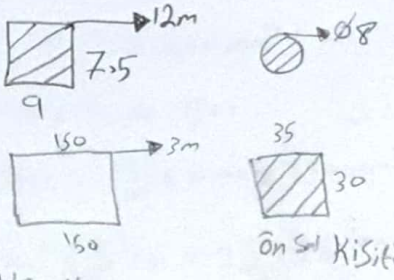


Kotok

(1)

Kotok

$A_0 = 150 \times 150 \times 3000 = 675\ mm^5$

$A_1 = A_0 - \%40 \cdot A_0$

$= 675^5 - \%40\ 675^5 = 405$

$= 675^5 - \frac{40}{100} \cdot 675^5 = 405$

$a = \sqrt{405} = \boxed{20.12\ mm}$

$A_2 = A_1 - \%40 \cdot A_1$

$= 405^5 - \frac{40}{100} \cdot 405 = 243\ mm^2$

$a = \sqrt{243} = \boxed{15.58\ mm}$

$b = 15.58\ mm$

$A_3 = A_2 - \%40 \cdot A_2$

$= 243 - \frac{40}{100} \times 243 = 145.8\ mm^2$

$a = \sqrt{145.8} = \boxed{12.07\ mm}$

$A_4 = A_3 - \%40 \cdot A_3$

$= 145.8 - \frac{40}{100} \times 145.8 = 87.48\ mm^2$

$a = \sqrt{87.48} = \boxed{9.35\ mm}$

$A_5 = A_4 - \%40 \cdot A_4$

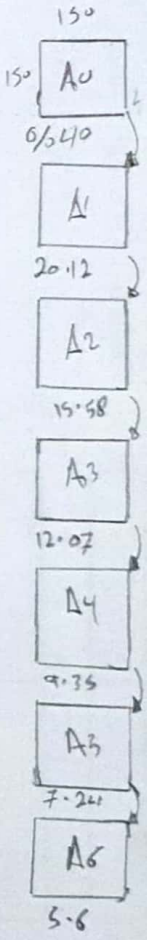
$87.48 = \frac{40}{100} \times 87.48 = 52.48\ mm^2$

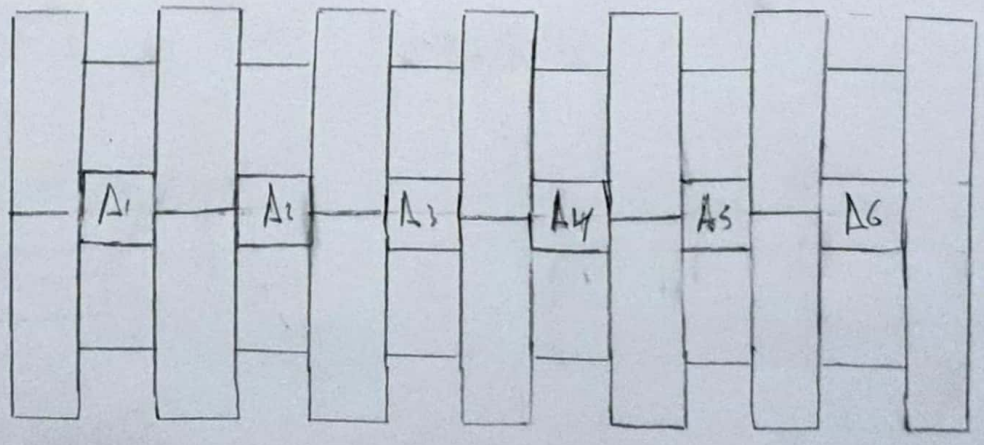
$a = \sqrt{52.48} = \boxed{7.24\ mm}$

$A_6 = A_5 - \%0 \times A_5$

$= 52.48 - \frac{40}{100} \times 52.48 = 31.48\ mm^2$

$= \sqrt{31.48} = \boxed{5.6\ mm}$





Tameem Alnahari
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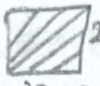
$B_0 = 40 \cdot 30 = 1400\ mm^2$

$B_1 = B_0 - \%40 \cdot B_0 =$

$= 1400 - \frac{40}{100} \times 1400 = 840\ mm^2$

$B_1 = a^2 \sqrt{840} = 28.98\ mm$

$840 = a^2 \Rightarrow a = \boxed{28.98\ mm}$



$B_2 = B_1 - \%40 \cdot B_1$

$= 840 - \frac{40}{100} \times 840 = 504\ mm^2$

$B_2 = 504 mm^2$

$B_2 = \sqrt{504} = \boxed{22.44\ mm}$

$B_3 = B_2 - \%40 \times B_2 =$

$= 504 - \frac{40}{100} \times 504 = 302.4\ mm^2$

$B_3 = \sqrt{302.4} = \boxed{17.38\ mm^2}$

$B_4 = B_3 - \%40 \times B_3$

$B_4 = 302.4 - \frac{40}{100} \times 302.4 = 181.44\ mm^2$

$B_4 = \sqrt{181.44} = \boxed{13.46\ mm}$

$B_5 = B_4 - \frac{40}{100} \times B_4$

$B_5 = 181.44 - \frac{40}{100} \times 181.44 = 108.86 mm^2$

$B_5 = \sqrt{108.86} = \boxed{10.43 mm}$

$B_6 = B_5 - \frac{40}{100} \times B_5$

$B_6 = 108.86 - \frac{40}{100} \times 108.86 = 65.31\ mm^2$

$B_6 = \sqrt{65.31} = \boxed{8.9 mm}$

$B_7 = B_6 - \frac{40}{100} \times B_6$

$B_7 = 65.31 - \frac{40}{100} \times 65.31 = 39.18\ mm^2$

$B_7 = \sqrt{39.18} = \boxed{6.25 mm}$

$B_8 = B_7 - \frac{40}{100} \times B_7$

$B_8 = 39.18 - \frac{40}{100} \times 39.18 = 23.5 mm^2$

$B_8 = \sqrt{23.5} = \boxed{4.84 mm}$

(2)

