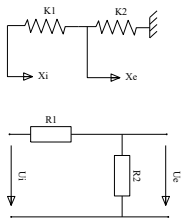
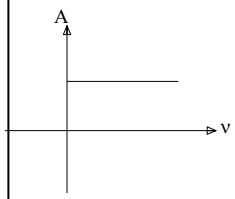
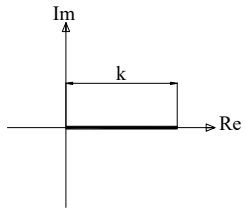
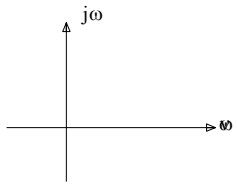
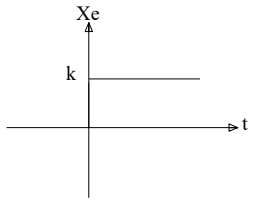
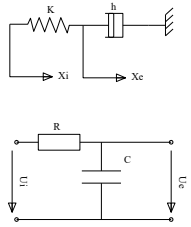
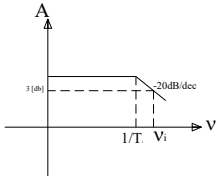
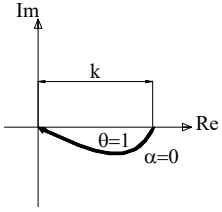
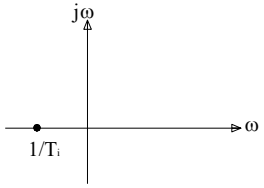
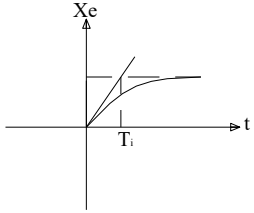
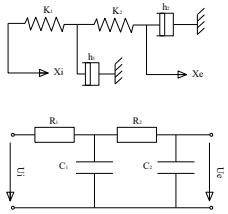
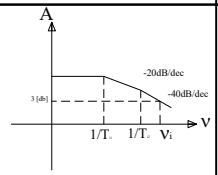
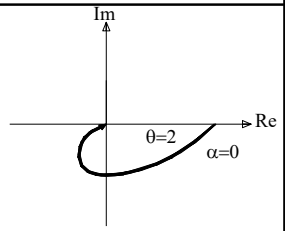
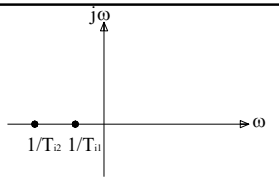
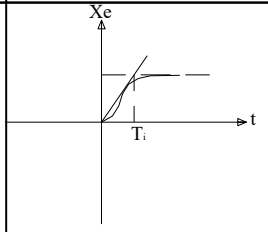
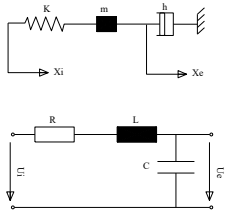
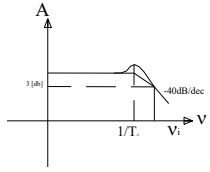
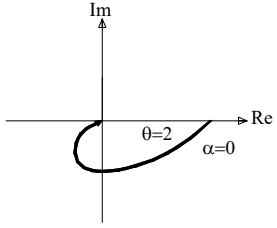
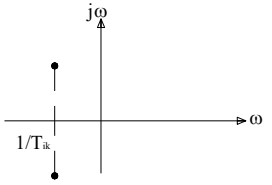
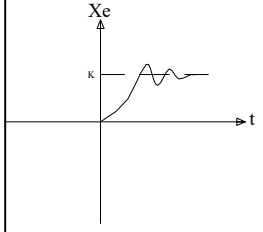
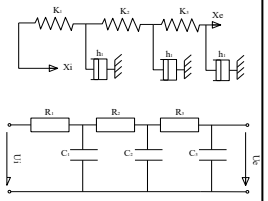
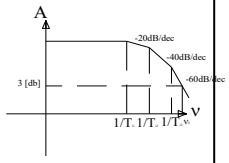
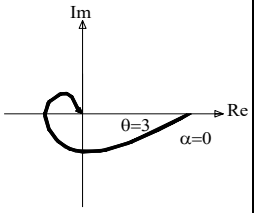
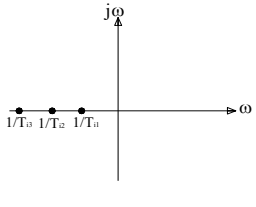
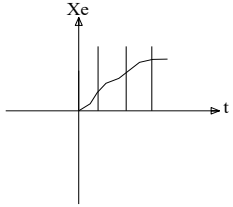
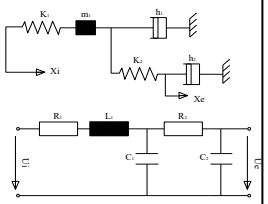
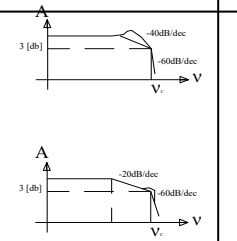
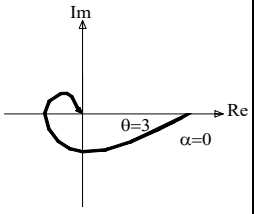
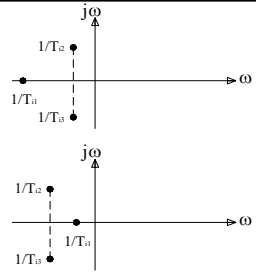
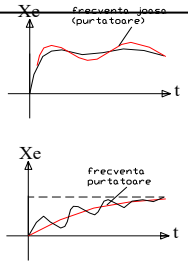
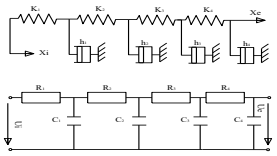
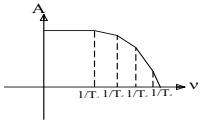
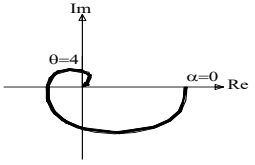
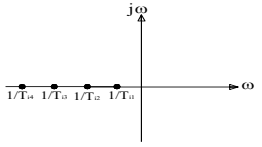
