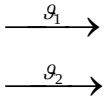
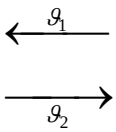
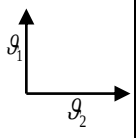
1.	Tekis harakatda tezlikni topish. Tezlik birligi.	$\vartheta = \frac{S}{t}; \quad [\vartheta] = \frac{m}{s}$
2.	Ikki nuqta orasidagi masofani yoki jism $(x_0 : y_0)$ nuqtadan (x: y) nuqtaga o'tgan bo'lsa ko'chishni topish formulasi.	$S = \sqrt{(x - x_0)^2 + (y - y_0)^2}$
3.	Tekis harakatda yo'lni topish	$S = \vartheta \cdot t$
4.	Tekis harakat tenglamasi	$x = x_0 + \vartheta_0 t$
5.	Tekis harakatda yo'l vaqt grafigi.	
6.	Tekis harakatda yo'l vaqt grafigida hosil bo'lgan burchak tangensi.	
7.	Agar jism bir vaqtda ikkita α burchak tashkil qilgan harakatda ishtirok etsa natijaviy tezlik vektori	$\vartheta^2 = \vartheta_1^2 + \vartheta_2^2 + 2\vartheta_1\vartheta_2\cos\alpha$
8.	Tekis harakatda tezlik vaqt grafigi.	
9.	Agar ikki jismni harakat yo'nalishi quyidagi hollarda bo'lsa nisbiy tezliklarni topish ; (bir biriga nisbatan) 	$\vartheta_n = \vartheta_1 - \vartheta_2$
10.	Agar ikki jismni harakat yo'nalishi quyidagi hollarda bo'lsa nisbiy tezliklarni topish ;  (bir biriga nisbatan)	$\vartheta_n = \vartheta_1 + \vartheta_2$
11.	Agar ikki jismni harakat yo'nalishi quyidagi hollarda bo'lsa nisbiy tezliklarni topish ; (bir biriga nisbatan) 	$\vartheta = \sqrt{\vartheta_1^2 + \vartheta_2^2}$
12.	Agar ikkita jism tezliklari orasidagi burchak α bo'lsa ularni nisbiy tezligini topish.	$\vartheta_n = \sqrt{{\vartheta_1}^2 + {\vartheta_2}^2 - 2\vartheta_1\vartheta_2\cos\alpha}$
13.	Agar bir jismni ustida ikkinchi jism turgan bo'lsa, ikkinchi jismni tezligi birinchisi bilan bir yo'nalishda bo'lsa yerga nisbatan tezliklarini topish. (natijaviy)	$\vartheta_{yn} = \vartheta_1 + \vartheta_2$
14.	Agar bir jismni ustida ikkinchi jism turgan bo'lsa, ikki jismni tezligi qarama - qarshi yo'nalishlarda bo'lsa yerga nisbatan tezliklarini topish. (natijaviy)	$\vartheta_{yn} = \vartheta_1 - \vartheta_2$
15.	Agar bir jismni ustida ikkinchi jism turgan bo'lsa, ikki jismni tezligi o'zaro tik yo'nalishlarda bo'lsa yerga nisbatan tezliklarini topish. (natijaviy)	$\vartheta_{yn} = \sqrt{{\vartheta_1}^2 + {\vartheta_2}^2}$
16.	Agar bir jismni ustida ikkinchi jism turgan bo'lsa, ikki jismni tezligi o'zaro α burchak qilsa yerga nisbatan tezliklarini topish. (natijaviy)	$\vartheta_{yn} = \sqrt{{\vartheta_1}^2 + {\vartheta_2}^2 + 2\vartheta_1\vartheta_2\cos\alpha}$
17.	Daryoda harakatlanayotgan qayiq oqim bo'yicha *(ϑ_{ob})* harakatlanayotgan bo'lsa	$\vartheta_{ob} = \vartheta_0 + \vartheta_q$

18.	Daryoda harakatlanayotgan qayiq oqimga qarshi (ϑ_{oq}) harakatlanayotgan bo'lsa;.	$\vartheta_{oq} = \vartheta_q - \vartheta_0$
19.	Agar oqimga qarshi (υ_{oq}) va oqim bo'yicha (υ_{ob}) tezliklari berilgan bo'lsa qayiqni tezligi(υ_q)	$\vartheta_q = \frac{\vartheta_{ob} + \vartheta_{oq}}{2}$
20.	Agar oqimga qarshi (υ_{oq}) va oqim bo'yicha (υ_{ob}) tezliklari berilgan bo'lsa Oqim tezligi (υ_o)	$\vartheta_o = \frac{\vartheta_{ob} - \vartheta_{oq}}{2}$
21.	Daryo oqimiga perpendikulyar (tik) yoki 90^o harakatlonayotgan qayiq suzib o'tish vaqti.	$t = \frac{\ell_{dk}}{\vartheta_q}$
