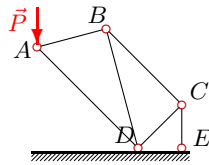


Простая стержневая система.

Кирсанов М.Н. **Решебник. Теоретическая механика** с. 14.

Вариант 1

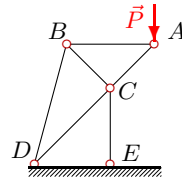
C1.



$$\begin{aligned}
 P &= 1 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 30^\circ, \\
 \angle BDC &= 60^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 2

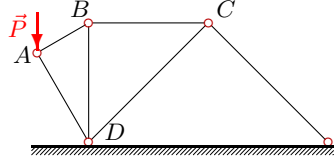
C1.



$$\begin{aligned}
 P &= 2 \text{ кН}, \\
 \angle ACB &= 90^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 3

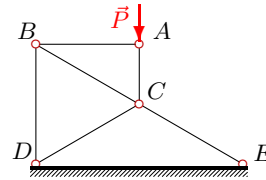
C1.



$$\begin{aligned}
 P &= 3 \text{ кН}, \\
 \angle ABD &= 60^\circ, \\
 \angle ADB &= 30^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 45^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 4

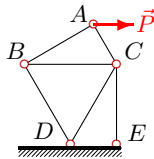
C1.



$$\begin{aligned}
 P &= 4 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 60^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 30^\circ, \\
 \angle CED &= 30^\circ.
 \end{aligned}$$

Вариант 5

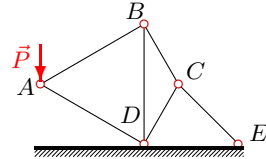
C1.



$$\begin{aligned}
 P &= 5 \text{ кН}, \\
 \angle ACB &= 60^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 60^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 6

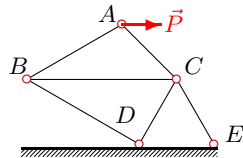
C1.



$$\begin{aligned}
 P &= 6 \text{ кН}, \\
 \angle ABD &= 60^\circ, \\
 \angle ADB &= 60^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 45^\circ.
 \end{aligned}$$

Вариант 7

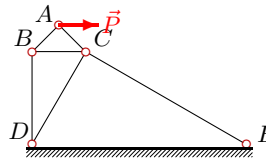
C1.



$$\begin{aligned}
 P &= 7 \text{ кН}, \\
 \angle ACB &= 45^\circ, \\
 \angle ABC &= 30^\circ, \\
 \angle BDC &= 90^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 60^\circ.
 \end{aligned}$$

Вариант 8

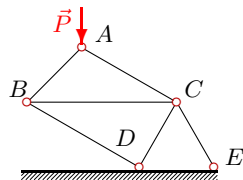
C1.



$$\begin{aligned}
 P &= 8 \text{ кН}, \\
 \angle ACB &= 45^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 30^\circ.
 \end{aligned}$$

Вариант 9

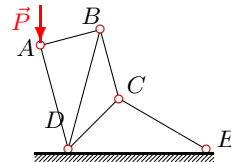
C1.



$$\begin{aligned}
 P &= 9 \text{ кН}, \\
 \angle ACB &= 30^\circ, \\
 \angle ABC &= 45^\circ, \\
 \angle BDC &= 90^\circ, \\
 \angle BCD &= 60^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 60^\circ.
 \end{aligned}$$

Вариант 10

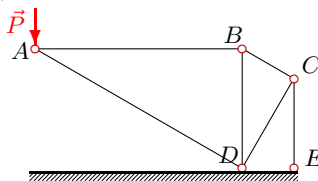
C1.



$$\begin{aligned}
 P &= 10 \text{ кН}, \\
 \angle ABD &= 60^\circ, \\
 \angle ADB &= 30^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 120^\circ, \\
 \angle CDE &= 45^\circ, \\
 \angle CED &= 30^\circ.
 \end{aligned}$$

Вариант 11

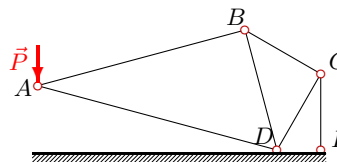
C1.