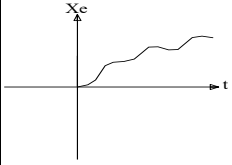
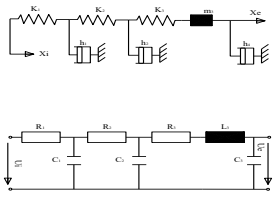
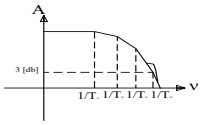
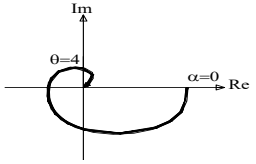
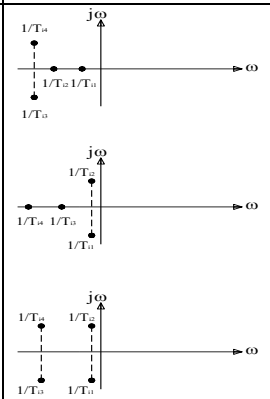
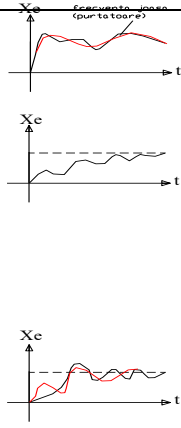
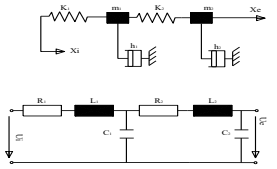
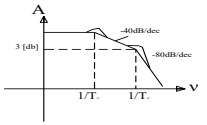
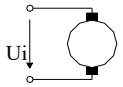
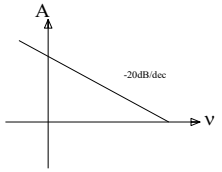
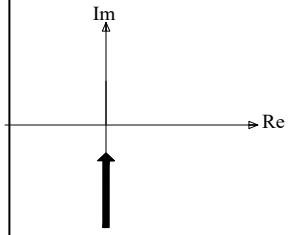
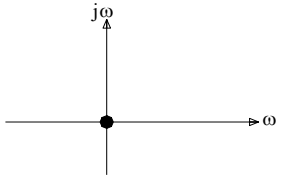
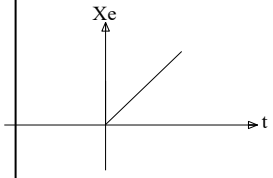
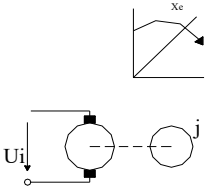
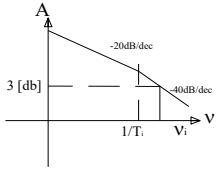
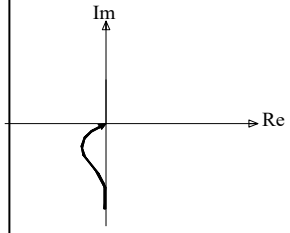
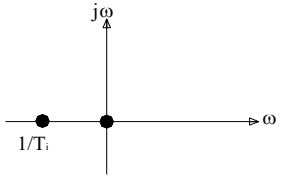
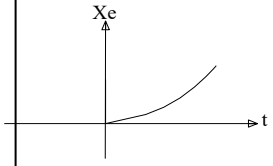
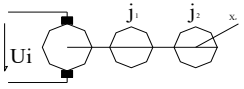
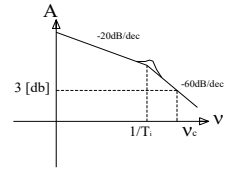
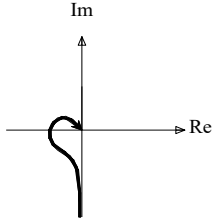
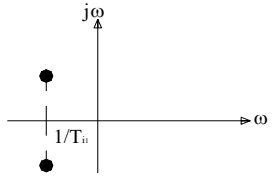
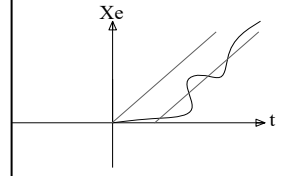
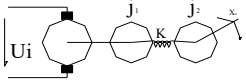
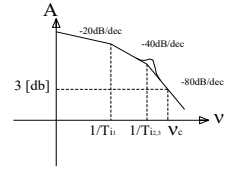
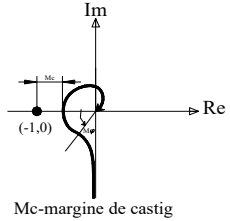
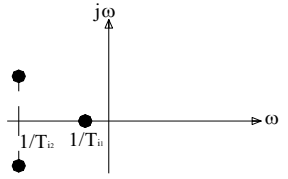
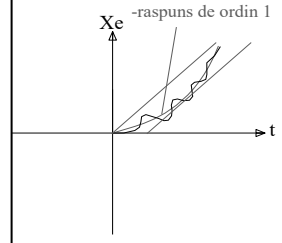
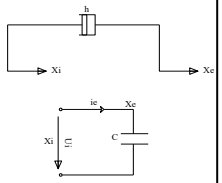
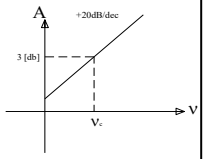
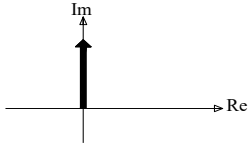
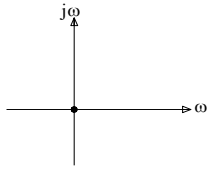
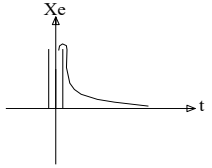
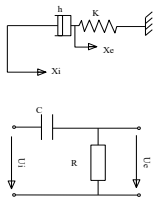
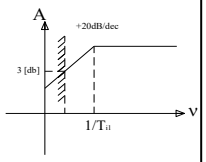
