \times 100}{(1 - 0.125) \times 90} = 17.78 \text{ mm}$$

$$V_p = \frac{17.78 \times 0.75 \times 1.5}{2} = \underline{10 \text{ L/day}}$$

$$T_a = \frac{20}{4} = \underline{5 \text{ hr}}$$

$$ET_d = \frac{14}{2} = \underline{7 \text{ mm}}$$

$$N_{\text{days}} = \frac{ET_s}{ET_d} = \frac{63 \times 10}{7} = 90 \text{ day} = \underline{3 \text{ month}}$$

$$X = 2.0 T_a^{0.6}$$

$$Y = 0.9 T_a^{0.8}$$

$$= Y, X$$

$$= T_a :$$

$$T = \frac{V}{Q} = \frac{40}{8} = 5 \text{ hr} = 300 \text{ min}$$

$$X = 2(300)^{0.6} = \underline{61.28 \text{ cm}}$$

$$Y = 0.9(300)^{0.8} = \underline{86.28 \text{ cm}}$$

$$P_w = \frac{\pi (0.6128)^2 \times 0.8628}{0.90 \times 1.5 \times 2} \times 100 = \underline{37.7 \%}$$

$$n_r = 6 \quad S_o = 50 \text{ cm} \quad q = 4 \text{ l/m} \quad H_i = 8 \text{ m}$$

$$C_m = 0.75 \quad d_i = ? \quad H_o = ?$$

$$q_o = \frac{q}{2} = 2 \text{ l/hr}$$

$$H_o = \frac{H_i}{n_r^2 + 1} = \frac{8}{6^2 + 1} = \underline{0.216 \text{ m}}$$

$$\therefore 2 = 3.6 \times 0.75 \frac{\pi}{4} d_o^2 \sqrt{2 \times 9.81 \times 0.216}$$

$$\therefore d_o = 0.48 \text{ mm}$$

$$\therefore d_i = \underline{0.48 \text{ mm}}$$

الضغط الهوائي :

$$2 = 3.6 \times 0.4 \times \frac{\pi}{4} (0.38)^2 H^{0.4} \sqrt{2 \times 9.81}$$

$$\therefore H = \underline{12.71 \text{ m}}$$

(β)

$$q_e = 3.6 \times \frac{\pi}{4} (0.75)^2 \times 0.6 \times (12)^{0.15} \sqrt{2 \times 9.81} = 6.14 \text{ L/hr}$$

المنفذ المائل للضخ:

$$6.14 = 3.6 \times \frac{\pi}{4} (d^2) \times 0.7 \times \sqrt{2 \times 9.81 \times 12}$$

المنفذ ذو الوعجة:

$$\therefore d = 0.45 \text{ mm}$$

$$12 = \frac{1.153 \times 0.25 \times 6.14}{d^4}$$

المنفذ ذو المسار الطويل:

$$\therefore d = 0.62 \text{ mm}$$

$$6.14 = 3.6 \times 0.4 \times \frac{\pi}{4} d^2 \times (12)^{0.4} \sqrt{2 \times 9.81}$$

المنفذ الدائري:

$$\therefore d = 0.67 \text{ mm}$$