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16/Eng03/026.

1) $P = \frac{E^2}{R}$

$E = 200V \quad R = 8\Omega$

$\Delta E = 5V \quad \Delta R = 0.2\Omega$

$\Delta P = \frac{dP}{dE} \cdot \Delta E + \frac{dP}{dR} \cdot \Delta C$

$\frac{dP}{dE} = \frac{2E}{R} \qquad \frac{dP}{dR} = -\frac{E^2}{R^2}$

$\Delta P = \frac{2(200)(5)}{8} + \frac{(-200)^2}{8^2} \cdot (0.2)$

$\Delta P = -250 - 125$

$\Delta P = -375W$

Change in P is $-375W$

2) $y = \frac{kwd^4}{t^3}$

$\Delta k = 3/100 \qquad \Delta d = \frac{2.5}{100} d$

$\Delta t = \frac{4}{100} t$

$\frac{dy}{dw} = \frac{kd^4}{t^3} \qquad \frac{dy}{dd} = \frac{4kwd^3}{t^3} \qquad \frac{dy}{dt} = \frac{-3kwd^4}{t^4}$

$$\Delta y = \frac{dy}{dw}\cdot \Delta w + \frac{dy}{dd} + \frac{dy}{dt}\cdot \Delta t$$

$$\Delta y = \frac{kd^4}{t^3}\cdot\frac{3}{100}w + \frac{4kwd^3}{t^3}\cdot\frac{2.5}{100}d \div \frac{3kwd^4}{t^{4\cdot3}}\cdot\frac{4}{100}t$$

$$\Delta y = \frac{kwd^4}{t^3}\cdot\frac{3}{100} + \frac{kwd^4}{t^3}\cdot\frac{2.5\cdot4}{100} - \frac{kwd^4}{t^3}\cdot\frac{12}{100}$$

$$\Delta y = \frac{kwd^4}{t^3}\left(\frac{3}{100} + \frac{10}{100} - \frac{12}{100}\right)$$

$$\Delta y = \frac{kwd^4}{t^3}\left(\frac{1}{100}\right)$$

$$\Delta y = \frac{kwd^4}{t^3}$$

$\therefore$

$$\Delta y = \frac{1}{100}y$$

$$= 1\%y$$

Change in $y = \pm 1\%$.