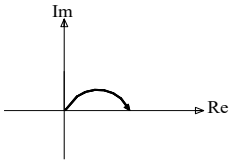
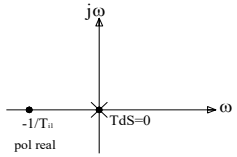
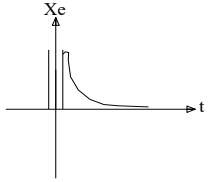
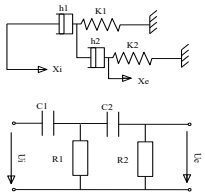
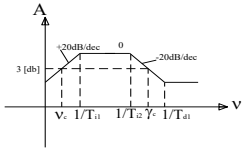
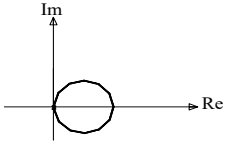
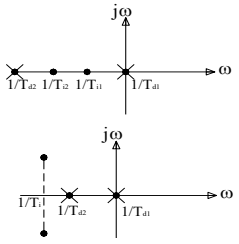
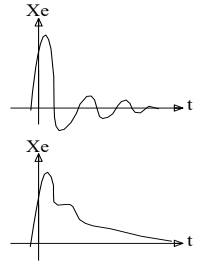
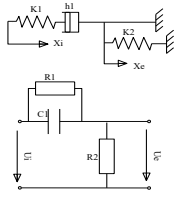
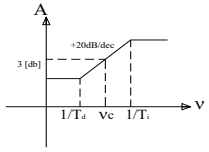
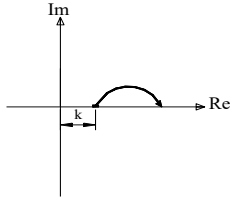
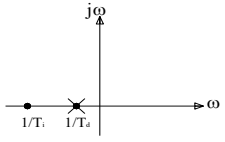
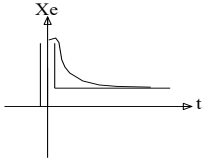
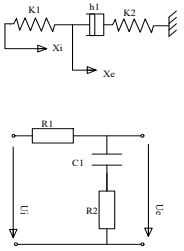
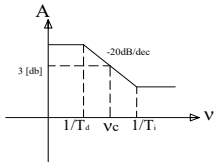
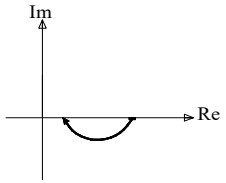
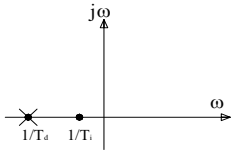
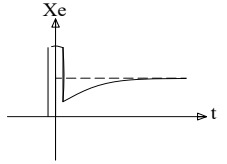
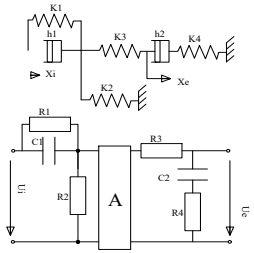
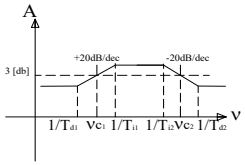
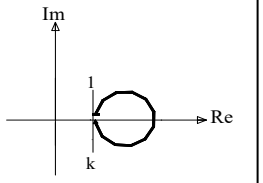
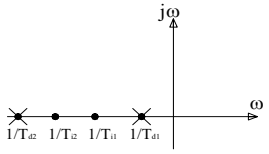
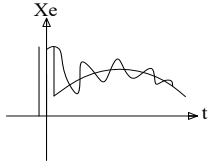
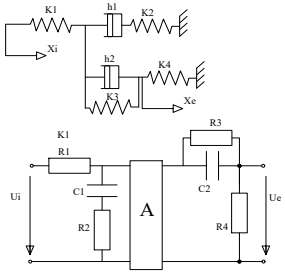
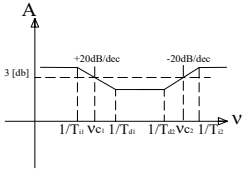
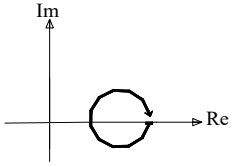
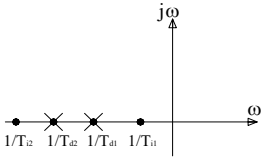
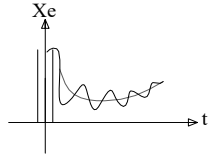
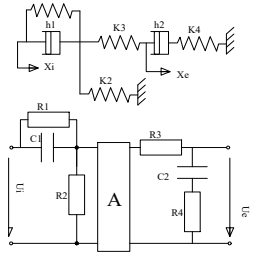
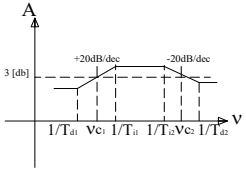
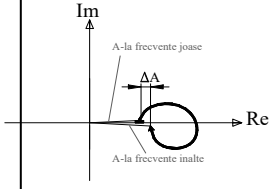
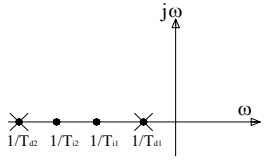
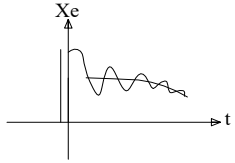
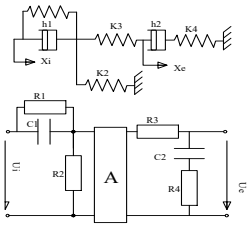