22.	Daryo oqimiga perpendikulyar (tik) yoki 90^o harakatlonayotgan qayiq og'ib ketish masofasi.	$S = \vartheta_o \frac{\ell}{\vartheta_q}, \quad S = \vartheta_o t$
23.	Daryo oqimiga perpendikulyar (tik) yoki 90^o harakatlonayotgan qayiq qirg'oq bilan hosil qilgan burchagi.	$tg\alpha = \frac{\vartheta_q}{\vartheta_o} \qquad tg\alpha = \frac{\ell}{S}$
24.	O'zgaruvchan harakatda o'rtacha tezlik (asosiy)	$\vartheta_{o'rt} = \frac{S_{butunyo'l}}{t_{butunvaqt}}$
25.	O'zgaruvchan harakatning oniy tezligi deb, harakatning ma'lum bir momentiga yoki trayektoriyasining aniq bir nuqtasiga mos kelgan tezlikka aytiladi.	$\vartheta_{oniy} = \frac{\Delta S}{\Delta t}$
26.	Jism harakati davomida bosib o'tgan yo'lning birinchi yarimini ϑ_1 tezlik bilan 2 chi yarimini esa ϑ_2 tezlik bilan bosib o'tgan bo'lsa jismning butun yo'l dovomidagi o'rtacha tezlikni toping. (Yoki masofalar teng bo'lsa $S_1=S_2$)	$\vartheta_{o'r} = \frac{2\vartheta_1\vartheta_2}{\vartheta_1 + \vartheta_2}$
27.	Jism yo'lning $\frac{1}{3}$ qismini ϑ_1 tezlik bilan qolgan qismini ϑ_2 tezlik bilan bosib o'tgan bo'lsa uning $\vartheta_{o'r}$ toping.	$\vartheta_{o'r} = \frac{3\vartheta_1\vartheta_2}{2\vartheta_1 + \vartheta_2}$
28.	Tekis o'zgaruvchan harakatda o'rtacha tezlik.	$\vartheta_{o'r} = \frac{\vartheta_0 + \vartheta}{2}$
29.	Jism yo'lning $\frac{1}{4}$ qismini ϑ_1 tezlik bilan qolgan qismini ϑ_2 tezlik bilan bosib o'tgan bo'lsa uning $\vartheta_{o'r}$ toping.	$\vartheta_{o'r} = \frac{4\vartheta_1\vartheta_2}{3\vartheta_1 + \vartheta_2}$
30.	Jism yo'lning S_1 qismini ϑ_1 tezlik bilan qolgan S_2 qismini ϑ_2 tezlik bilan bosib o'tgan bo'lsa uning $\vartheta_{o'r}$ toping.	$\vartheta_{o'r} = \frac{S_1 + S_2}{\frac{S_1}{\vartheta_1} + \frac{S_2}{\vartheta_2}}$

31.	Jism yo'lning S_1 qismini t_1 tezlik bilan qolgan S_2 qismini t_2 tezlik bilan bosib o'tgan bo'lsa uning $\vartheta_{o'r}$ toping.	$\vartheta_{o'r} = \frac{S_1 + S_2}{t_1 + t_2}$
32.	Vaqt birligi ichida tezlik o'zgarishiga *tezlanish* deyiladi. Tezlanish birligi va formulasi.	$a = \frac{\vartheta_t - \vartheta_0}{t} \quad [a] = \frac{m}{s^2}$
33.	Jismhing oniy tezligi	$v_t = v_0 + at$
34.	Tekis o'zgaruvchan harakat tenglamasi.	$x = x_0 + \vartheta_0 t + \frac{at^2}{2}$
35.	Tekis o'zgaruvchan harakatda ko'chish formulasi.	$S = \vartheta_0 t + \frac{at^2}{2}$
36.	Tekis o'zgaruvchan harakatda ko'chish formulasi. $\vartheta_0 = 0$	$S = \frac{at^2}{2}$
37.	O'zgaruvchan harakatda tezlik vaqt grafigida hosil bo'lgan burchak tangensi.	
38.	Tekis o'zgaruvchan harakatda ko'chish formulasi. $\vartheta_0,\ a,\ \vartheta_t$	$S = \frac{\vartheta_t^2 - \vartheta_0^2}{2a}, \quad S = \frac{\vartheta_t^2}{2a}, \quad S = \frac{\vartheta_0^2}{2a}$
39.	Tekis o'zgaruvchan harakatda ko'chish formulasi. $\vartheta_0,\ t,\ \vartheta_t$	$S = \frac{\vartheta_t + \vartheta_0}{2} t, \quad S = \frac{\vartheta_t}{2} t, \quad S = \frac{\vartheta_0}{2} t$
40.	ϑ_0 boshlang'ich tezlikli tekis tezlanuvchan harakatning tezlik - vaqt grafigi.	
41.	ϑ_0 boshlang'ich tezlikli tekis sekinlanuvchan harakatning tezlik - vaqt grafigi.	
