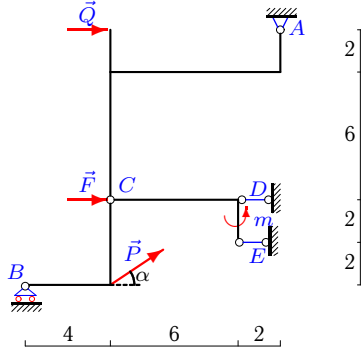


## Составная конструкция 3 тел

Определить реакции опор конструкции (в кН), состоящей из трех тел, соединенных в точке  $C$  шарниром. Размеры указаны в метрах.

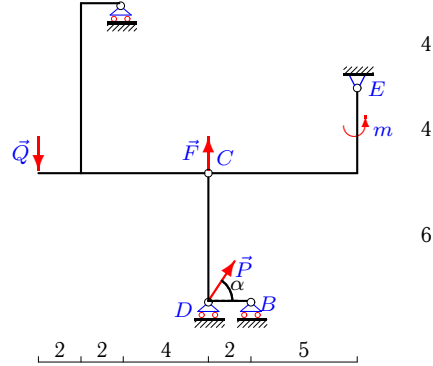
Кирсанов М.Н. **Решебник. Теоретическая механика**/Под ред. А. И. Кириллова.– М.:ФИЗМАТЛИТ, 2008.– 384 с. (с.67.)

**Задача 16.1.**



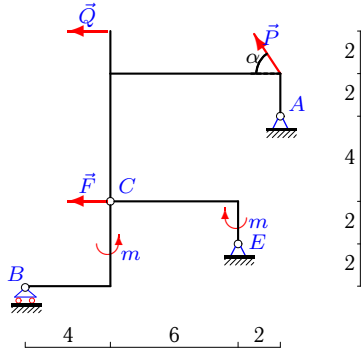
$P = 8$  кН,  $Q = 1$  кН,  $F = 7$  кН,  
 $m = 5$  кНм,  $\alpha = 30^\circ$ .

**Задача 16.2.**



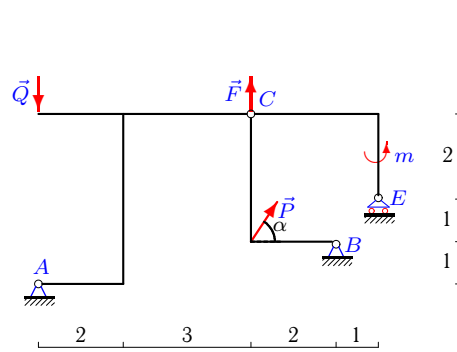
$P = 5$  кН,  $Q = 5$  кН,  $F = 4$  кН,  
 $m = 4$  кНм,  $\alpha = 60^\circ$ .

**Задача 16.3.**



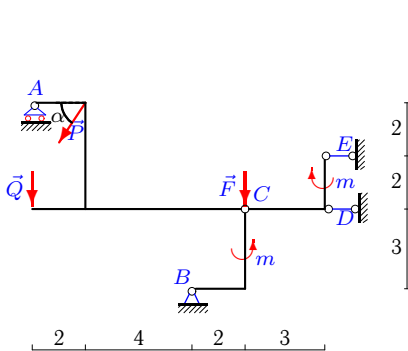
$P = 4$  кН,  $Q = 3$  кН,  $F = 2$  кН,  
 $m = 5$  кНм,  $\alpha = 60^\circ$ .

**Задача 16.4.**



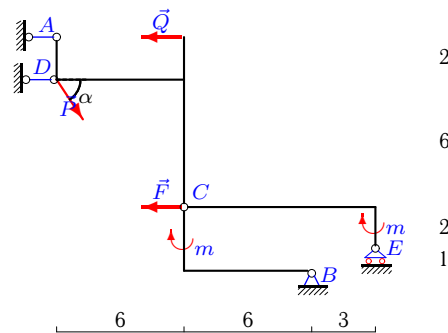
$P = 3$  кН,  $Q = 3$  кН,  $F = 3$  кН,  
 $m = 6$  кНм,  $\alpha = 60^\circ$ .

**Задача 16.5.**



$P = 2$  кН,  $Q = 7$  кН,  $F = 5$  кН,  
 $m = 3$  кНм,  $\alpha = 60^\circ$ .