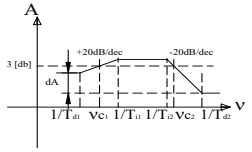
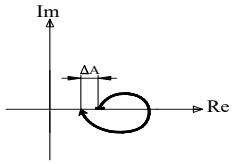
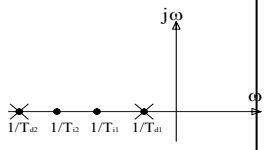
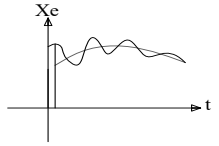
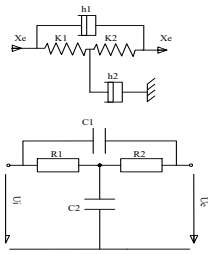
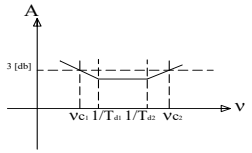
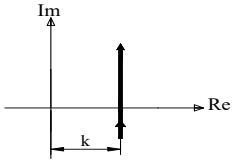
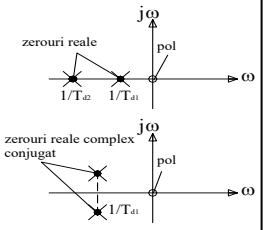
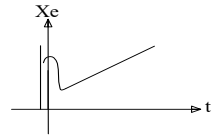
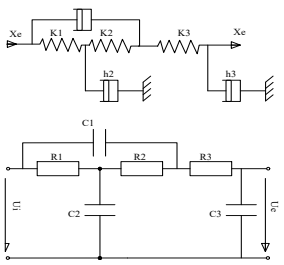
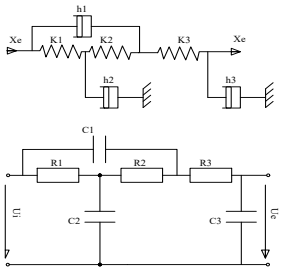
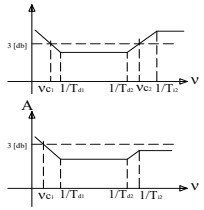
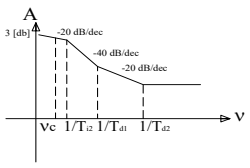
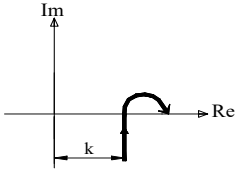
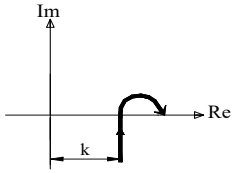
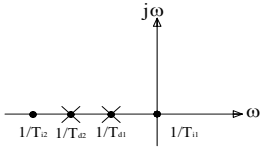
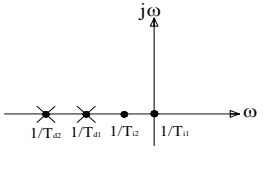
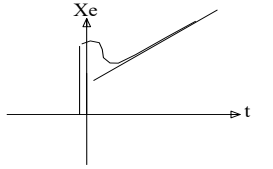
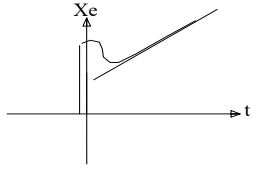
TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTCA BODE	CARACTERISTICA NYQUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALĂ
P Proporţional	$H(s)=k$				 nu are rol pt. ca nu depinde de S	
PT_1 Proporţional cu inerţie de ordinul 1	$H(s)=\frac{k}{T_i s+1}$		 (FTJ)=filtru trece jos			
PT_2 Proporţional cu inerţie de ordinul 2	$H(s)=\frac{k}{(T_{i_1}s+1)(T_{i_2}s+1)}$ $P_1, P_2 - doi\ poli\ reali$	 P₁,P₂-poli reali	 (FTJ)=filtru trece jos			
	$H(S)=\frac{K}{T_{i_2}s^2+T_{i_1}s+1}$ $P_1, P_2 - doi\ poli$ $complex-conjugati$	 P₁,P₂-poli complex conjugati	 (FTJ)=filtru trece jos			

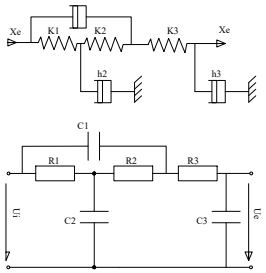