42.	Tekis tezlanuvchan harakatning masofa - vaqt grafigi.	
43.	Tekis sekinlanuvchan harakatning masofa - vaqt grafigi.	
44.	Tekis tezlanuvchan harakatning tezlanish - vaqt grafigi.	
45.	Tekis sekinlanuvchan harakatning tezlanish - vaqt grafigi.	
46.	Tekis o'zgaruvchan harakatda n – sekundda bosib o'tilgan masofa.	$S_n = \vartheta_0 + \frac{a}{2}(2n - 1)$
47.	Tekis o'zgaruvchan harakatda n – sekundda bosib o'tilgan masofa. $\vartheta_0 = 0$	$S_n = \frac{a}{2}(2n - 1)$
48.	Erkin tushish tezlanishi Qutbda, Ekvatorda, Parij kengligida.	$g_q = 9.8324 \approx 9.83\frac{m}{s^2}\ g_e = 9.7805 \approx 9.78\frac{m}{s^2}$ $g_{parij} = 9.80665 \approx 9.81\frac{m}{s^2}$
49.	t momentdagi oniy tezligi;	$\vartheta_t = \vartheta_0 + gt$
50.	h masofani bosib o'tgandan keyingi jism tezligi.	$\vartheta = \sqrt{2gh}$
51.	Yuqoriga ϑ_0 tezlik bilan tik otilgan jismning ko'tarilish vaqti;	$t = \frac{\vartheta_0}{g}$
52.	Yuqoriga ϑ_0 tezlik bilan tik otilgan jismning ko'tarilish balandligi;	$h = \frac{\vartheta_0^2}{2g}$
53.	Erkin tushishda o'rtacha tezligi;	$\vartheta_{o'rt} = \frac{\vartheta_0 + \vartheta_t}{2}$

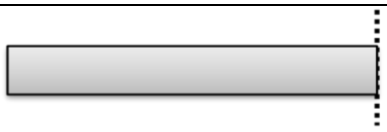
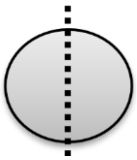
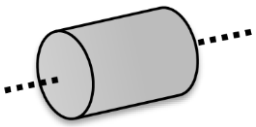
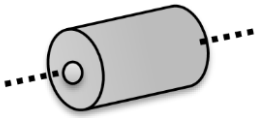
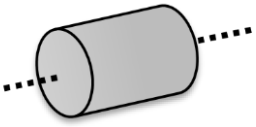
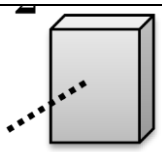
54.	Erkin tushish balandligi	$h = \vartheta_0 t + \frac{gt^2}{2}$
55.	ϑ_0 dan ϑ_t ga erishguncha o'tish balandligi	$h = \frac{\vartheta_t^2 - \vartheta_0^2}{2g}$
56.	Yuqoriga tik otilgan jismning t vaqtda ko'tarilish balandligi	$h = \vartheta_0 t - \frac{gt^2}{2}$
57.	Yuqoriga ϑ_0 tezlik otilgan jismni uchish vaqti.	$t_u = 2t_k = \frac{2\vartheta_0}{g}$
58.	*Erkin tushayotgan jismning n-sekundda o'tgan yo'li;* (ϑ_0=0) bo'lsa	$h_n = \frac{g}{2}(2n-1)$
59.	*Erkin tushayotgan jismning n-sekundda o'tgan yo'li;*	$h_n = \vartheta_0 + \frac{g}{2}(2n-1)$
60.	Битта нуқтадан Δt вақт оралиғи билан иккита жисм ϑ_0 тезлик билан юқорига тик отилganda uchrashish vaqti.	$t_1 = \frac{\vartheta_0}{g} + \frac{\Delta t}{2}, \qquad t_2 = \frac{\vartheta_0}{g} - \frac{\Delta t}{2}$
61.	**Erkin tushayotgan jism oxirgi Δt vaqt ichida Δh masofani o'tgan bo'lsa, butun yo'lni o'tish vaqti;**	$t = \frac{\Delta h}{g\Delta t} + \frac{\Delta t}{2}$
62.	**— yo'lning birinchi h_1 qismini o'tish vaqti;**	$t_1 = \frac{\Delta h}{g\Delta t} - \frac{\Delta t}{2}$
63.	Bir marta to'la aylanishi uchun ketgan davr formulasi va birligi.	$T = \frac{t}{N}, \quad [T] = 1s,$ $T = \frac{1}{v}, \quad T = \frac{2\pi}{\omega}, \quad T = \frac{2\pi R}{\vartheta}, \; T = \sqrt{\frac{4\pi^2 r}{a_n}}$
64.	Bir sekunddagi aylanishlar soni chasto'ta Formulasi va birligi.	$v = \frac{N}{t}, \quad [v] = 1\frac{ayl}{s} = 1s^{-1} = Hz$ $v = \frac{1}{T}, \; v = \frac{\omega}{2\pi}, \quad v = \frac{\vartheta}{2\pi R}, \; v = \sqrt{\frac{a_n}{4\pi^2 r}}$
65.	Burchakli tezlik formulasi va birligi.	$\omega = \frac{\varphi}{t}, \quad , \quad [\omega] = 1\frac{rad}{s} \qquad \omega = \frac{a_n}{\vartheta}$ $\omega = \frac{2\pi}{T}, \; \omega = 2\pi v, \quad \omega = \frac{\vartheta}{R}, \quad \omega = \sqrt{\frac{a_n}{R}}$
66.	Aylana harakatda chiziqli (bu yerda l-aylana uzunligi va u $l = 2\pi R$ ga teng)	$\vartheta = \frac{l}{t}, \quad [\vartheta] = 1\frac{m}{s} \qquad \vartheta = \frac{a_n}{\omega}$ $\vartheta = \frac{2\pi R}{T}, \; \vartheta = 2\pi v R, \; \vartheta = \omega R, \; \vartheta = \sqrt{a_n R}$
67.	Tangensial tezlanish.	$a_t = \frac{\Delta\vartheta}{\Delta t}, \quad a_t = \frac{\vartheta_2 - \vartheta_1}{\Delta t}$
68.	Normal tezlanish (Markazga intilma tezlanish).	$a_n = \frac{\vartheta^2}{R}, \; a_n = 4\pi^2 v^2 R, \; a_n = \frac{4\pi^2 R}{T^2}, \; a_n = \omega^2 R,$ $a_n = \omega \cdot \vartheta$
69.	Aylanma harakatni uzatishda aylanish davrini Radius va Tishlar soniga bog'lanishi.	$\frac{T_2}{T_1} = \frac{R_2}{R_1}, \quad \frac{T_2}{T_1} = \frac{N_2}{N_1}$
70.	Aylanma harakatni uzatishda aylanish chastotasini Radius va Tishlar soniga bog'lanishi.	$\frac{v_1}{v_2} = \frac{R_2}{R_1}, \quad \frac{v_1}{v_2} = \frac{N_2}{N_1}$
71.	Aylanma harakatni uzatishda aylanish siklik chastotasini Radius va Tishlar soniga bog'lanishi.	$\frac{\omega_1}{\omega_2} = \frac{R_2}{R_1}, \quad \frac{\omega_1}{\omega_2} = \frac{N_2}{N_1}$
72.	Aylanma harakatni uzatishda aylanish	$\vartheta_1 = \vartheta_2$ chiziqli tezlikni Radius va Tishlar soniga

	chiziqli tezlikni Radius va Tishlar soniga bog'lanishi.	bog'lanmagan. Chiziqli tezlik o'zgarmaydi.
