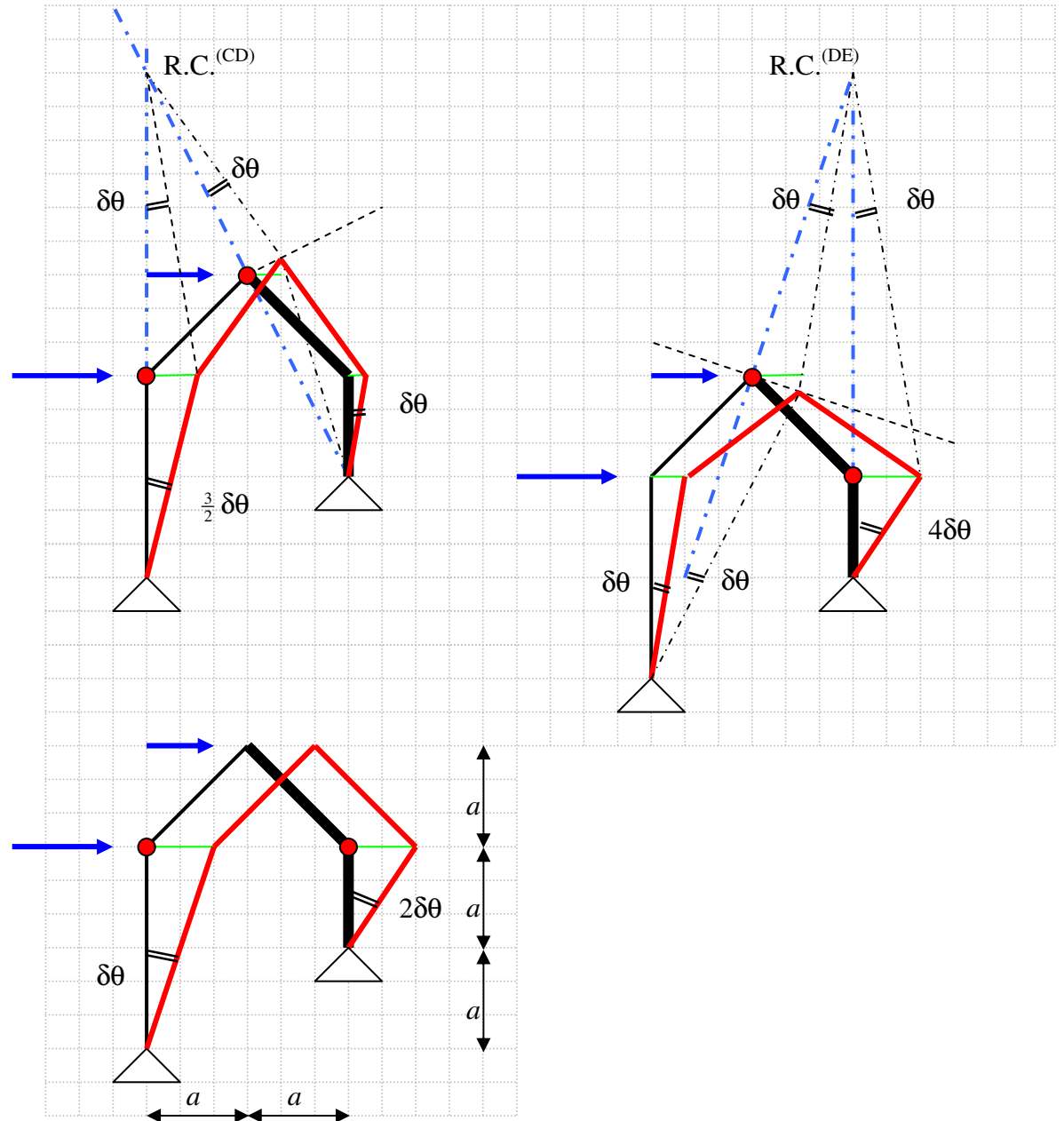
