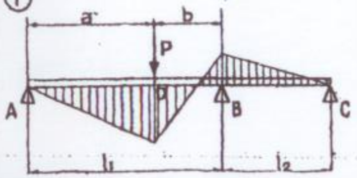
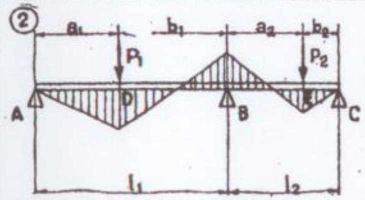
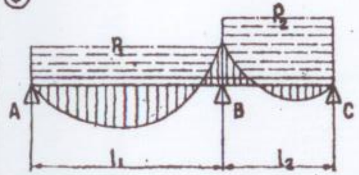
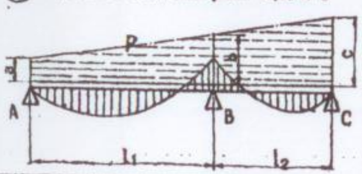
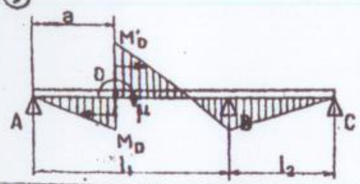
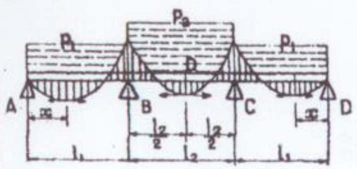
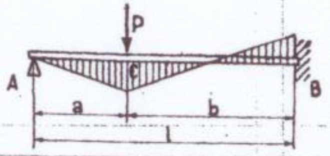
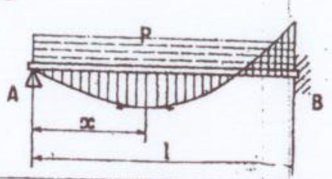
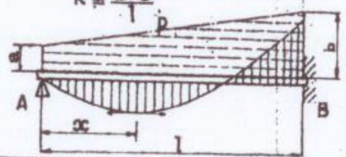
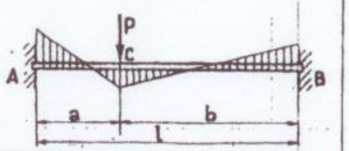
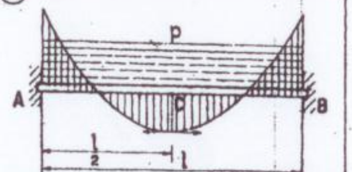
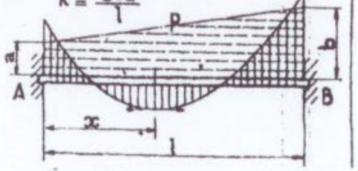
Principaux cas particuliers de flexion des poutres droites hyperstatiques.

Cas de charge	Réactions	Moments fléchissants
(1) 	$R_A = -\frac{1}{l_1}(Pb+M_B)$ $R_B = -\frac{Pa}{l_1} + M_B\left(\frac{1}{l_1}+\frac{1}{l_2}\right)$ $R_C = -\frac{M_B}{l_2}$	$M_B = -\frac{Pa}{(l_1+l_2)\,2l_1}(l_1^2-a^2)$ $M_D = -R_A a$
(2) 	$R_A = \frac{1}{l_1}(P_1b_1+M_B)$ $R_B = -\frac{P_1a_1}{l_1} - \frac{P_2b_2}{l_2} + M_B\left(\frac{1}{l_1}+\frac{1}{l_2}\right)$ $R_C = -\frac{1}{l_2}(P_2a_2+M_B)$	$M_D = -R_A a_1$ $M_B = \frac{\frac{P_1a_1}{l_1}(l_1^2-a_1^2)+\frac{P_2b_2}{l_2}(l_2^2-b_2^2)}{2(l_1+l_2)}$ $M_E = -R_C b_2$
(3) 	$R_A = -\frac{p_1l_1}{2} - \frac{M_B}{l_1}$ $R_B = -\frac{p_1l_1}{2} - \frac{p_2l_2}{2} + M_B\left(\frac{1}{l_1}+\frac{1}{l_2}\right)$ $R_C = -\frac{p_2l_2}{2} - \frac{M_B}{l_2}$	$M_B = -\frac{p_1l_1^3+p_2l_2^3}{8(l_1+l_2)}$
(4) a, b, c ordonnées p en A, B et C 	$R_A = -\frac{M_B}{l_1} - \frac{l_1[l_1(2a+c)+3al_2]}{6(l_1+l_2)}$ $R_B = M_B\left(\frac{1}{l_1}+\frac{1}{l_2}\right) - \frac{1}{6}[l_1(a+2c)+l_2(2a+c)]$ $R_C = -\frac{M_B}{l_2} - \frac{l_2[l_2(a+2c)+3cl_1]}{6(l_1+l_2)}$	$M_B = -\frac{l_1^3(7a+8b)+l_2^3(7c+8b)}{120(l_1+l_2)}$