73.	Bir o'qqa mahkamlangan ikki disk uchun burchakli tezlik ω chasto'ta ν, davr T va chiziqli tezliklarning o'zgarishi.	$\omega_1 = \omega_2 \quad \nu_1 = \nu_2 \quad T_1 = T_2$, $\frac{\vartheta_1}{R_1} = \frac{\vartheta_2}{R_2}$ burchakli tezlik ω chasto'ta ν, davr T bir hil bo'ladi.
74.	**Aylana bo'ylab notekis harakatda** - **burchak**	$\varphi = \omega_0 t + \frac{\varepsilon t^2}{2} = \frac{\omega^2 - \omega_0^2}{2\varepsilon}$
75.	- **burchak tezlikni oniy qiymati**	$\omega = \omega_0 + \varepsilon t$
76.	- **burchak tezlanish**	$\varepsilon = \frac{\Delta\omega}{\Delta t} = \frac{\omega - \omega_0}{t}$
77.	Nyutonni birinchi qonuni ifodasi. (inersiya qonuni)	$F = 0$, bo'lsa $\vartheta = 0$ yoki $\vartheta = const$ bo'ladi.
78.	Bir yo'nalishdagi kuchlar natijasi.	$F = F_1 + F_2$
79.	Qarama qarshi yo'nalishdagi kuchlar natijasi.	$F = F_1 - F_2$
80.	Perpendikulyar kuchlar natijasi.	$F = \sqrt{F_1^2 + F_2^2}$
81.	α burchak ostida kesishuvchi kuchlar natijasi.	$F = \sqrt{F_1^2 + F_2^2 + 2F_1F_2\cos\alpha}$
82.	Nyutonni ikkinchi qonuni ifodasi. Kuch birligi.	$\vec{F} = m\vec{a} \quad [F] = 1N = 1kg \cdot 1\frac{m}{s^2}$
83.	Nyutonning uchinchi (aks ta'sir) qonuni . ikki jismning o'zaro tasir kuchlari miqdor jihatdan teng va bir to'g'ri chiziq bo'ylab qarama- qarshi yo'nalgan.	$\vec{F}_1 = -\vec{F}_2$
84.	Elastiklik kuchi.	$F_{el} = -K\Delta X$
85.	Elastiklik kuchidan bikrlikni topish.	$k = \frac{F_{el}}{\Delta x}$
86.	Purjinalarni ketma-ket ulangandagi bikrligi.	$\frac{1}{k} = \frac{1}{k_1} + \frac{1}{k_2} + \frac{1}{k_3}$;
87.	Purjinalarni parallel ulangandagi bikrligi.	$k = k_1 + k_2 + \ldots + k_n$
88.	Bikrlikni uzunlikka bog'liqligi.	$k \sim \frac{1}{l}$
89.	Guk qonuni grafigi.	
90.	Бутун олам тортишиш кучи	$F = G\frac{m_1 m_2}{r^2}$
91.	Gravitasion doimiylikni qiymati va birligi.	$G=6{,}67259\cdot10^{-11}$ $H\cdot m^2/kg^2$
92.	Biror sayora uchun erkin tushish tezlanishini topish formulasi	$g = G\frac{M_{yer}}{R_{yer}^2}$
93.	Biror sayora uchun erkin tushish tezlanishini topish formulasi (Planetani o'rtacha zichligi orqali)	$g = \frac{4}{3}G\pi\rho R$
94.	h balandlikdagi erkin tushish tezlanishi.	$g_h = G\frac{M_{yer}}{(R_{yer} + h)^2}$
95.	Og'irlik kuchi.	$P = mg, \quad P = G\frac{Mm}{R^2}$
96.	Og'irlik kuchi. (Planetani o'rtacha zichligi orqali)	$P = \frac{4}{3}G\pi\rho Rm$

97.	h balandlikdagi og'irlik kuchi.	$P_h = G\frac{M_{yer}m}{(R_{yer}+h)^2}$
98.	Birinchi kosmik tezlik. (Yer uchun qiymati)	$\vartheta_1 = \sqrt{g \cdot R_{yer}} = 7.9, \quad \vartheta = \sqrt{G\frac{M}{R}}$
99.	Birinchi kosmik tezlikni Sayyorani o'rtacha zichligi orqali.	$\vartheta = \sqrt{\frac{4}{3}G\pi\rho R^2}$
100.	Ikkinchi va uchinchi kosmik tezliklar. (Yer uchun qiymati).	$\vartheta_{2k} = 11.2\frac{km}{s}, \quad \vartheta_{3k} = 16.7$ km/s.