$B_9 = B_8 - \frac{40}{100} \times B_8$

$B_9 = 23.5 - \frac{40}{100} \times 23.5 = 14.1 mm^2$

$B_9 = \sqrt{14.1} = \boxed{3.75 mm}$

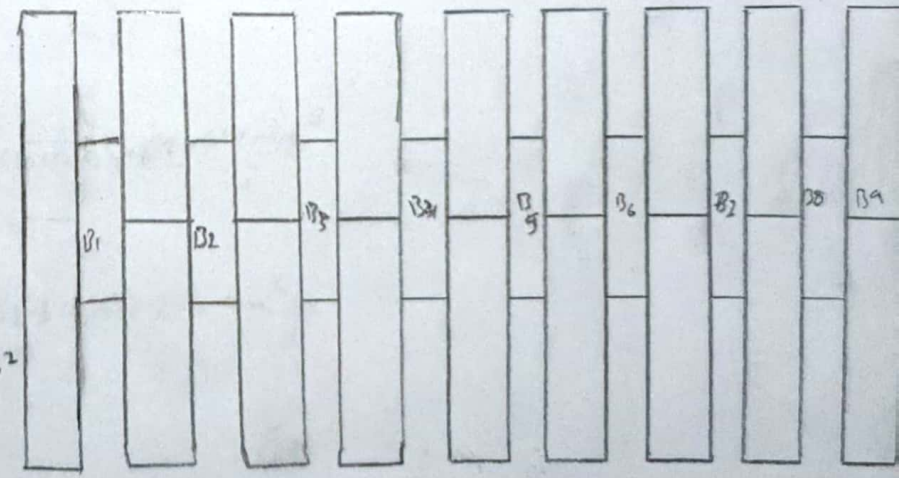
$B_{10} = B_9 - \frac{40}{100} \times B_9$

$B_{10} = 14.1 - \frac{40}{100} \times 14.1 = 8.46\ mm^2$

$B_{10} = \sqrt{8.46} = \boxed{2.9 mm}$

$x = 2.9$

$x = \%8$



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$C_0 = 30 \times 40 = 1400\ mm^2$ $\Pi = 0.18$

$C_1 = C_0 - \%40 \times C_0 = 1400 - \%40 - 1400 = 804 mm^2$

$C_1 = \frac{\pi \cdot D^2}{4} = 804 = \frac{\pi \cdot D^2}{4} = 631.46\ mm$

(3)

$C_2 = C_1 - \%40 \times C_1 =$

$804 - \%.804 = 482.4\ mm^2$

$C_2 = \frac{\pi \cdot D^2}{4} = 482.4 = \frac{\pi \times 482.4}{4} = 378.87\ mm$

$C_3 = C_2 - \%40 \times C_2 = 482.4 - \%40 \cdot 482.4 = 289.44 mm^2$

$C_3 = \frac{\pi \cdot 289.44}{4} = 227.32 mm$

$C_4 = C_3 - \%40 \times C_3 = 289.44 - \%40 \times 289.44 = 173.66 mm^2$

$C_4 = \frac{\pi \times 173.66}{4} = 136.36\ mm$

$C_5 = C_4 - \%40 \times C_4 = 173.66 - \%40 \times 173.66 = 104.19 mm^2$

$C_5 = \frac{\pi \times 104.19}{4} = 81.83 mm$

$C_6 = C_5 - \%40 \times C_5 = 104.19 - \%40 \times 104.14 = 62.514 mm^2$

$C_6 = \frac{\pi \times 62.514}{4} = 49.09\ mm$

$C_7 = C_6 - \%40 \times C_6 = 62.514 - \%40 \times 62.514 = 37.5\ mm^2$

$C_7 = \frac{\pi \times 37.5}{4} = 29.45\ mm$

$C_8 = C_7 - \%40 \times C_7 = 37.5 - \%40 \times 37.5 = 22.5 mm^2$

$C_8 = \frac{\pi \times 22.5}{4} = 17.67\ mm$

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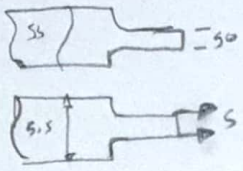
$N=0.2$ $n=0.18$ $K=320$ $R=300$ $nr=30$ $d\omega/dK$



(4)

$d=t_0-t_e$

$d=55-50=5mm$

$d_{max}=N^2\cdot R \Rightarrow d_{max}(0.2)^2\cdot 300=12$

$d<d_{max}$

$5m<12mm$

Redüksiyon oranı

$r=d/t_0 \Rightarrow r=\frac{5}{55}$

Kuvvet hesabı:-

$\varepsilon \cdot R_n=\frac{55}{50}=0.095mm/mm$

$G_{akm}=\frac{K\cdot\varepsilon^n}{h+1}=\frac{320\times(0.095)^{0.18}}{1+0.18}=177.5MPa$

$L=\sqrt{R(T_0-T_e)}=\sqrt{300-(55-50)}=38.72mm$

$F=2\cdot w\cdot G_x=38.72\times150\times177.5=1030920\cdot N$

$P=m\cdot w_r=\frac{F.L\cdot\pi\cdot n\cdot r}{30}$

$P=\frac{1030920\times38.72\times\pi\times30}{30}$

$P=1254036.26\ N.m/s$

$=125.4\ KW$

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