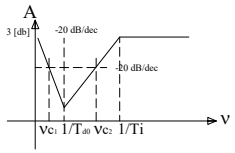
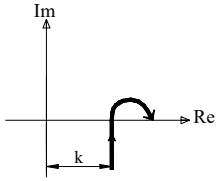
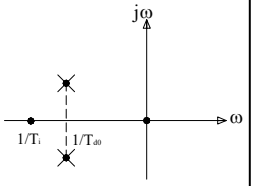
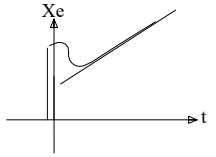
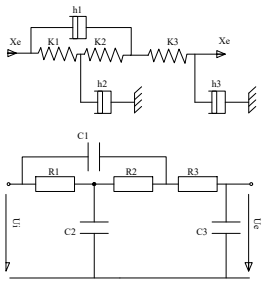
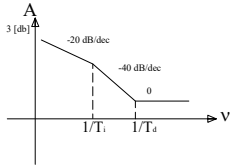
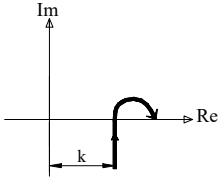
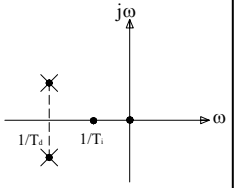
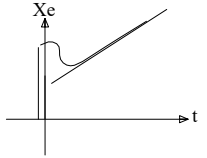
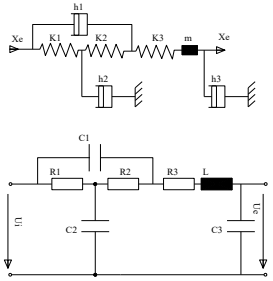
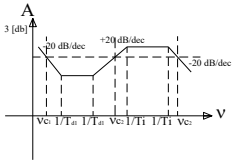
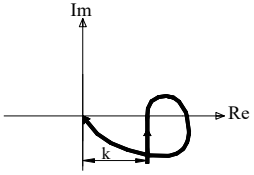
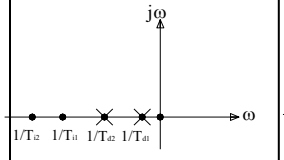
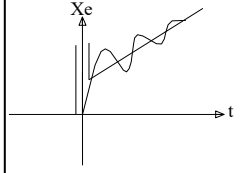
TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTCA BODE	CARACTERISTICA NYQUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALA
PT_3 Proporţional cu inerţie de ordinul 3	$H(s)=\frac{k}{(T_{i_1}s+1)(T_{i_2}s+1)(T_{i_3}s+1)}$		 (FTJ)=filtru trece jos			
	$H(s)=\frac{k}{(T_{i_1}s+1)(T_{i_2}s^2+T_{i_3}s+1)}$		 (FTJ)=filtru trece jos			
	$H(s)=\frac{k}{(T_{i_1}s+1)(T_{i_2}s+1)(T_{i_3}s+1)(T_{i_4}s+1)}$		 (FTJ)=filtru trece jos			
PT_4 Proporţional cu inerţie de ordinul 4	$H(s)=\frac{k}{(T_{i_1}s+1)(T_{i_2}s+1)(T_{i_3}s^2+T_{i_4}s+1)}$		 (FTJ)=filtru trece jos			
	$H(s)=\frac{k}{(T_{i_2}s^2+T_{i_1}s+1)(T_{i_3}s^2+T_{i_4}s+1)}$		 (FTJ)=filtru trece jos			

TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTICA BODE	CARACTERISTICA NYOUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALĂ
I integrator	$H(s)=\frac{k}{s}$	 - modelul unui micromotor cu moment de inertie j foarte mic (se neglijeaza !)	 (FTJ)=filtru trece jos		 -polul este pozitiv in origine	 -de tip rampa
IT_1 Integrator cu inerţie de ordinul 1	$H(s)=\frac{k}{s}\cdot\frac{1}{T_i s+1}$		 (FTJ)=filtru trece jos			 -apare o intarziere de raspuns datorata inertiei
IT_2 Integrator cu inerţie de ordinul 2	$H(S)=\frac{k}{s}\cdot\frac{1}{T_{i_2}s^2+T_{i_1}s+1}$	 j₁-moment de inertie al motorului j₂-moment de inertie al sarcinii	 (FTJ)=filtru trece jos			 -semnalul este oscilant: poate aparea frecventa de rezonanta; -semnal mai intarziat
IT_3 Integrator cu inerţie de ordinul 3	$H(S)=\frac{k}{s}\cdot\frac{1}{(T_i s+1)(T_{i_2}s^2+T_{i_1}s+1)}$	 j₁-moment de inertie al motorului j₂-moment de inertie al sarcinii	 (FTJ)=filtru trece jos	 Mc-margine de castig Mφ-margine de faza	 -polul real rezulta din rigiditatea arborelui	

TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTICA BODE	CARACTERISTICA NYQUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALĂ
D derivativ	$H(s)=T_D s$		 (FTS)=filtru trece sus			
DT_1 Derivativ cu inerţie de ordinul 1	$H(s)=\frac{T_D s}{T_i s+1}$		 (FTS)=filtru trece sus			
D_2T_2 Dublu derivativ cu inerţie de ordinul 2	$H(s)=\frac{T_{D_2} s^2+T_{D_1} s}{T_{i_2} s^2+T_{i_1} s+1}$		 (FTS)=filtru trece sus; (sau trece banda)			
PDT_1 Proporţional derivativ cu inerţie de ordinul 1 de anticipaţie	$H(s)=\frac{k(T_D s+1)}{T_i s+1}$ $T_D > T_i$ – *conditie de anticipatie*		 (FTS)=filtru trece sus			

TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTICA BODE	CARACTERISTICA NYOUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALĂ
PDT_1 de întârziere	$H(s)=\frac{k(T_D s+1)}{T_i s+1}$ $T_D < T_i$ – *conditie de întârziere*		 (FTJ)=filtru trece jos			
PD_2T_2 de anticipaţie intârziere cu buclă simetrică	$H(s)=\frac{s^2+(a_1+b_2)s+a_1b_2}{s^2+(a_2+b_1)s+a_2b_1}$ *sau* $H(s)=\frac{k(T_{D_2}s^2+T_{D_1}s+1)}{T_{i_2}s^2+T_{i_1}s+1}$ $a_1b_2 = a_2b_1$ $(a_1+b_2) > (a_2+b_1)$	 A-amplificator de impedanta	 (FTB)=filtru trece banda	 k-determina amplitudinea oscilatiilor		
PD_2T_2 de întârziere anticipaţie cu buclă simetrică	$H(s)=\frac{s^2+(a_1+b_2)s+a_1b_2}{s^2+(a_2+b_1)s+a_2b_1}$ $a_1b_2 = a_2b_1$ $(a_1+b_2) < (a_2+b_1)$ *bucla simetrică înseamnă arii egale caracteristica Nyquist*		 (FTB)=filtru trece banda (BL)-banda lata			
PD_2T_2 de anticipaţie intârziere cu buclă nesimetrică	$H(s)=\frac{as^2+(a_1+b_2)s+a_1b_2}{bs^2+(a_2+b_1)s+a_2b_1}$ $a_1b_2 = a_2b_1$ $(a_1+b_2) > (a_2+b_1)$ $a > b$ *buclă nesimetrică preponderent anticipativă*	 A-amplificator de impedanta	 (FTB)=filtru trece banda (BL)-banda lata			

TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTCA BODE	CARACTERISTICA NYOUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALA