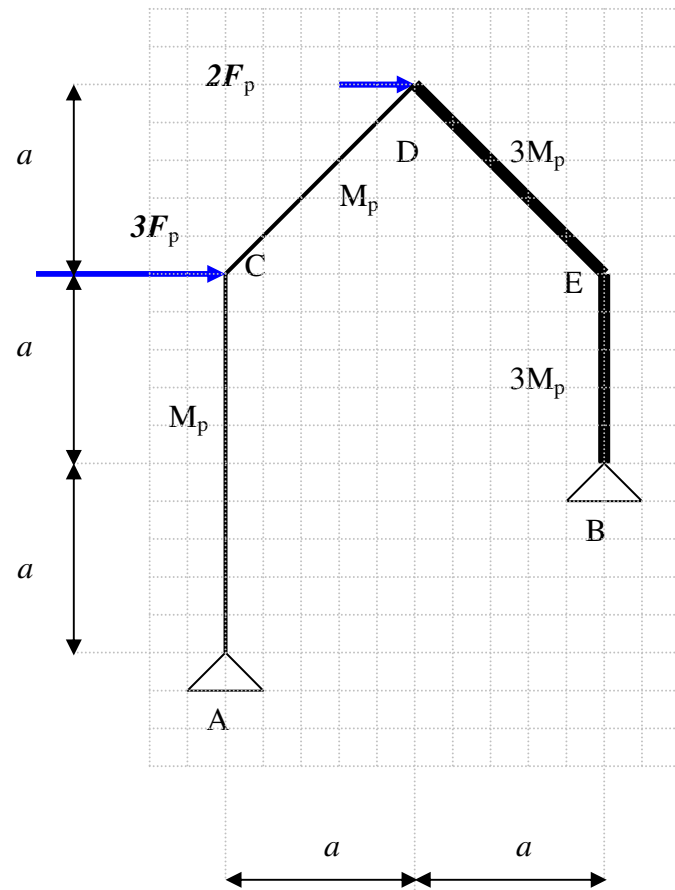
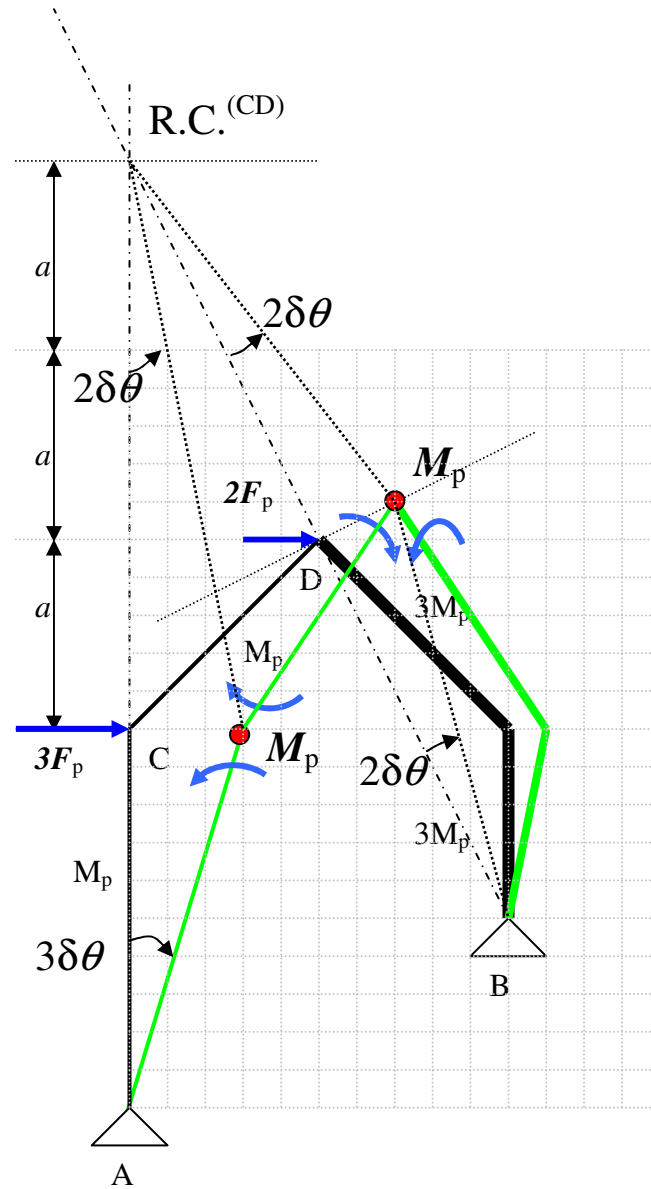
