

①

$$m = 4 \text{ kg}$$

$$K = 8 \text{ N/m}$$

$$F = m \cdot a$$

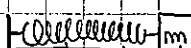
$$a = -\frac{K}{m} x \Leftrightarrow a = -\frac{8}{4} x = a = -2x$$

$$\hookrightarrow \text{2ª L} \quad a = \frac{F}{m}$$

⑧

②

$$m = 2 \text{ kg}$$



$$E_{m_i} = 0,25 \text{ J}$$

$$E_T = E_c + E_{pe} \Leftrightarrow E = K + U$$

$$\frac{1}{2} m v^2$$

$$\frac{1}{2} K x^2$$

$$E_i = \frac{1}{2} K x^2 + \frac{1}{2} m v^2 \Leftrightarrow 0,25 = \frac{1}{2} K x^2$$

③

$$E_f = \frac{1}{2} m v^2 \Leftrightarrow 0,25 = \frac{1}{2} \cancel{m} v^2 \Leftrightarrow v = \sqrt{0,25} \Leftrightarrow v = 0,5 \text{ m/s}$$

③

frequência angular natural - ω

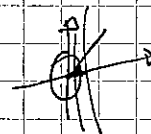
frequência angular - ω_d

Quando $\omega_d = \omega$ há ressonância.

⑧

⑧

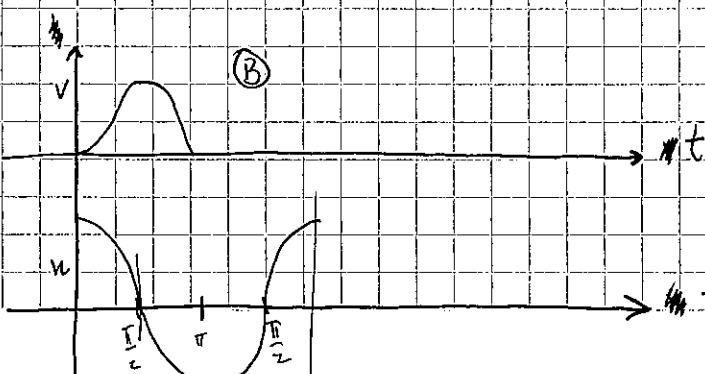
SOA



④

⑧

⑤



6

$$E = 0,4 \text{ J}$$

~~$$E = \frac{1}{2}mv^2 + \frac{1}{2}kx^2$$~~

(C)

$$E = K + U \Leftrightarrow K = E - U \Leftrightarrow K = 0,4 - 0,1 \Leftrightarrow K = 0,3$$

7

$$m = 2 \text{ kg}$$

(B)

$$E = 0,4 \text{ J}$$

$$x = 0,04 \text{ m}$$

$$K = \frac{1}{2}mv^2$$

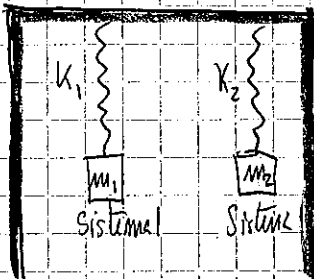
$$E = 0,4 \text{ J}$$

$$U = 0,1 \text{ J}$$

$$K = 0,3 \text{ J}$$

$$E = K + U \Leftrightarrow K = 0,3 \Leftrightarrow \frac{1}{2}mv^2 = 0,3 \Leftrightarrow v^2 = 0,3 \Leftrightarrow v = \sqrt{0,3} \Leftrightarrow v \approx 0,55$$

8



- a. 1
- b. 3
- c. 2
- d. 4

(D)

9

$$E = 0,5 \text{ J}$$

(B)

$$x = 0,08 \rightarrow U = 0,4 \quad m = 2,0 \text{ kg}$$

$$E = K + U \Leftrightarrow K = 0,1 \rightarrow \frac{1}{2}mv^2 = 0,1 \Leftrightarrow v^2 = 0,1 \Leftrightarrow v = 0,32$$

10

(D)