



TOSHKENT IRRIGATSIYA VA QISHLOQ
XO'JALIGINI MEXANIZATSIYALASH
MUHANDISLARI INSTITUTI



FAN

**Elektrotexnika va Elektronika
asoslari**

MAVZU:

**O`zgarmas tok zanjirlarini
hisoblash**



Elektrotexnika va mexatronika
kafedrası o`qituvchisi



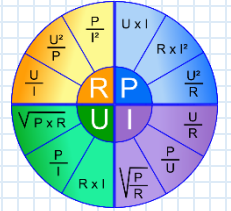
Cho`lliyev Ya`qubjon
Ergashovich

Uy topshirig`i va variantlar:

- Nemis olimi **G. Kirxgof** 1845 yilda elektr zanjirlarga oid ikkita muhim qonunga ta'rif bergan.
- Kirxgofning 1- qonuni va 2- qonuni

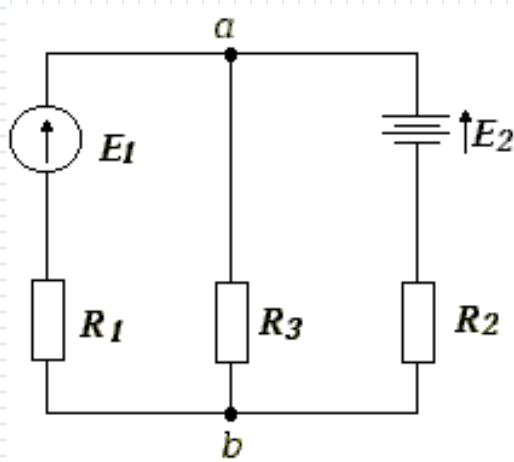
- **1-qoidasi:** Kirxgofning birinchi qoidasiga ko‘ra, o‘tkazgichlarning uchlari tutashgan nuqta (tugun) da uchrashuvchi tok kuchlarining algebraik yig‘indisi nolga teng:
- *Tugunga kelayotgan toklar musbat, undan chiqayotganlari manfiy deb hisoblanadi. Bu qoida elektr zaryadining saqlanish qonunini aks ettiradi.*

- **2- qoidasi:** Kirxgofning ikkinchi qoidasiga ko‘ra, o‘tkazgichlarning tarmoqlangan elektr zanjiridagi ixtiyoriy tanlangan har qanday berk konturda zanjirning tegishli qismlaridagi tok kuchlarining shu qismlar qarshiliklari R ga ko‘paytmalari yig‘indisi mazkur konturdagi EYUKlari yig‘indisiga teng.
- *Tarmoqlangan zanjirda kamida uchta o‘tkazgich tutashadigan har qanday nuqta tugun deb ataladi.*

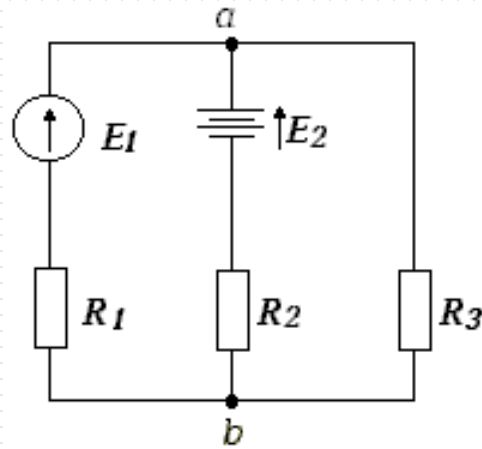


O'zgarmas tok zanjirlari hisoblashga topshiriq.

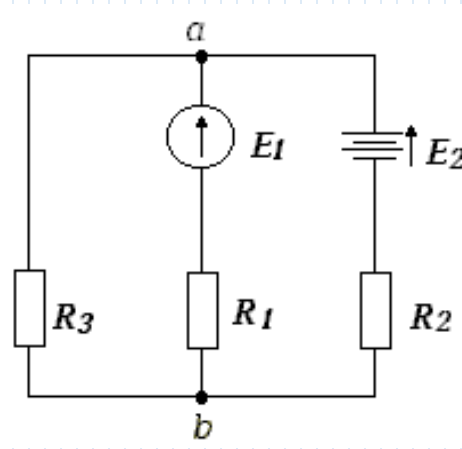
Jadvalda berilganlardan foydalanib barcha tarmoqlardagi toklar **Kirxgof** tenglamalarini tuzish va **ustma-ustlash** usullari yordamida aniqlansin hamda quvvatlar balansi tenglamasi tuzilsin.