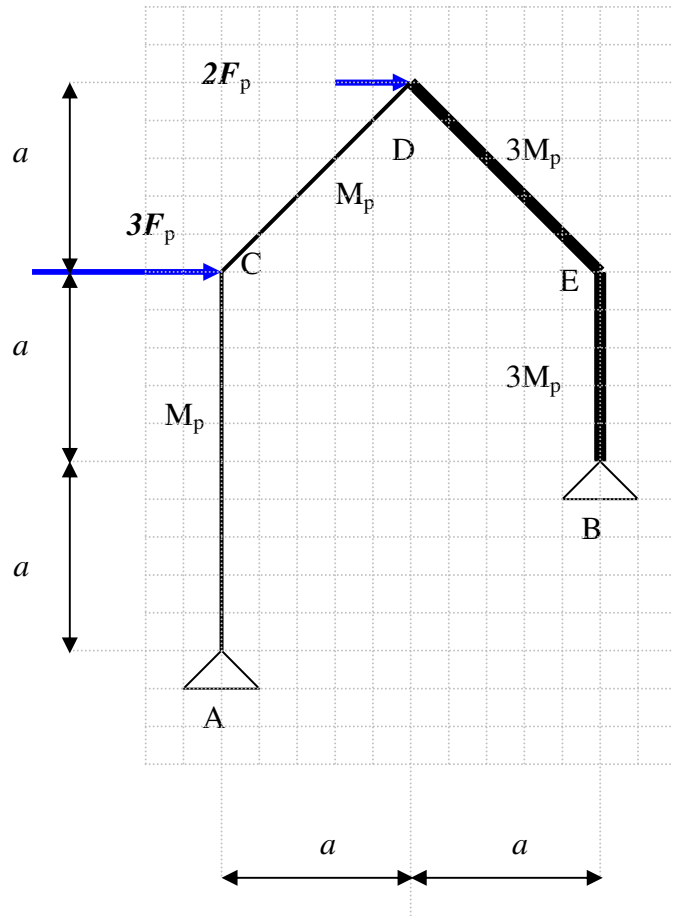