PD_2T_2 de anticipaţie întârziere cu buclă nesimetrică	$H(s)=\frac{as^2+(a_1+b_2)s+a_1b_2}{bs^2+(a_2+b_1)s+a_2b_1}$ $a_1b_2=a_2b_1$ $(a_1+b_2)>(a_2+b_1)$ $a<b$ *bucla nesimetrica preponderent derivativa*		 (FTB)=filtru trece banda (BL)-banda lata			
PID Proporţional integral derivativ	$H(s)=\left(1+T_Ds+\frac{1}{T_is}\right)k$ $T_DT_is^2+T_is+1=0$ $z_{1,2}=\frac{-T_i\pm\sqrt{T_i^2-4T_{di}}}{2T_dT_i}$ $\frac{1}{T_{d_1}}=\frac{T_i}{2T_dT_i}=\frac{1}{2T_d}$ $4T_d>T_i$ – *conditia pentru a exista zerouri conjugate*		 (FOB)=filtru opreste banda (BI)-banda ingusta			
$PIDT_1$ Proporţional integral derivativ cu inerţie de ordinul 1	$H(s)=k\left(1+T_ds+\frac{1}{T_is}\right)\frac{1}{T_{i_1}s+1}$	 	 (FOB)=filtru opreste banda (BL)-banda lata  (FTJ)=filtru trece jos	 	 	 caracterul de intarziere este mai pronuntat  caracterul de intarziere este mai pronuntat

TIP	MODEL MATEMATIC	MODEL FIZIC	CARACTERISTCA BODE	CARACTERISTICA NYQUIST	PLAN POLI-ZEROURI	CARACTERISTICA INDICIALA
$PIDT_1$ Proporţional integral derivativ cu inerţie de ordinul 1	$H(s)=k\left(1+T_d s+\frac{1}{T_i s}\right)\frac{1}{T_{i_1} s+1}$		 (FOB)=filtru opreste banda (BI)-banda ingusta			 caracterul de intarziere este mai pronuntat
						 caracterul de intarziere este mai pronuntat
$PIDT_2$ Proporţional integral derivativ cu inerţie de ordinul 2	$H(s)=k\left(1+T_d s+\frac{1}{T_i s}\right)\frac{1}{T_{i_2} s^2+T_{i_1} s+1}$		 (FOB)=filtru opreste banda (BL)-banda lata			 caracterul de intarziere este mai pronuntat