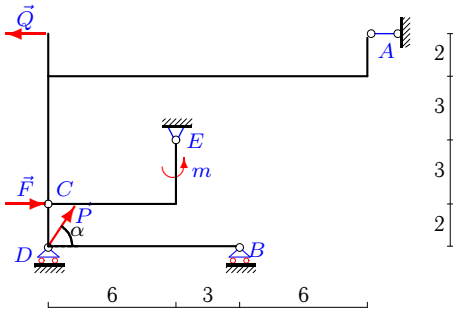
**Задача 16.6.**



$P = 4$  кН,  $Q = 3$  кН,  $F = 8$  кН,  
 $m = 6$  кНм,  $\alpha = 60^\circ$ .

**Задача 16.7.**

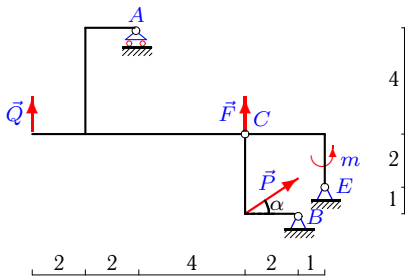
7



$P = 9 \text{ кН}, Q = 7 \text{ кН}, F = 4 \text{ кН},$   
 $m = 4 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.9.**

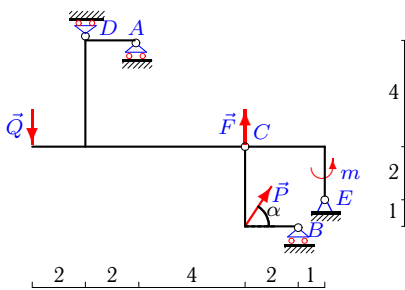
7



$P = 3 \text{ кН}, Q = 5 \text{ кН}, F = 1 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.11.**

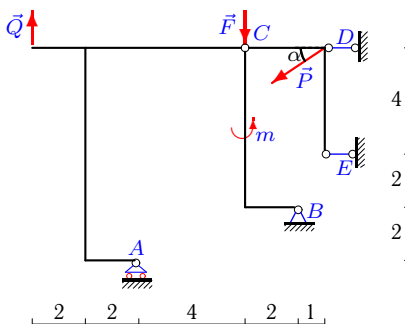
7



$P = 3 \text{ кН}, Q = 2 \text{ кН}, F = 6 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.13.**

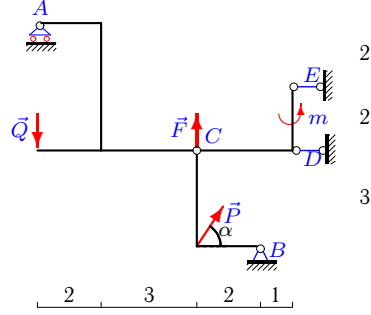
7



$P = 2 \text{ кН}, Q = 8 \text{ кН}, F = 5 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.8.**

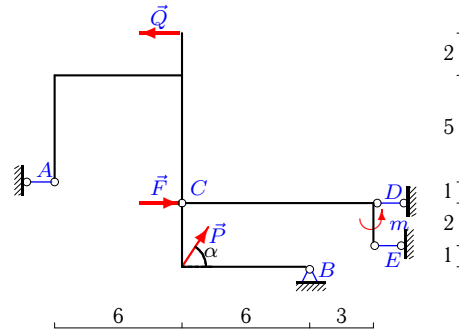
7



$P = 5 \text{ кН}, Q = 5 \text{ кН}, F = 5 \text{ кН},$   
 $m = 4 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.10.**

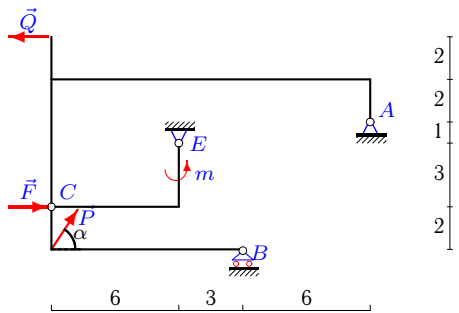
7



$P = 9 \text{ кН}, Q = 3 \text{ кН}, F = 5 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.12.**

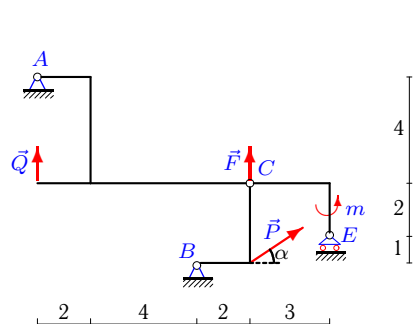
7



$P = 4 \text{ кН}, Q = 7 \text{ кН}, F = 2 \text{ кН},$   
 $m = 4 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.14.**