101.	Sun'iy yo'ldosh yerdan h-balandlikda harakatlangandagi tezlik.	$\vartheta = \sqrt{G\frac{M}{R+h}}$
102.	h balandlikdan gorizontal yo'nalishda ϑ_0 tczlik bilan otilgan jismniharakatlanish vaqti	$t = \sqrt{\frac{2h}{g}}$
103.	h balandlikdan gorizontal yo'nalishda ϑ_0 tezlik bilan otilgan jismni uchish uzoqligi	$S = \vartheta_x t \quad S = \vartheta_0\sqrt{\frac{2h}{g}}$
104.	h balandlikdan gorizontal yo'nalishda ϑ_0 tezlik bilan otilgan jismni trayektoriyaning istalgan nuqtasidagi tezligi.	$\vartheta = \sqrt{\vartheta_x^2 + \vartheta_y^2}, \quad \vartheta = \sqrt{\vartheta_0^2 + g^2t^2}$
105.	h balandlikdan gorizontal yo'nalishda ϑ_0 tezlik bilan otilgan jismni trayektoriyaning istalgan nuqtasida gorizont bilan hosil qilgan burchagi.	$tg\alpha = \frac{\vartheta_y}{\vartheta_x} \quad tg\alpha = \frac{gt}{\vartheta_0}$
106.	Gorizontga nisbatan α burchak ostida ϑ_0 tczlik bilan otilgan jismni maksimal ko'tarilish balandligi.	$h = \frac{\vartheta_0^2\sin^2\alpha}{2g}, \quad h = \frac{(\vartheta_0\sin\alpha)^2}{2g}$
107.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni maksimal ko'tarilish balandligi. (ko'tarilish vaqti orqali)	$h = \frac{gt_k^2}{2}$
108.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni maksimal ko'tarilish balandligi. (uchish vaqti orqali)	$h = \frac{gt_{uch}^2}{8}$
109.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni maksimal uchish uzoqligi.	$S = \frac{\vartheta_0^2\sin2\alpha}{g}$
110.	Uchish uzoqligini ko'tarilish balandligiga nisbati.	$\frac{S}{h} = 4ctg\alpha$
111.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni to'la uchish vaqti.	$t_{uch} = \frac{2\vartheta_0\sin\alpha}{g}$
112.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni ko'tarilish vaqti.	$t_k = \frac{\vartheta_0\sin\alpha}{g}$
113.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni gorizontal tezligi	$\vartheta_x = \vartheta_0 cos\alpha, \quad \vartheta_x = \vartheta_0 cos\alpha = const$

114.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni vertikal tezligi	$\vartheta_y = \vartheta_0 sin\alpha \qquad \vartheta_y = \vartheta_0 sin\alpha - gt$
115.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni traektoriyaning eng baland nuqtasidagi egrilik radiusi.	$R = \frac{(\vartheta_0 cos\alpha)^2}{g}$
116.	**Gorizontal otilgan jismda tangensial tezlanish**	$a_t = \frac{g^2 t}{\sqrt{\vartheta_0^2 + g^2 t^2}}$
117.	**Gorizontal otilgan jismda normal tezlanish**	$a_t = \frac{g\vartheta_0}{\sqrt{\vartheta_0^2 + g^2 t^2}}$
118.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni traektoriyaning biror nuqtasidagi natijaviy tezligi.	$\vartheta = \sqrt{\vartheta_x^2 + \vartheta_x^2}$
119.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni traektoriyaning biror nuqtasida gorizont bilan hosil qilgan burchagi.	$tg\varphi = \frac{\vartheta_y}{\vartheta_x}, \qquad tg\varphi = \frac{\vartheta_0 sin\alpha - gt}{\vartheta_0 cos\alpha}$
120.	Gorizontga nisbatan α burchak ostida ϑ_0 tezlik bilan otilgan jismni traektoriyaning biror nuqtasida gorizont bilan φ burchak hosil qilish shartlari.	$t = \frac{\vartheta_0 sin\alpha \pm tg\varphi \cdot \vartheta_0 cos\alpha}{g}$
121.	Yuqoriga *a* tezlanish bilan harakatlanayotgan jismning vazni	$P = m(g + a)$
122.	Pastga *a* tezlanish bilan harakatlanayotgan jismning vazni.	$P = m(g - a)$
123.	Yuqoriga tekis sekinlanuvchan harakatlanayotgan jismning vazni	$P = m(g - a)$
