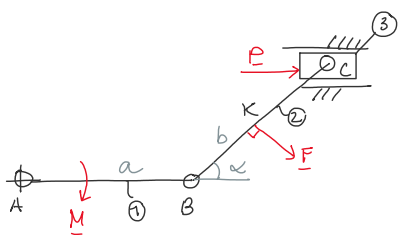


Esercitazione: compito di esame

giovedì 7 novembre 2024 18:05



Nota: $a, b, \alpha = 45^\circ$

$M, (K, F)$ + P NOTA DIREZIONE
 \downarrow
 APPLICATA A ③
 $\overline{KB} = b/2$

Richiesto: 1) Valutare P in modo che il sistema sia equill. statico

2) Applicare PSE \Rightarrow DCL DEF. nel caso M, R, F

a) AGV: $n^{\circ} gdl = 3 \times 3 - 2 \times 3 - 2 = 1$
CSGK EP
 \downarrow
 SISTEMA LABILE

b) AFV:

$\left. \begin{array}{l} (P_{Ax}, P_{Ay}) \\ (P_{Bx}, P_{By}) \\ (P_{Cx}, P_{Cy}) \\ R_{CP}, M_{CP} \end{array} \right\}$

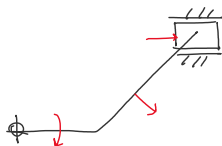
6 INCOGNITE
 $\Rightarrow 2 \text{ INC.}$

 $8 \text{ INCOG. REATTIVE}$
 $+$
 $1 \text{ INCOG. ATTIVA } (P)$

 9 INCOG.

c) SCI $\Rightarrow 9 \text{ INCOG} = 9 \text{ EQNI.}$
 (SÌ)

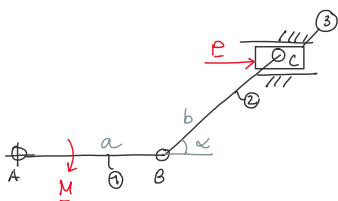
d) SEI \Rightarrow (NO)



AFV: $\left. \begin{array}{l} R_{CP}, M_{CP} \\ R_{Ax}, R_{Ay} \\ P \end{array} \right\} 5 \text{ INCOG.} \neq 3 \text{ EQNI}$

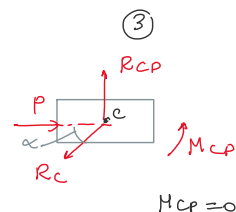
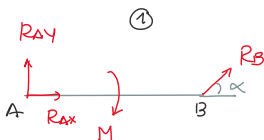
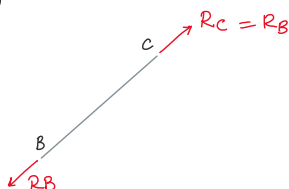
e) PSE \Rightarrow I CASO $M \oplus P$ + II CASO $F \oplus P$

I CASO \Rightarrow

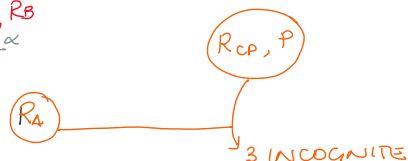
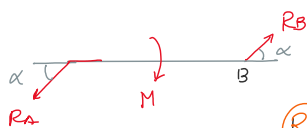


\Rightarrow CORPO 2 E' SCARICO

DCL P. ②



$M_{CP} = 0$



CORPO 2

A \uparrow $-M + R_B \sin \alpha a = 0$

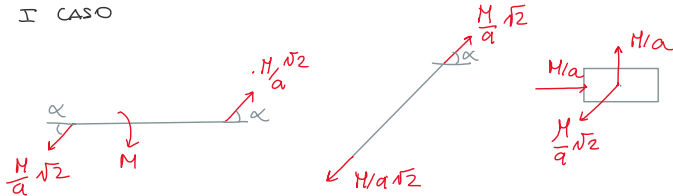
$R_B = \frac{M}{a \sin \alpha} = \frac{M}{a} \sqrt{2} > 0$

CORPO 3

$$\begin{cases} x: & P - R_c \cos \alpha = 0 \\ y: & R_{cp} - R_c \sin \alpha = 0 \end{cases}$$

$$\begin{cases} P = R_c \cos \alpha = \frac{M}{a} \frac{\sqrt{2}}{2} \frac{\sqrt{2}}{2} = \frac{M}{a} = P^I \text{ I CASO} \\ R_{cp} = R_c \sin \alpha = \frac{M}{a} \end{cases}$$

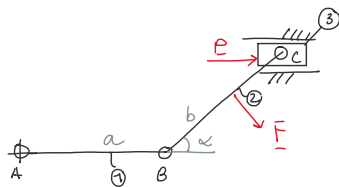
DCL DEF I CASO



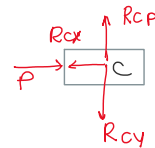
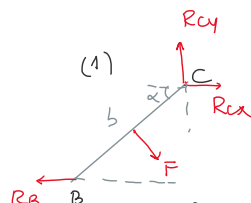
$$P^I = \frac{M}{a}$$

II CASO

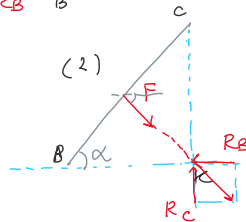
CORPO SCALARIO $\Rightarrow \curvearrowright$



DCL P.



$$\curvearrowright M_{cp} = 0 \quad c)$$



$$R_B = R_C$$

$R_B, R_{cy}, R_{cx}, R_{cp}, P$
5 INCOGN.
 \downarrow
5 EQNI.

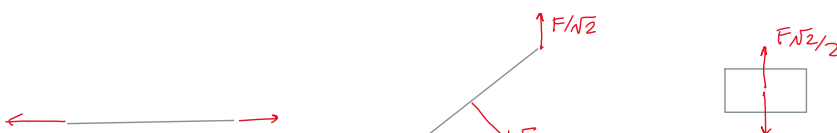
EQNI CORPO 2

$$\begin{aligned} c) & \quad +F \frac{b}{2} - R_B \sin \alpha b = 0 \quad \rightarrow \quad R_B = \frac{F \frac{b}{2}}{\frac{b}{2} \frac{\sqrt{2}}{2}} = \frac{F}{\sqrt{2}} \\ x: & \quad -R_B + F \frac{\sqrt{2}}{2} + R_{cx} = 0 \quad \rightarrow \quad R_{cx} = R_B - F \frac{\sqrt{2}}{2} = F \left(\frac{1}{\sqrt{2}} - \frac{\sqrt{2}}{2} \right) = 0 \\ y: & \quad R_{cy} - F \sin \alpha = 0 \quad \rightarrow \quad R_{cy} = F \frac{\sqrt{2}}{2} \end{aligned}$$

EQNI CORPO 3

$$\begin{aligned} x: & \quad -R_{cx} + P = 0 \quad \rightarrow \quad P = 0 = P^{II} \\ y: & \quad R_{cp} - R_{cy} = 0 \quad \rightarrow \quad R_{cp} = R_{cy} = F \frac{\sqrt{2}}{2} \end{aligned}$$

DCL DEF.



$$P^{II} = 0$$

$F/\sqrt{2}$ $F/\sqrt{2}$ \leftarrow
 $F/\sqrt{2}$ $\rightarrow F$ $F/\sqrt{2}$

$$\Rightarrow P = P' + P'' = P' = \frac{M}{a}$$