

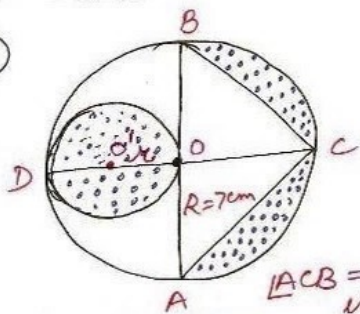
① distance around inner edge of track

$$\begin{aligned}
 &= 2l + 2 \times \pi r \\
 &= 2(106 + \frac{22}{7} \times 40) \\
 &= \frac{2}{7}(742 + 660) \\
 &= \frac{2 \times 1402}{7} \\
 &= \frac{2804}{7} \text{ m} \\
 &= 400.57 \text{ m}
 \end{aligned}$$

area of track
 = area of rect. parts
 + area of semi-circular parts

$$\begin{aligned}
 &= 2lb + 2 \times \frac{\pi}{2}(R^2 - r^2) \\
 &= 2 \times 106 \times 10 + \frac{22}{7}(40^2 - 30^2) \\
 &= 2120 + \frac{22}{7} \times (40+30)(40-30) \\
 &= 2120 + \frac{22}{7} \times 70 \times 10 \\
 &= 2120 + 2200 \\
 &= 4320 \text{ m}^2
 \end{aligned}$$

⑨

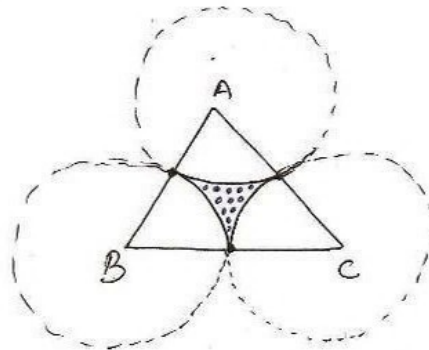


$\angle ACB = 90^\circ$ (angle in semi-circ)
 $OA = R = 7 \text{ cm}$
 $O'O = r = \frac{7}{2} \text{ cm}$

Required area = area of small circle + area of bigger semi-circle - ar(ΔACB)

$$\begin{aligned}
 &= \pi r^2 + \frac{\pi R^2}{2} - \frac{1}{2} \times AB \times OC \\
 &= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} + \frac{22}{7} \times 7 \times 7 - \frac{1}{2} \times 14 \times 7 \\
 &= 38.5 + 77 - 49 \\
 &= 66.5 \text{ cm}^2
 \end{aligned}$$

⑩



$\angle A = \angle B = \angle C = 60^\circ$ [each angle of equilateral Δ]

area of equi. $\Delta = 17320.5 \text{ cm}^2$

$$\frac{\sqrt{3}}{4} s^2 = 17320.5$$

$$\frac{1.73205}{4} s^2 = 17320.5$$

$$\Rightarrow s^2 = \frac{17320.5 \times 4}{1.73205}$$

$$\Rightarrow s = \sqrt{100 \times 100 \times 2 \times 2} = 200 \text{ cm}$$

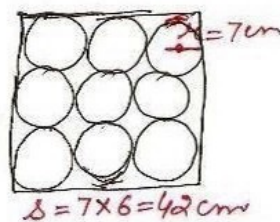
$$\therefore \text{radius} = \frac{200}{2}$$

$$= 100 \text{ cm}$$

reqd. Δ = area of equi. Δ
 - area of 3 sectors

$$\begin{aligned}
 &= 17320.5 - 3 \times \frac{\pi r^2 \theta}{360} \\
 &= 17320.5 - 3 \times \frac{3.14 \times 10000 \times 60}{360} \\
 &= 17320.5 - 15700 \\
 &= 1620.5 \text{ cm}^2
 \end{aligned}$$

⑪



area of remain. portion

$$\begin{aligned}
 &= \text{area of Square} \\
 &\quad - \text{area of 9 circles} \\
 &= \text{side}^2 - 9 \times \pi r^2 \\
 &= 42^2 - 9 \times \frac{22}{7} \times 7 \times 7 \\
 &= 1764 - 1386 \\
 &= 378 \text{ cm}^2
 \end{aligned}$$