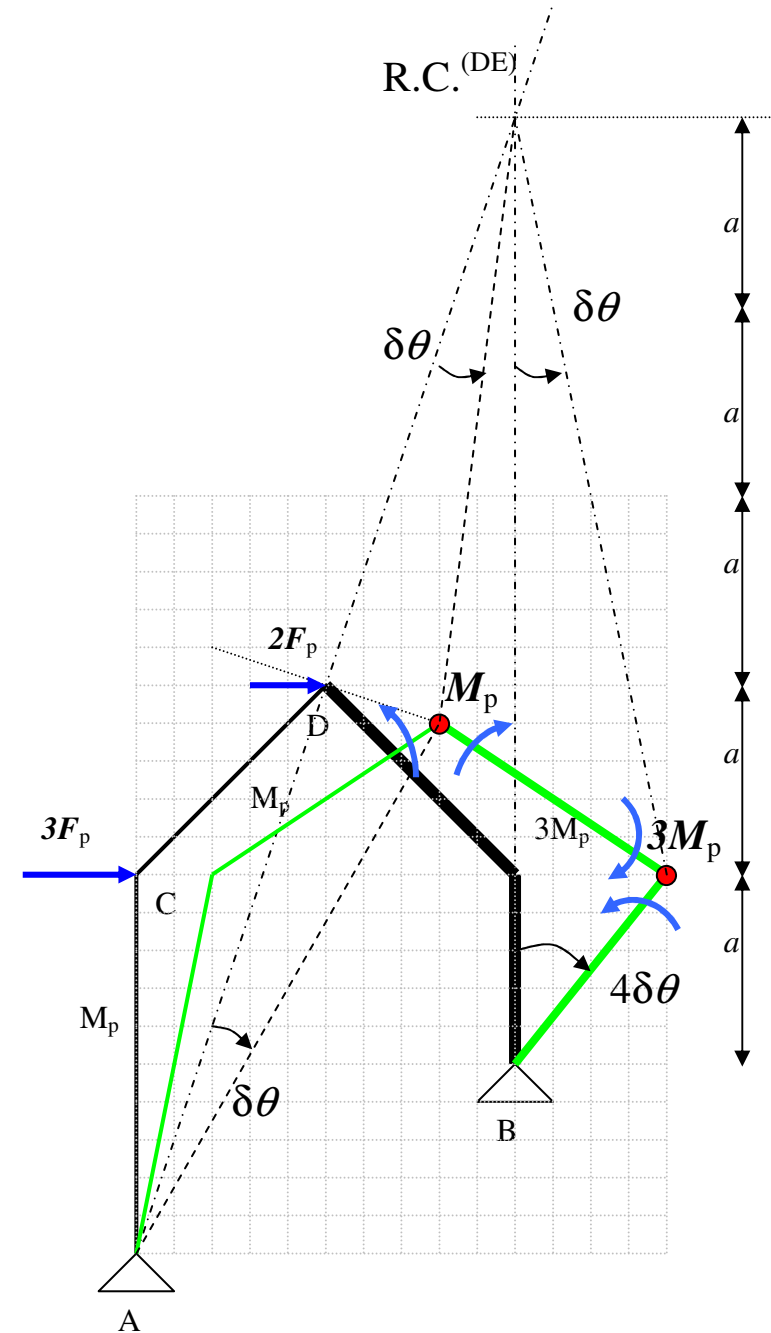
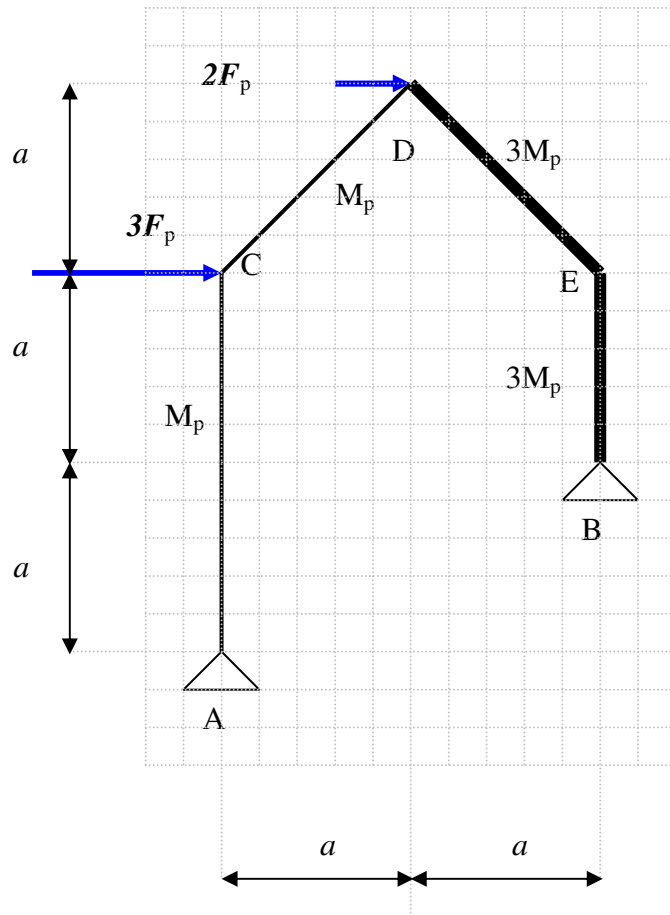
EXAM