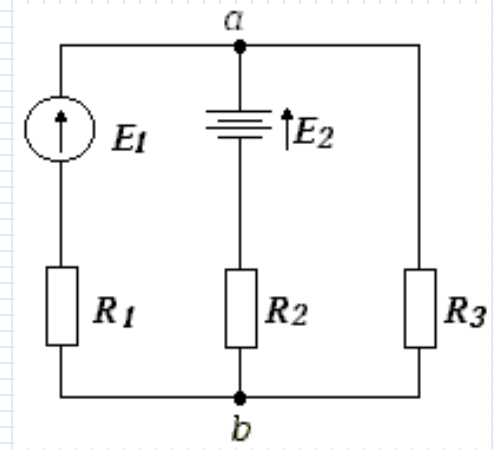
1.1-rasm



1.2-rasm

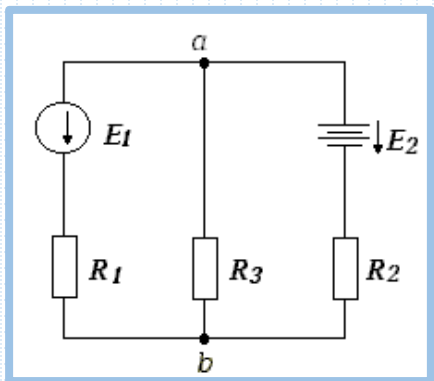


1.3-rasm

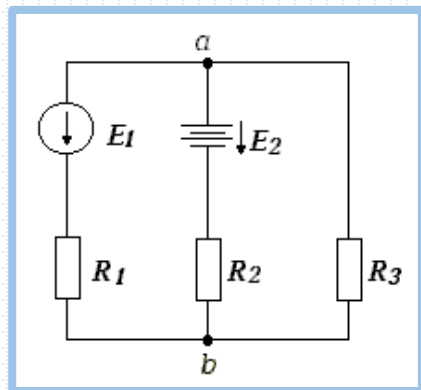


1.4-rasm

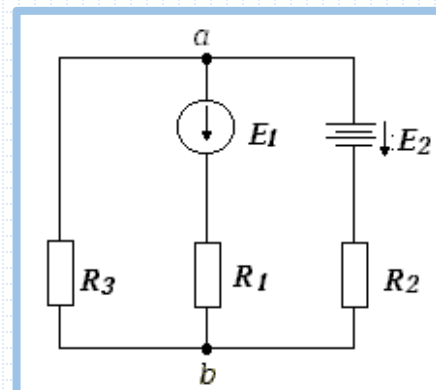
Tok yo`nalishi ixtiyoriy tanlanadi



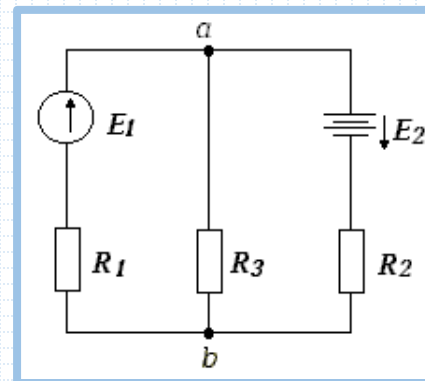
1.5-rasm



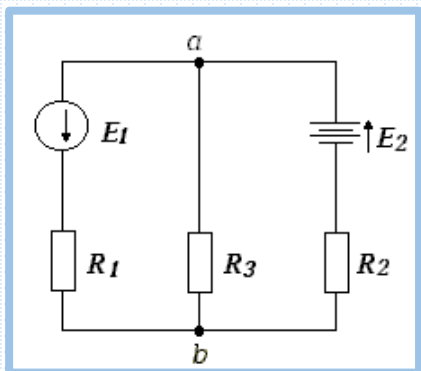
1.6-rasm



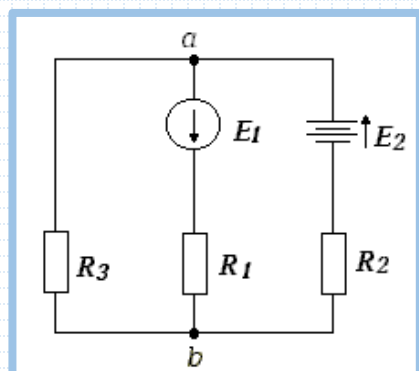
1.7-rasm



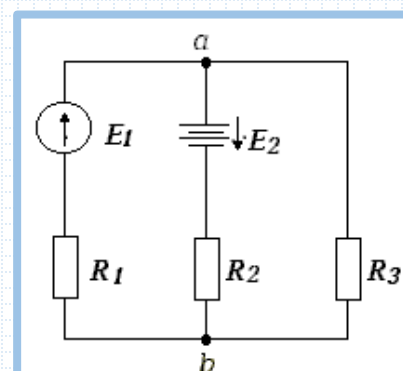
1.8-rasm



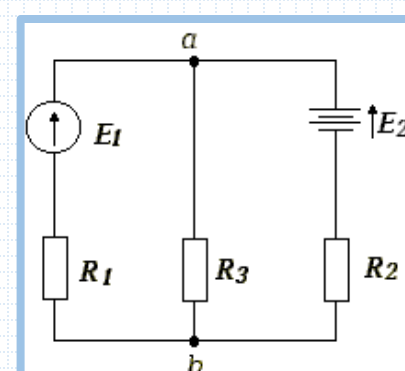
1.9-rasm



1.10-rasm



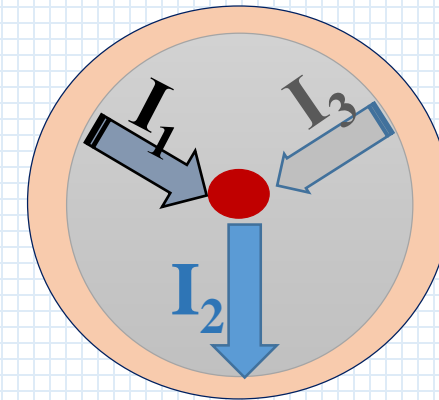
1.11-rasm



1.12-rasm

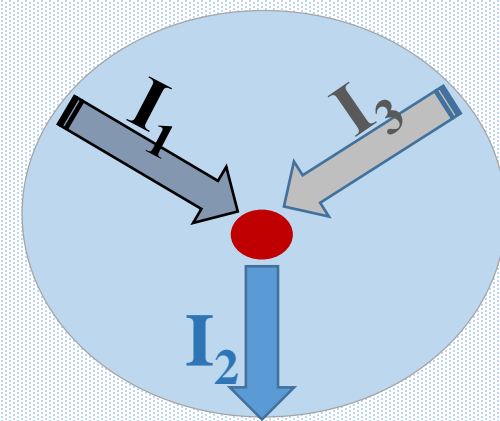
Tok yo`nalishi ixtiyoriy tanlanadi

Вариант	Расм	R ₁	R ₂	R ₃	E ₁	E ₂	Вариант	Расм	R ₁	R ₂	R ₃	E ₁	E ₂
		Ом			В				Ом			В	
1	2	3	4	5	6	7	1	2	3	4	5	6	7
1	1.1	7	10	4	21	10	23	1.1	6	9	15	21	23,5
2	1.2	5	13	2	10	21	24	1.2	30	120	225	90	37,5
3	1.3	13	10	10	30	12	25	1.3	15	27	15	16,5	52,5
4	1.4	80	100	35	150	100	26	1.4	19,5	13,5	15	16,2	15
5	1.5	18	5	10	20	80	27	1.5	195	80	90	18	32
6	1.6	9	10	5	16	8,2	28	1.6	12	10	21	15	33
7	1.7	40	60	80	13	12	29	1.7	150	105	60	25,5	22,5
