15 $p(t) = 10te^{-t/7} \qquad 0 \le t \le 35$

$$p'(t) = 10\left[t\frac{d}{dt}\left(e^{-t/7}\right) + e^{-t/7}\cdot\frac{d}{dt}(t)\right]$$

$$= 10\left[-\frac{t}{7}\cdot e^{-t/7} + e^{-t/7}\right]$$

$p'(t) = 0$

$$\Rightarrow \quad 10\left[-\frac{te^{-t/7}}{7} + e^{-t/7}\right] = 0$$

$$\Rightarrow 10e^{-t/7}\left[-\frac{t}{7} + 1\right] = 0$$

Since $e^{-t/7} \neq 0 \quad \therefore \quad -\frac{t}{7} + 1 = 0$

$$\Rightarrow t = 7$$

$\therefore$ After 7 days is the percentage of infected people max.

Max. % $= p(7) = 10 \cdot 7 \cdot e^{-1}$

$$= \frac{70}{e} = \boxed{25.75\%}$$

16 $q = \sqrt{\frac{2fM}{k}}$

$f = 1000$

$K = 2$

$M = 200{,}000$

$$\therefore q = \sqrt{\frac{\cancel{2}\cdot 1000 \cdot 200{,}000}{\cancel{2}}}$$

$$= 1000\sqrt{2}$$

$$\approx \boxed{1414}$$