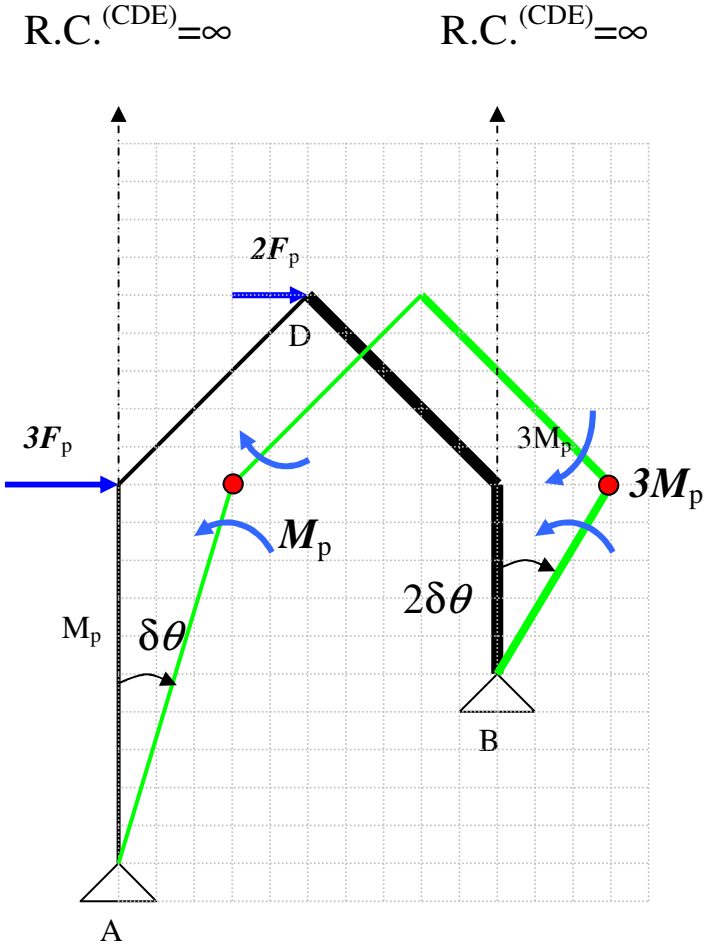
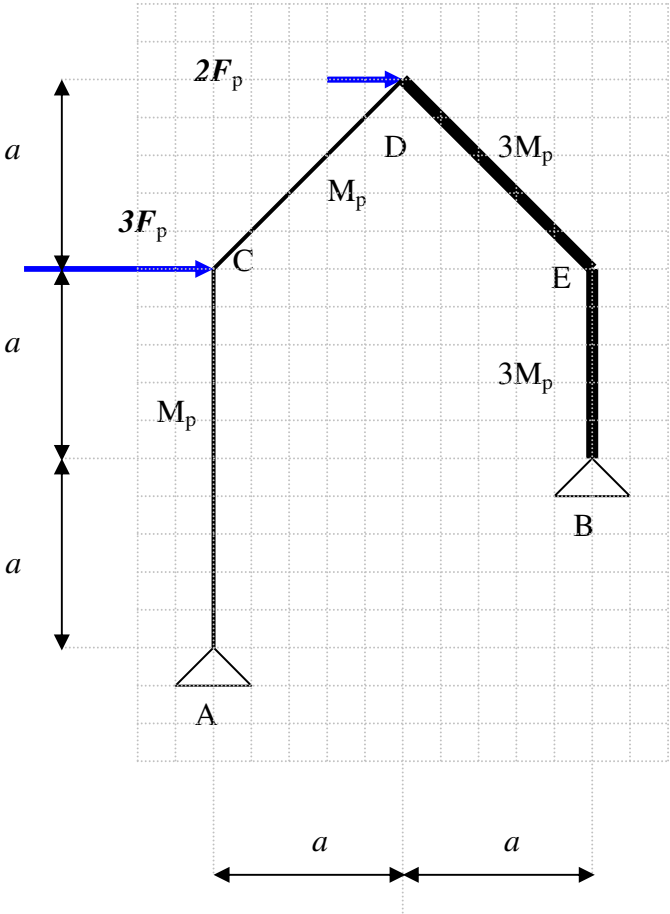
Mechanism 1