8	1.8	3	5	8	20	14	30	1.12	10	165	90	15	12
9	1.9	80	100	40	25	10	31	1.11	13,5	6	10,5	21	14
10	1.1	45	150	80	25	8	32	1.10	60	33	75	16,5	25,5
11	1.1	7	4	9	20	10	33	1.9	18	15	10,5	30	15
12	1.12	22	10	14	23	9,5	34	1.8	18	33	9	9	18
13	1.11	12	10	9	13	14	35	1.7	10,5	15	30	9	30
14	1.10	6	10	15	20	7,6	36	1.6	16,5	7,5	18	25	15,5
15	1.9	7	10	12	10	20	37	1.5	30	24	60	16	27
16	1.8	4	11	7	20	4,5	38	1.4	7,5	15	8	37,5	15
17	1.7	16	40	30	30	10	39	1.3	10,5	7,5	15	45	55
18	1.6	5	10	7	15	13	40	1.2	12	15	9	25,5	30
19	1.5	7	10	15	15	20	41	1.1	6,5	2,5	4,5	4	15
20	1.4	6	15	21	14	25	42	1.2	1	4	7,5	5	10



Variantlarni har bir talaba Jurnalidagi tartib raqami bo`yicha olib bazarasizlar

22	1.2	3	12	16.5	30	12		44	1.4	10	40	50	34	125
Ва-ри-ант	Расм	R1	R2	R3	E1	E2		Ва-ри-ант	Расм	R1	R2	R3	E1	E2
Ом			В			Ом			В					
1	2	3	4	5	6	7		1	2	3	4	5	6	7
45	1.5	5	9	4	8,2	17		73	1.11	30	24	20	26	38
46	1.7	2	6,5	4,5	6,7	5		74	1.10	70	44	14	40	21,5
47	1.1	65	20	40	4,7	12,5		75	1.9	8	24	40	40	20
48	1.11	3	25	7	7,5	11		76	1.7	23	23	85	50	16,5
49	1.12	40	50	60	6,5	7,5		77	1.8	18	42	30	60	28
50	1.1	55	30	22,5	8,1	7		78	1.4	24	10	20	30	36
51	1.3	6	2	4	7	5		79	1.5	10	24	35	35	15