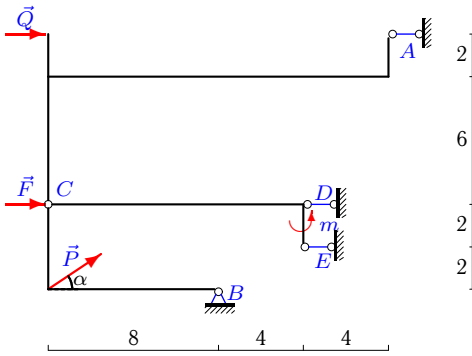
7



$P = 9 \text{ кН}, Q = 6 \text{ кН}, F = 3 \text{ кН},$   
 $m = 5 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.15.**

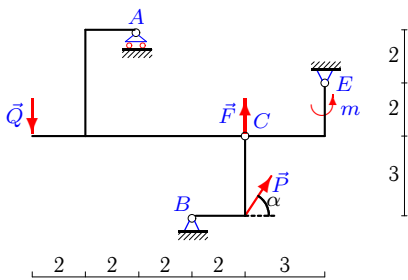
7



$P = 4 \text{ кН}, Q = 5 \text{ кН}, F = 5 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.17.**

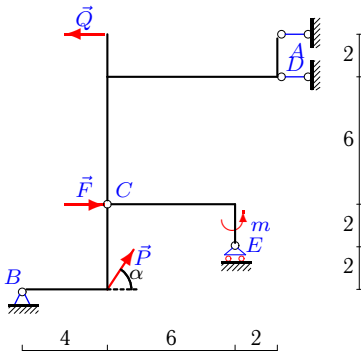
7



$P = 9 \text{ кН}, Q = 8 \text{ кН}, F = 1 \text{ кН},$   
 $m = 3 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.19.**

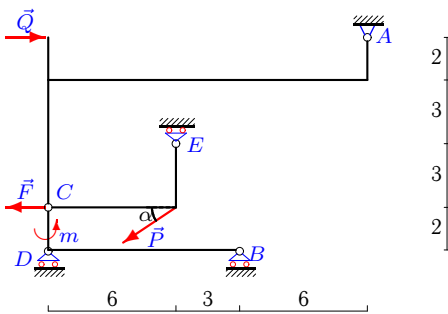
7



$P = 7 \text{ кН}, Q = 6 \text{ кН}, F = 8 \text{ кН},$   
 $m = 5 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.21.**

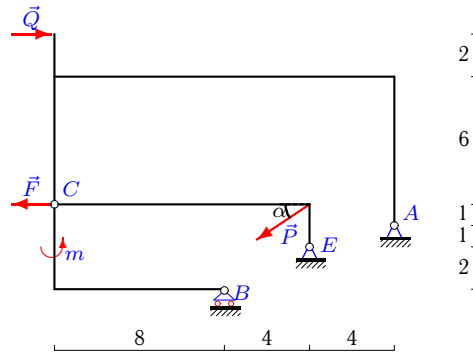
7



$P = 7 \text{ кН}, Q = 1 \text{ кН}, F = 9 \text{ кН},$   
 $m = 4 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.16.**

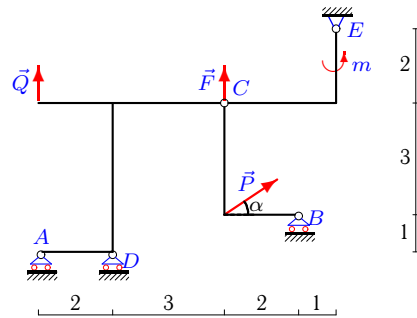
7



$P = 3 \text{ кН}, Q = 2 \text{ кН}, F = 2 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.18.**

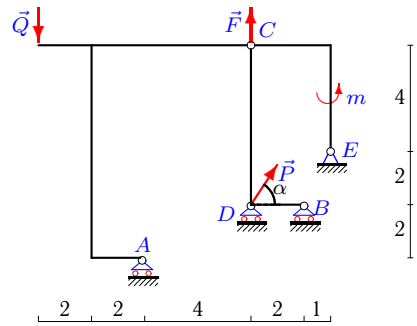
7



$P = 4 \text{ кН}, Q = 5 \text{ кН}, F = 6 \text{ кН},$   
 $m = 4 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.20.**

