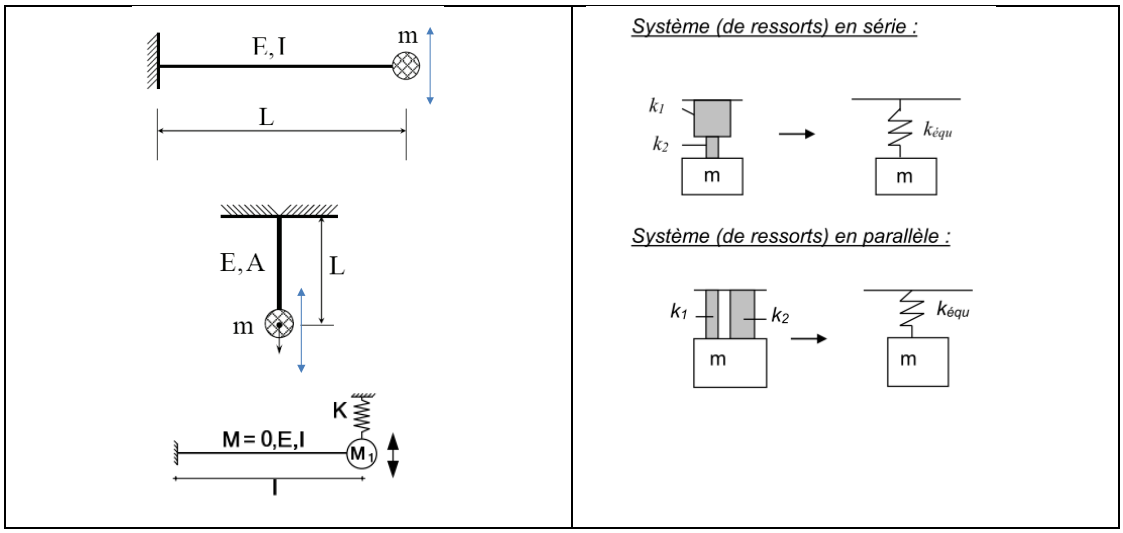
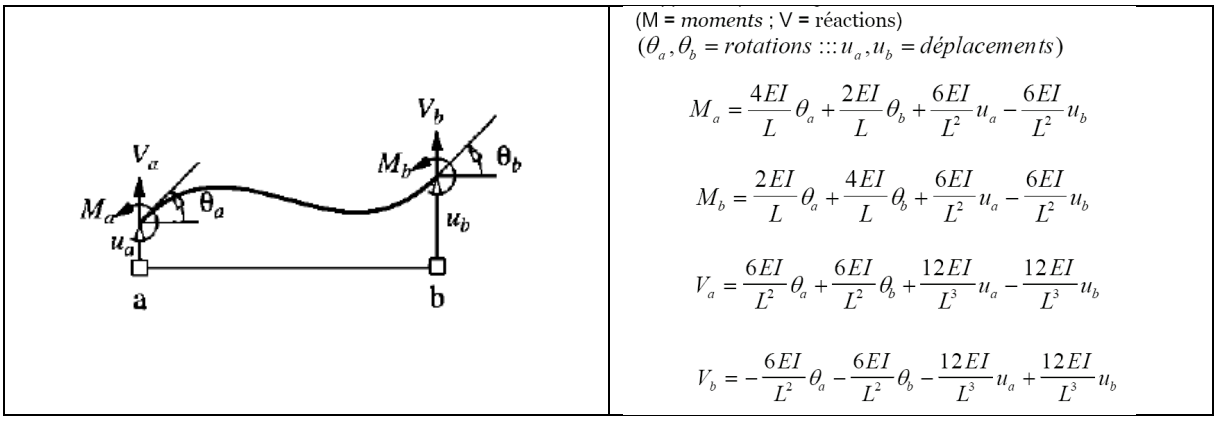
Bases of Dynamics of Structure

Exercice 1 : Identify the stiffness of the systems hereafter



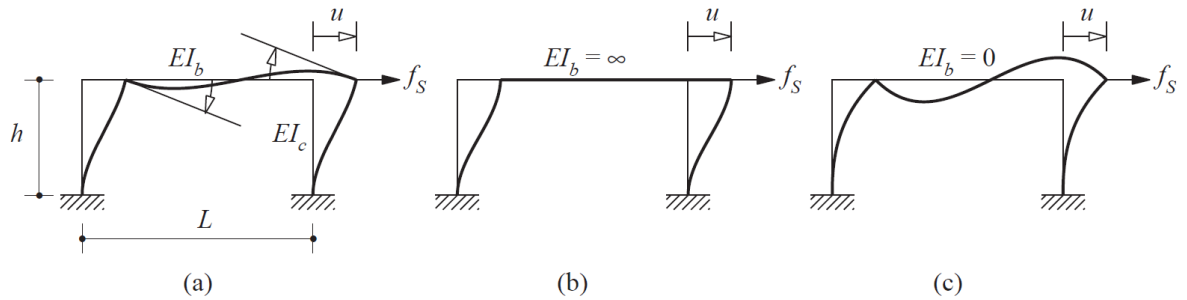
Exercise 2 : Use of fundamental table of beam stiffness to calculate the stiffness of frames (table hereafter)



Using this table calculate :

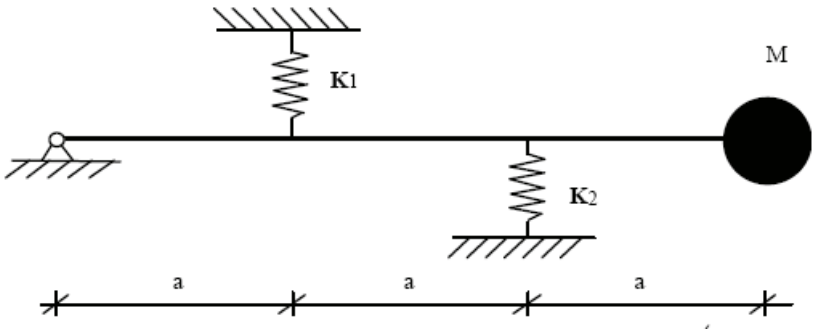
1 – The flexure rigidity of a beam fixed in one extremity (let say A) against a force normal to the axe of the beam applied to the other extremity (let say B)) in two case : a- where the extremity B is free to rotate b- when no rotation is allowed around extremity B

2 – the flexure rigidity of the frame of the figure hereafter for various hypothesis of the rigidity of the longitudinal element



Exercise 3 Let us consider the following system in which the rode is considered to be infinitely stiffen and massless. A concentrated mass M is fixed at the extremity of the rode.

a) Determine the pulsation of the system around the equilibrium position.



Numerical application : a=2m, M=5kg, $K_1=K_2=2.10^5$ N/m