$$\begin{aligned}
 P &= 11 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 60^\circ, \\
 \angle BDC &= 30^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 12

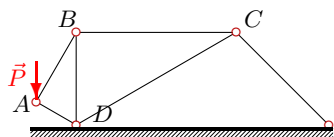
C1.



$$\begin{aligned}
 P &= 12 \text{ кН}, \\
 \angle ABD &= 90^\circ, \\
 \angle ADB &= 60^\circ, \\
 \angle BDC &= 45^\circ, \\
 \angle BCD &= 90^\circ, \\
 \angle CDE &= 60^\circ, \\
 \angle CED &= 90^\circ.
 \end{aligned}$$

Вариант 13

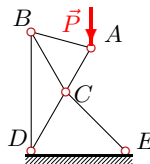
C1.



$P = 13 \text{ кН}$,
 $\angle ABD = 30^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 45^\circ$.

Вариант 14

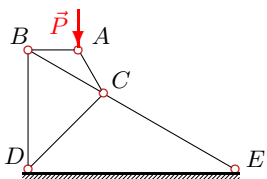
C1.



$P = 14 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 120^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 45^\circ$.

Вариант 15

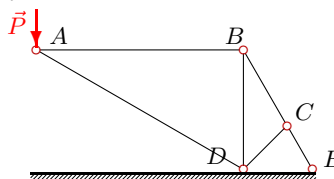
C1.



$P = 15 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 75^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 30^\circ$.

Вариант 16

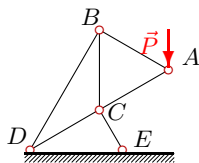
C1.



$P = 16 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 105^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 60^\circ$.

Вариант 17

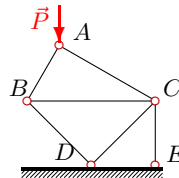
C1.



$P = 17 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 120^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 60^\circ$.

Вариант 18

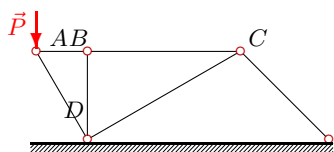
C1.



$P = 18 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 90^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 90^\circ$.

Вариант 19

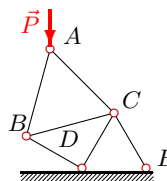
C1.



$P = 19 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 45^\circ$.

Вариант 20

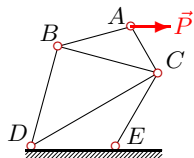
C1.



$P = 20 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 90^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 60^\circ$.

Вариант 21

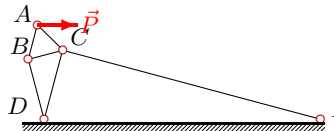
C1.



$P = 21 \text{ кН}$,
 $\angle ACB = 45^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 120^\circ$.

Вариант 22

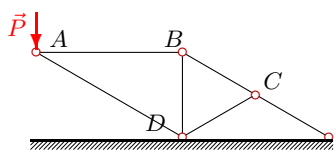
C1.



$P = 22 \text{ кН}$,
 $\angle ACB = 60^\circ$,
 $\angle ABC = 60^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 75^\circ$,
 $\angle CED = 15^\circ$.

Вариант 23

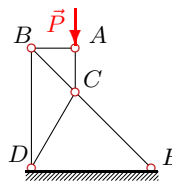
C1.



$P = 23 \text{ кН}$,
 $\angle ABD = 90^\circ$,
 $\angle ADB = 60^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Вариант 24

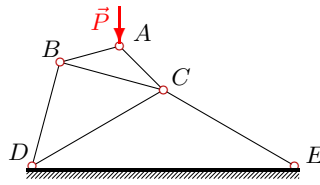
C1.



$P = 24 \text{ кН}$,
 $\angle ACB = 45^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 105^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 45^\circ$.

Вариант 25

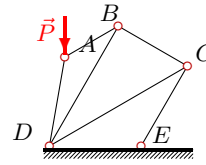
C1.



$P = 25 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Вариант 26

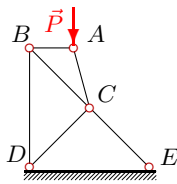
C1.