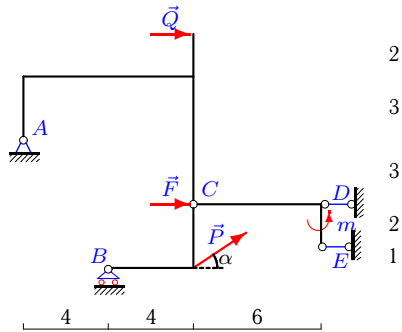
7



$P = 8 \text{ кН}, Q = 4 \text{ кН}, F = 4 \text{ кН},$   
 $m = 6 \text{ кНм}, \alpha = 60^\circ.$

**Задача 16.22.**

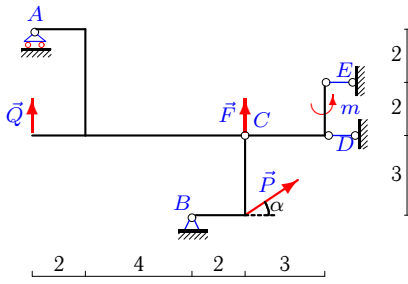
7



$P = 6 \text{ кН}, Q = 2 \text{ кН}, F = 7 \text{ кН},$   
 $m = 5 \text{ кНм}, \alpha = 30^\circ.$

**Задача 16.23.**

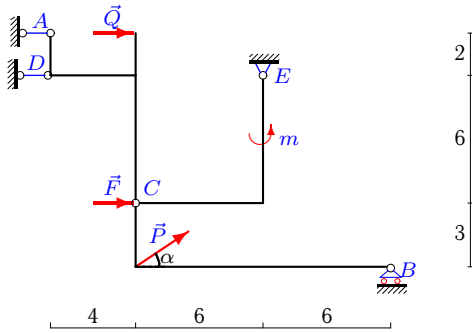
7



$P = 8 \text{ кН}$ ,  $Q = 5 \text{ кН}$ ,  $F = 5 \text{ кН}$ ,  
 $m = 3 \text{ кНм}$ ,  $\alpha = 30^\circ$ .

**Задача 16.25.**

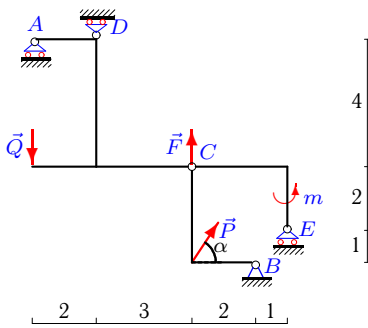
7



$P = 8 \text{ кН}$ ,  $Q = 3 \text{ кН}$ ,  $F = 6 \text{ кН}$ ,  
 $m = 4 \text{ кНм}$ ,  $\alpha = 30^\circ$ .

**Задача 16.27.**

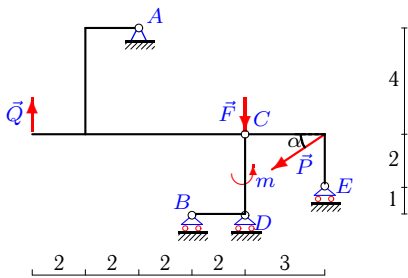
7



$P = 3 \text{ кН}$ ,  $Q = 9 \text{ кН}$ ,  $F = 8 \text{ кН}$ ,  
 $m = 6 \text{ кНм}$ ,  $\alpha = 60^\circ$ .

**Задача 16.29.**

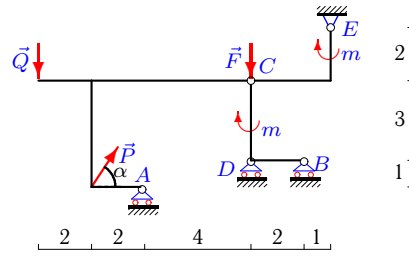
7



$P = 1 \text{ кН}$ ,  $Q = 2 \text{ кН}$ ,  $F = 9 \text{ кН}$ ,  
 $m = 5 \text{ кНм}$ ,  $\alpha = 30^\circ$ .

**Задача 16.24.**

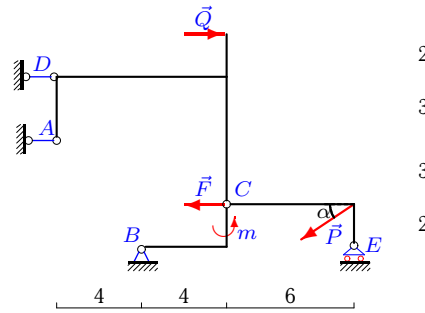
7



$P = 4 \text{ кН}$ ,  $Q = 6 \text{ кН}$ ,  $F = 4 \text{ кН}$ ,  
 $m = 4 \text{ кНм}$ ,  $\alpha = 60^\circ$ .