124.	Pastga tekis sekinlanuvchan harakatlanayotgan jismning vazni.	$P = m(g + a)$
125.	O'ta yuklanish.	$n = \frac{G}{P} = \frac{\lvert\vec{g} - \vec{a}\rvert}{g}, \qquad n = \frac{g+a}{g} = 1 + \frac{a}{g}$
126.	Botiq ko'prikdan ϑ tezlik bilan o'tayotgan jism og'irligi.	$P_b = mg + \frac{m\vartheta^2}{R}$
127.	Qavariq ko'prikdan ϑ tezlik bilan o'tayotgan jism og'irligi.	$P_q = mg - \frac{m\vartheta^2}{R}$
128.	Arqonga bog'lab aylantirilgan jism og'irligi (eng yuqori nuqtadagi).	$T_y = \frac{m\vartheta^2}{R} - mg$
129.	Arqonga bog'lab aylantirilgan jism og'irligi (eng pastgi nuqtadagi).	$T_p = \frac{m\vartheta^2}{R} + mg$
130.	Gorizontal sirtda yotgan jism uchun ishqalanish kuchi.	$F_{ishq} = -\mu N \qquad F_{ishq} = -\mu mg$
131.	Ishqalanish koeffisiyenti topish.	$\mu = \frac{F_{ishq}}{N}$
132.	Qiya tekislikda turgan jismni yumalatuvchi (sirpantiruvchi) kuch;	$F = mgsin\alpha$
133.	Qiya tekislikka ta'sir etuvchi normal bosim kuchi.	$N = mgcos\alpha$

134.	Dumalanish ishqalanishi	$F_g = -\mu\frac{N}{R}$
135.	Qiya tekislikda ta’sir qiluvchi ishqalanish kuchi.	$F_{ishq} = \mu N = \mu mgcos\alpha$
136.	Jismning qiya tekislikda muvozanatda turish sharti.	$\mu \geq tg\alpha$
137.	Qiya tekislikda tekis tezlanuvchan harakatlanib tushish sharti.	$\mu < tg\alpha$
138.	Qiya tekislikda tekis harakatlanib tushish sharti.	$\mu = tg\alpha$
139.	Qiya tekislikda tekis sekinlanuvchan harakatlanib tushish sharti.	$\mu > tg\alpha$
140.	Qiya tekislikda tushish tezlanishi.	$a = g(\sin\alpha - \mu\cos\alpha)$
141.	Qiya tekislik bo’ylab *a* tezlanish bilan yuqoriga sudrovchi kuch.	$F = ma + mg\sin\alpha + \mu mg\cos\alpha$
142.	Aylanayotgan diskdagi jismning muvozanat sharti	$\frac{m\vartheta^2}{R} = \mu mg,\ m\omega^2 R = \mu mg,\ 4\pi^2 v^2 R = \mu g$
143.	Tormozlanish masofasi. (Ishqalanish kuchi ta’sirida)	$S = \frac{\vartheta_0^2}{2\mu g},\qquad S = \frac{m\vartheta_0^2}{2F_{иш}}$
144.	Tormozlanish vaqti. (Ishqalanish kuchi ta’sirida)	$\tau = \frac{\vartheta_0}{\mu g},\qquad \tau = \frac{m\vartheta_0}{F_{иш}}$
145.	Tormozlanish tezlanishi. (gorizontal sirtda)	$a = \mu g$
146.	Tortishish kuchining og’irlik kuchiga nisbati. (Tortish koeffisienti k).	$k = \frac{F_T}{mg},\ k = \mu + \frac{a}{g},\ \ a = (k - \mu)g$
147.	Tormozlanish masofasidan boshlang’ich tezlikni topish .	$\vartheta_0 = \sqrt{2\mu gS},\qquad \vartheta_0 = \sqrt{2aS}$
148.	Qiya tekislikning F.I.K	$\eta = \frac{\sin a}{\sin a + \mu\cos a} = \frac{1}{1 + \mu ctga} = \frac{tga}{tga + \mu} = \frac{h}{h + \mu\sqrt{l^2 - h^2}}$
149.	Stol ustiga *l* uzunlikdagi bir jinsli zanjir yotibdi.	$l_{ustidagi} = \frac{l}{1+\mu}\qquad l_{osilib} = l\left(\frac{\mu}{1+\mu}\right)$
150.	*m* massali jism gorizontal tekislikda tekislikka α burchak ostida yuqoriga ta’sir etuvchi F kuch bilan tortilgandagi ishqalanish kuchi.	$F_{ish} = \mu(mg - F\sin\alpha)$
151.	*m* massali jism gorizontal tekislikda tekislikka α burchak ostida pastga ta’sir etuvchi F kuch bilan tortilgandagi ishqalanish kuchi.	$F_{ish} = \mu(mg + F\sin\alpha)$
152.	Arhimed kuchi.	$F_A = \rho_s V_j g$
153.	Suyuqlikda cho’kmasdan turgan jismni suyuqlik ustidagi hajmi va balandligi.	$V_{ust} = \left(1 - \frac{\rho_j}{\rho_s}\right)V_{um},\quad H_{ust} = \left(1 - \frac{\rho_j}{\rho_s}\right)H_{um}$
154.	Suyuqlikda cho’kmasdan turgan jismni suyuqlik pastidagi hajmi va balandligi.	$V_{past} = \frac{\rho_j}{\rho_s}V_{um}\quad ,\qquad H_{past} = \frac{\rho_j}{\rho_s}H_{um}$