$P = 26 \text{ кН}$,
 $\angle ABD = 30^\circ$,
 $\angle ADB = 20^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 60^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 120^\circ$.

Вариант 27

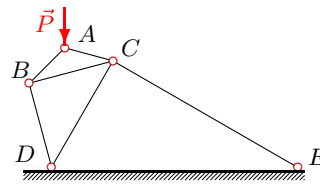
C1.



$P = 27 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 45^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 90^\circ$,
 $\angle CDE = 45^\circ$,
 $\angle CED = 45^\circ$.

Вариант 28

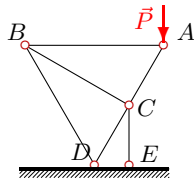
C1.



$P = 28 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 45^\circ$,
 $\angle BCD = 45^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 30^\circ$.

Вариант 29

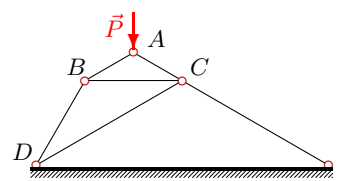
C1.



$P = 29 \text{ кН}$,
 $\angle ACB = 90^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 60^\circ$,
 $\angle BCD = 90^\circ$,
 $\angle CDE = 60^\circ$,
 $\angle CED = 90^\circ$.

Вариант 30

C1.



$P = 30 \text{ кН}$,
 $\angle ACB = 30^\circ$,
 $\angle ABC = 30^\circ$,
 $\angle BDC = 30^\circ$,
 $\angle BCD = 30^\circ$,
 $\angle CDE = 30^\circ$,
 $\angle CED = 30^\circ$.

Отвѣты

	S_{AB}	S_{AC}	S_{AD}	S_{BC}	S_{BD}	S_{CD}	S_{CE}
1	0.816	—	-1.115	1.633	-1.414	-1.633	2.309
2	2.000	-2.828	—	-2.231	1.633	-0.598	-3.155
3	1.500	—	-2.598	1.299	-0.750	-0.919	0.919
4	0.000	-4.000	—	-0.000	0.000	-4.000	-4.000
5	4.330	-2.500	—	-5.000	2.500	12.500	-12.990
6	6.000	—	-6.000	10.392	-12.000	2.785	9.317
7	5.124	-3.623	—	-8.876	5.124	9.959	-12.917
8	5.657	-5.657	—	-4.000	4.000	0.536	-8.928
9	-8.069	-6.588	—	15.588	-11.412	-11.785	7.981
10	2.588	—	-9.659	4.483	-5.176	3.282	4.019
11	19.053	—	-22.000	22.000	-11.000	-38.105	44.000
12	23.182	—	-23.182	32.785	-23.182	-56.785	65.569
13	11.258	—	-6.500	5.629	-9.750	-4.121	2.914
14	7.247	-14.000	—	-14.000	10.249	-17.751	-12.552
15	-8.660	-17.321	—	10.000	-5.000	-8.966	-7.321
16	27.713	—	-32.000	55.426	-48.000	-0.000	55.426
17	17.000	-17.000	—	-34.000	29.445	-34.000	-29.445
18	-15.588	-9.000	—	21.294	-19.092	-19.092	9.000
19	10.970	—	-21.939	10.970	0.000	-8.030	5.678
20	-16.330	-5.977	—	22.307	-20.000	-23.094	11.547
21	18.828	-5.627	—	-16.306	9.414	41.246	-34.313
22	17.963	-24.538	—	-8.981	15.556	-7.778	-29.029
23	39.837	—	-46.000	46.000	-23.000	0.000	46.000
24	0.000	-24.000	—	-0.000	0.000	-17.569	-12.423
25	-20.412	-27.884	—	17.678	-10.206	-13.616	-16.667
26	-5.894	—	-29.393	-2.947	5.104	5.894	-5.104
27	-7.235	-27.952	—	10.231	-7.235	-13.976	-13.976
28	-31.230	-22.862	—	27.046	-15.615	-13.207	-2.959
29	16.743	-33.486	—	-29.000	16.743	16.743	-58.000
30	-30.000	-30.000	—	17.321	-17.321	-10.000	-20.000