Mechanism 2



Mechanism 3



Virtual work

Mechanism 1

$$\delta A = -M_p \times 3\delta\theta - M_p \times 2\delta\theta - M_p \times 2\delta\theta - M_p \times 2\delta\theta + 3F \times (2a \times 3\delta\theta) + 2F \times (2a \times 2\delta\theta) = 0$$

$$F_{p-1} = \frac{9M_p}{26a}$$



COLLAPSE LOAD

Mechanism 2

$$\delta A = -M_p \times \delta\theta - M_p \times \delta\theta - 3M_p \times \delta\theta - 3M_p \times 4\delta\theta + 3F \times (2a \times \delta\theta) + 2F \times (3a \times \delta\theta) = 0$$

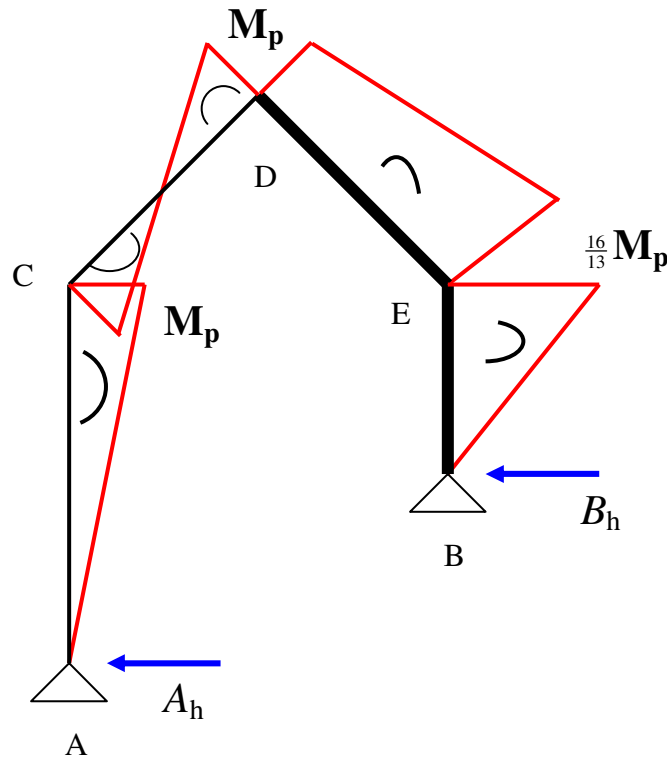
$$F_{p-2} = \frac{17M_p}{12a}$$

Mechanism 3

$$\delta A = -M_p \times \delta\theta + M_p \times 0 + 3M_p \times 0 - 3M_p \times 2\delta\theta + 3F \times (2a \times \delta\theta) + 2F \times (2a \times \delta\theta) = 0$$

$$F_{p-3} = \frac{7M_p}{10a}$$

MOMENT DISTRIBUTION MECHANISM 1 $F_p = \frac{9M_p}{26a}$



Find the moment at E ?

1 Horizontale reaction at A:

$$\sum T|C = 0 \Rightarrow A_h \times 2a = M_p \Rightarrow A_h = \frac{M_p}{2a}$$

$$\sum F_h = 0 \Rightarrow B_h = 5F_p - A_h \Rightarrow B_h = \frac{16M_p}{13a}$$

2 Sum of moments part BE around E:

$$\sum T|E = 0$$

$$B_h \times a = M_E \Rightarrow M_E = \frac{16M_p}{13} < 3M_p$$