155.	Jismni suyuqlikda cho’kish tezlanishi.	$a_{cho\prime k} = \frac{\rho_j - \rho_s}{\rho_j}g$
156.	Jismni suyuqlikda qalqish tezlanishi.	$a_{qalqish} = \frac{\rho_s - \rho_j}{\rho_j}g$
157.	Jismni suyuqlikdagi og’irligi	$P = mg - F_A$

158.	Ko’chmas blokka osilgan yuklar tezlanishi.	$a = \frac{(m_2 - m_1)g}{m_1 + m_2}$
159.	Ko’chmas blokka osilgan yuklardan hosil taranglik kuchi.	$T = m_2(g - a) \quad T = m_1(g + a)$ $T = \frac{2m_1 m_2}{m_1 + m_2} g$
160.	**Qarshilik kuchi jism tezligiga bog’liq** - **Jism tezligi kichik bo’lganda**	$F_{qar} = -k\vartheta$
161.	- **Jism tezligi katta bo’lganda**	$F_{qar} = -k\vartheta^2$
162.	O’girlik markazini topish. (Jism bir jinsli bo’lmasa).	$x_0 = \frac{x_1 m_1 + x_2 m_2}{m_1 + m_2}, \quad y_0 = \frac{y_1 m_1 + y_2 m_2}{m_1 + m_2}$
163.	Og’irlik markazini topish. (Hajmlari teng bo’lsa.)	$x_0 = \frac{x_1 \rho_1 + x_2 \rho_2}{\rho_1 + \rho_2}, \quad y_0 = \frac{y_1 \rho_1 + y_2 \rho_2}{\rho_1 + \rho_2}$
164.	Kuch momenti	$M = F \cdot l \quad [M] = N \cdot m$
165.	**Aylanma harakat dinamikasining asosiy tenglamasi**	$M = I \cdot \varepsilon$
166.	**Massasi *m* va uzunligi *l* bo’lgan sterjenning uning uzunligiga tik va o’rtasidan o’tgan aylanish o’qiga nisbatan inersiya momenti**	$M = \frac{1}{12} ml^2$ 
167.	**Massasi *m* va uzunligi *l* bo’lgan sterjenning uning uzunligiga tik va bir uchidan o’tgan aylanish o’qiga nisbatan inersiya momenti**	$M = \frac{1}{3} ml^2$ 
168.	**Massasi m va radiusi R bo’lgan sharning o’z markazidan o’tgan aylanish o’qiga nisbatan inersiya momenti**	$M = \frac{2}{5} mR^2$ 
169.	**Massasi m va radiusi R bo’lgan yahlit silindrning o’z o’qiga nisbatan inersiya momenti**	$M = \frac{1}{2} mR^2$ 
170.	**Massasi m, tashqi radiusi R va ichki radiusi r bo’lgan qalin devorli kovak silindrning o’z o’qiga nisbatan inersiya momenti**	$M = \frac{1}{2} m(R^2 + r^2)$ 
171.	**Massasi m va radiusi R bo’lgan yupqa (halqa) silindrning o’z o’qiga nisbatan inersiya momenti**	$I = mR^2$ 
172.	**Massasi m, bo’yi *a* va eni *b* bo’lgan brusokning inersiya momenti**	$M = \frac{1}{2} m(a^2 + b^2)$ 
173.	**Aylanma harakat qilayotgan jismning kinetik energiyasi**	$E = \frac{I\omega^2}{2}$
174.	Bir jinsli sterjenni bir uchidan ko’tarish uchun kuch	$F = \frac{mg}{2}$
175.	Aylanish o’qiga ega bo’lgan jismni	$M_1 + M_2 = M_3 + M_4 \quad F_1 l_1 + F_2 l_2 = F_4 l_4 + F_4 l_4$

	muvozanatda turish sharti.	
176.	Yelkaga nisbatan α burchak ostida ta'sir qilayotgan Kuch momenti	$M = Fl\sin\alpha$
177.	Ikkita tayanchda turgan balka ustidagi yukning tayanchlarga beradigan kuchi.	$F_1 = \frac{mg}{l_1+l_2} l_2, \quad F_2 = \frac{mg}{l_1+l_2} l_1$
178.	Jism impulsi.	$p = m\vartheta$
179.	Kuch impulsi .	$F \cdot t = m\vartheta_2 - m\vartheta_1$
180.	Bir yo'nalishdagi impulslar natijasi.	$p = p_1 + p_2$
181.	Qarama qarshi yo'nalishdagi impulslar natijasi.	$p = p_1 - p_2$
182.	Perpendikulyar impulslar natijasi.	$p = \sqrt{p_1^2 + p_2^2}$
183.	α burchak ostida kesishuvchi impulslar natijasi.	$p = \sqrt{p_1^2 + p_2^2 + 2p_1p_2\cos\alpha}$
184.	Impuls o'zgarishi. (Biror tekislik bilan noelastik to'qnashganda)	$\Delta p = m\vartheta$
185.	Impuls o'zgarishi. (Biror tekislik normali bilan α burchak ostida noelastik to'qnashganda)	$\Delta p = m\vartheta\cos\alpha$
186.	Impuls o'zgarishi. (Biror tekislik bilan elastik to'qnashganda)	$\Delta p = 2m\vartheta$
187.	Impuls o'zgarishi. (Biror tekislik normali bilan α burchak ostida elastik to'qnashganda)	$\Delta p = 2m\vartheta\cos\alpha$