52	1.2	20	11	25	7,5	80		80	1.2	42	30	52	55	38
53	1.5	7,5	6	5	3,5	10		81	1.6	32	18	25	20	70
54	1.7	6	17,5	5	6,5	6		82	1.9	5	20	30,5	35	60
55	1.12	2	6	10	30	25		83	1.2	15	20	35	45	30,5
56	1.1	5,5	2,5	7	10,5	5		84	1.1	200	50	375	150	320
57	1.7	10	8	20	10	9		85	1.3	45	25	15	34	77,5
58	1.8	5	6	4	6	12,5		86	1.7	32,5	25,5	17	29	19
59	1.8	5	2	10	10,5	20		87	1.8	320	175	255	14	64,5
60	1.7	5	7,5	10,5	7	10		88	1.12	18	33	44	25	55
61	1.2	26	10	14	34	20		89	1.3	200	137	145	31,7	32,8
62	1.3	10	22	1	32	25		90	1.6	150	115	275	35	28
63	1.5	20	26	18	60	24		91	1.1	30	10	20	26	12
64	1.12	160	200	300	200	100		92	1.12	75	100	35	32,5	37,5
65	1.6	36	10	16	40	50		93	1.10	30	22,5	25	50	35
66	1.1	16	8	20	11	32		94	1.4	55	36,5	13,5	15	34
67	1.2	260	120	160	24	38		95	1.8	17,5	11,5	9,5	45	18
68	1.3	28	14	16	45	18		96	1.11	21,5	18,5	35	44	17
69	1.4	160	110	80	50	22		97	1.2	50	100	55	35	25
70	1.5	120	220	90	50	32		98	1.5	25	30	20	30	55
71	1.6	14	24	30	45	22		99	1.3	13,5	19,5	50	70	10
72	1.12	80	60	28	110	44		100	1.10	44	49	68	100	75



Variantlarni har bir talaba Jurnaldagi tartib raqami bo`yicha olib bjarasizlar

Savollar