**Задача 16.26.**

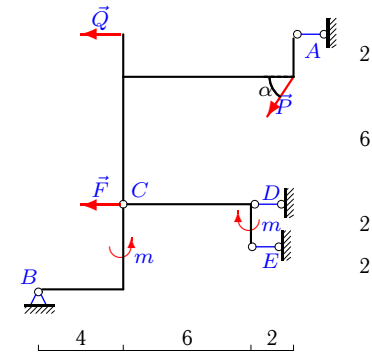
7



$P = 5 \text{ кН}$ ,  $Q = 4 \text{ кН}$ ,  $F = 8 \text{ кН}$ ,  
 $m = 5 \text{ кНм}$ ,  $\alpha = 30^\circ$ .

**Задача 16.28.**

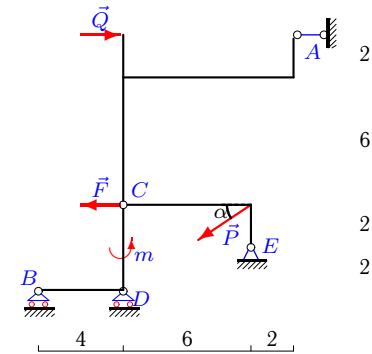
7



$P = 8 \text{ кН}$ ,  $Q = 8 \text{ кН}$ ,  $F = 5 \text{ кН}$ ,  
 $m = 5 \text{ кНм}$ ,  $\alpha = 60^\circ$ .

**Задача 16.30.**

7



$P = 3 \text{ кН}$ ,  $Q = 1 \text{ кН}$ ,  $F = 4 \text{ кН}$ ,  
 $m = 5 \text{ кНм}$ ,  $\alpha = 30^\circ$ .

**Составная конструкция 3 тел**

№	$X_A$	$Y_A$	$X_B$	$Y_B$	$X_E$	$Y_E$	$X_D$	$Y_D$
1	-11.928	-10.928	-	6.928	-2.500	-	-0.500	-
2	-	10.000	-	-7.500	-2.500	-2.000	-	-3.830
3	5.700	-5.114	-	1.250	1.300	0.400	-	-
4	-1.564	1.748	0.064	-2.346	-	-2.000	-	-
5	-	8.799	2.288	4.933	-1.500	-	0.211	-
6	-21.392	-	-3.594	2.797	-	0.666	33.987	-
7	7.000	-	-	-1.000	-8.500	-4.916	-	-1.877
8	-	5.000	3.720	-9.330	2.000	-	-8.220	-
9	-	-10.000	-7.998	8.100	5.400	-5.600	-	-
10	24.000	-	11.088	-7.794	-3.000	-	-38.588	-
11	-	-18.044	-	-2.250	-1.500	-1.000	-	14.696
12	0.512	-3.596	-	-0.444	2.487	0.576	-	-
13	-	-16.000	-5.666	14.000	0.750	-	6.648	-
14	2.916	-7.458	-10.710	-4.375	-	-1.666	-	-
15	-5.000	-	0.535	-2.000	-3.000	-	-6.000	-
16	1.756	0.890	-	-0.750	0.841	1.359	-	-
17	-	16.000	-23.453	-28.429	18.953	11.635	-	-
18	-	-6.258	-	-5.196	-3.464	-3.642	-	2.097
19	14.313	-	-8.728	-5.228	-	-0.833	-11.084	-
20	-	8.000	-	-12.000	-4.000	3.333	-	-6.261
21	14.062	8.033	-	-0.444	-	3.500	-	-7.588
22	13.059	-6.897	-	3.897	-2.500	-	-24.755	-
23	-	-5.000	-12.928	-9.000	1.500	-	4.500	-
24	-	8.803	-	2.000	-2.000	0.000	-	-4.267
25	30.980	-	-	-1.732	-1.601	-2.267	-45.307	-
26	32.326	-	-2.500	0.000	-	2.500	-21.496	-
27	-	21.897	-1.500	0.000	-	-2.000	-	-21.495
28	4.071	-	5.678	6.928	2.500	-	4.750	-
29	0.866	-4.866	-	2.500	-	0.500	-	9.366
30	-1.000	-	-	1.250	6.598	-0.699	-	0.949