(5) 	$R_A = \frac{1}{l_1}(\mu-M_B)$ $R_B = M_B\left(\frac{1}{l_1}+\frac{1}{l_2}\right) - \frac{\mu}{l_1}$ $R_C = -\frac{M_B}{l_2}$	$M_B = -\mu\frac{l_1^2-3a^2}{l_1(l_1+l_2)}$ $M_D = \frac{a}{l_1}(M_B-\mu)$ $M'_D = M_D+\mu$
(6) 	$R_A = R_D = \frac{p_1l_1}{2} - \frac{M_B}{l_1}$ $R_B = R_C = -\frac{p_1l_1}{2} - \frac{p_2l_2}{2} + \frac{M_B}{l_1}$	$M_B = M_C = -\frac{p_1l_1^3+p_2l_2^3}{4(2l_1+3l_2)}$ $M_D = M_B + \frac{p_2l_2^2}{8}$ M max travées AB et CD $= \frac{R_A^2}{2p_1} = \frac{R_D^2}{2p_1}$ à l'abscisse $x = \frac{l_1}{2} + \frac{M_B}{p_1l_1}$

Cas de charge	Réactions	Moments fléchissants
(7) 	$R_A = -\frac{Pb^2}{2l^3}(3l-b)$ $R_B = -\frac{Pa}{2l^3}(3l^2-a^2)$	$M_A = 0$ $M_B = -\frac{Pab}{2l}\left(1+\frac{a}{l}\right)$ $M_C = \frac{Pab^2}{2l^3}(3l-b)$
(8) 	$R_A = -\frac{3}{8}pl$ $R_B = -\frac{8}{5}pl$	$M_B = -\frac{pl^2}{8}$ $M_{max} = \frac{l}{2p}R_A^2$ à l'abscisse $x = \frac{3}{8}l$
(9) a et b = ordonnées de p en A et B $K = \frac{b-a}{l}$ 	$R = -\frac{1}{40}(11a+4b)$ $R_B = -\frac{1}{40}(9a+16b)$	$M_B = -\frac{l^2}{120}(70+8b)$ $M_{max} = \left(\frac{a+Kx}{3}\right)\frac{x^2}{2} - R_Ax$ avec $x = \frac{-a+\sqrt{a^2-2KR_A}}{K}$
(10) 	$R_A = -\frac{Pb^2}{l^3}(2a+l)$ $R_B = -\frac{Pa^2}{l^3}(2b+l)$	$M_A = -\frac{Pba^2}{l^2}$ $M_B = -\frac{Pab^2}{l^2}$ $M_C = \frac{Pab}{l}\left(1-\frac{2a^2}{l^2}\right)$
(11) 	$R'_A = R_B = \frac{Pl}{2}$ Flèche en C : $v_C = \frac{pl^4}{384\,EI}$	$M_A = M_B = -\frac{pl^2}{12}$ $M_C = -\frac{M_A}{2} = \frac{pl^2}{24}$
(12) a et b = ordonnées de p en A et B $K = \frac{b-a}{l}$ 	$R_A = -\frac{l}{20}(7a+3b)$ $R_B = -\frac{l}{20}(7b+3a)$	$M_A = -\frac{l^2}{60}(3a+2b)$ $M_B = -\frac{l^2}{60}(2a+3b)$ $M_{max} = \left(a+\frac{Kx}{3}\right)\frac{x^2}{2} - R_Ax + M_A$ pour $x = \frac{-a+\sqrt{a^2-2KR_A}}{K}$