A - $X \sim N(\mu = 45, \sigma = 30)$

(1) $P\{X > 60\} = P\{Z > \frac{60-45}{30} = 0{,}50\} = 1 - 0{,}691462$

$\stackrel{\sim}{=} \boxed{0{,}3085}$

(2) $\mu_{\bar{X}} = 60 \quad \sigma_{\bar{X}} = \frac{30}{\sqrt{10}} = 9{,}487$

$P\{\bar{X} > 60\} = P\{Z > \frac{60-45}{\frac{30}{\sqrt{10}}}\} = P\{Z > 1{,}58\}$

$= 1 - 0{,}942947 \stackrel{\sim}{=} \boxed{0{,}0571}$

(3) $W = X_1 + X_2 + \dots + X_{10}$ $\quad \mu_W = E(W) = 10 \times 60 = 600$ s

$Var(W) = 10 \times 30^2$

$W > 600$ sse $\bar{X} > 60$, logo a resposta é a mesma de (2)

B-

4) $\hat{\mu} = \bar{x} = \dfrac{\overset{1}{23^{\underline{1}}} + 15^{\underline{6}} + 17^{\underline{4}} + \overset{2}{20^{\underline{1}}} + 19^{\underline{8}} + \overset{3}{26^{\underline{4}}} + \overset{4}{25^{\underline{1}}} + \overset{5}{20^{\underline{5}}} + \overset{6}{21^{\underline{9}}} + \overset{7}{28^{\underline{7}}}}{10}$

$= 21{,}86$

5) Demanda para todos as 5 000 casas

$\theta = 5000\,\mu$

$\hat{\theta} = 5000\,\hat{\mu} = 5000\,(21^{\underline{86}}) = 109.300^{\underline{00}}$

6) Proporcao estimada

$\hat{p} = \dfrac{7}{10} = 0{,}70$

C-

Gabarito

7) Dados são provenientes de distribuição normal

p-valor: 0,194

(8) $H_0: \mu = 14{,}5$ $\quad t_{19;0{,}05} = \cancel{2{,}861}\ 1{,}729$

$H_1: \mu > 14{,}5$

(9) $$T = \frac{15{,}330 - 14{,}5}{\frac{0{,}618}{\sqrt{20}} = 0{,}138} = 6{,}00 > \cancel{2{,}861}\ 1{,}729$$

Rejeita-se H_0. Há evidências amostrais, de que o nível médio de hemoglobina excede 14,5 g/dl, a um nível de significância de 5%.

(10) $p = P\{T_{19} > 6{,}000\} \approx 0$

(11) $$\bar{x} \pm t_{0{,}025;19} \frac{0{,}618}{\sqrt{20}} = 15{,}330 \pm 2{,}093 \times (0{,}138)$$
$$= 15{,}330 \pm 0{,}289$$

$14{,}5 \notin [15{,}040; 15{,}619]$

(12) $$\frac{(n-1)s^2}{\chi^2_{\alpha/2;n-1}} \leq \sigma^2 \leq \frac{(n-1)s^2}{\chi^2_{1-\alpha/2;n-1}} \Rightarrow \frac{(19)(0{,}618)^2}{}$$

$$\frac{(19)(0{,}618)^2}{32{,}85} \leq \sigma^2 \leq \frac{(19)(0{,}618)^2}{8{,}91}$$

$$0{,}22090 \leq \sigma^2 \leq 0{,}81443$$

$$\boxed{0{,}470 \leq \sigma \leq 0{,}902}$$

(13) $0{,}35 \in [0{,}221; 0{,}814]$ Sim.