188.	Импульснинг сақланиш қонуни.	$m_1\vec{\vartheta}_1 \pm m_2\vec{\vartheta}_2 = m_1\vec{\vartheta'}_1 \pm m_2\vec{\vartheta'}_2$
189.	Импульснинг сақланиш қонуни. (Noelastik to'qnashuv)	$m_1\vec{\vartheta}_1 \pm m_2\vec{\vartheta}_2 = (m_1 + m_2)U \quad U = \frac{m_1\vartheta_1 + m_2\vartheta_2}{m_1+m_2}$
190.	Reaktiv harakat (bir onda gaz chiqsa)	$m_R\vartheta_R = m_G\vartheta_G$
191.	Reaktiv harakat (biror mudatda gaz chiqsa)	$(m_R - m_G)\vartheta_R = m_G\vartheta_G$
192.	**Elastik to'qnashish. Jismlar markaziy elastik to'qnashgandan keyingi tezliklari – u_1 va u_2 larni toppish.** **—Jismlarni harakat yo'nalishlari bir xil bo'lganida:**	$u_1 = \frac{2m_2\vartheta_2 - (m_2 - m_1)\vartheta_1}{m_1 + m_2}$ $u_2 = \frac{2m_1\vartheta_1 + (m_2 - m_1)\vartheta_2}{m_1 + m_2}$
193.	**—Jismlarni harakat yo'nalishlari qarama - qarshi bo'lganida:**	$u_1 = \frac{-2m_2\vartheta_2 - (m_2 - m_1)\vartheta_1}{m_1 + m_2}$ $u_2 = \frac{2m_1\vartheta_1 - (m_2 - m_1)\vartheta_2}{m_1 + m_2}$
194.	Mexanik ish	$A = F \cdot S \cdot \cos\alpha$
195.	Og'irlik kuchining bajargan ish	$A = mgh \quad A = \frac{m}{2}(\vartheta_2^2 - \vartheta_1^2)$
196.	Mexanik ishning kinetik energiyaga bog'liqligi	$A = \Delta E_{kin} = E_2 - E_1 \quad A = \frac{m(\vartheta_2^2 - \vartheta_1^2)}{2}$
197.	Yerda yotgan l uzunlikdagi sterjenni tik qilib qo'yishda bajarilgan ish	$A = mg\frac{l}{2}$
198.	Sterjenni gorizontga nisbatan α burchakka og'dirishda bajarilgan ish	$A = mg\frac{l}{2}\sin\alpha$

199.	Jism α tezlanish bilan yuqoriga ko'tarilganida bajarilgan ish	$A = m(g + a)h$
200.	Ko'char blokda jismni h balandlikka ko'targanda F kuchni bajargan ishi	$A = 2mgh$
201.	F kuch ta'sirida jism h balandlikka ko'tarilganda F kuchni bajargan ishi	$A = Fh$
202.	Qarshilik kuchining bajargan ishi	$A = F_{qar} \cdot h = m(g - a)h$
203.	Elastiklik kuchining bajargan ish	$A = \frac{k \cdot x^2}{2}$ $A = \frac{F_{elast} \cdot x}{2}$ $A = \frac{F^2 elast}{2k}$
204.	Ishqalanish kuchining bajargan ish (gorizontal sirtda)	$A = F_{ishq} \cdot l = \mu mgl$
205.	Ishqalanish kuchining bajargan ish (qiya tekislikda)	$A = \mu mgl \cdot \cos\alpha$
206.	Quvvat	$N = \frac{A}{t}$, $N = F \cdot \vartheta \cos\alpha$, $N = F\vartheta$, $N = \frac{mgh}{\eta \cdot t}$
207.	Foydali ish koeffitsiyenti (FIK)	$\eta = \frac{A_F}{A_T} \cdot 100\%$ $\eta = \frac{A_F}{A_T}$ $\eta = \frac{N_F}{N_T} \cdot 100\%$ $\eta = \frac{N_F}{N_T}$
208.	Qiya tekislik uchun FIK	$\eta = \frac{1}{1+\mu ctg\alpha}$ $\eta = \frac{tg\alpha}{tg\alpha+\mu}$ $\eta = \frac{\sin\alpha}{\sin\alpha+\mu\cos\alpha}$
209.	Kinetik energiya	$W_k = \frac{m\vartheta^2}{2}$ $W_k = \frac{p\vartheta}{2}$ $W_k = \frac{p^2}{2m}$
210.	Potensial energiya	$W_p = mgh$
211.	Prujinaning potensial energiyasi	$W_p = \frac{k \cdot x^2}{2}$ $W_p = \frac{F \cdot \Delta x}{2}$ $W_p = \frac{F_{elast}}{2k}$
212.	To'la mexanik energiya	$W_T = W_K + W_P$
213.	Mexanik energiyaning saqlanish qonuni	$W_{K1} + W_{P1} = W_{K1} + W_{P1}$
214.	Bosim	$P = \frac{F}{S}$
215.	Suyuqlik va gazlarning idish tubiga bosimi	$P = \rho gh$
216.	**Dengiz sathidan h balandlikdagi atmosfera bosimi**	$P = 10^5 - \frac{h}{12} \cdot 133{,}3 \quad Pa$ $P = 760 - \frac{h}{12} mm.sim.ust$
217.	**Idishdagi suyuqlik sathidan h balandlik pastda ochilgan teshikdan oqib chiqayotgan suyuqlikning tezligi**	$\vartheta = \sqrt{2gh}$
218.	Bir tebranish davri davomida o'tilgan masofa. (Amplituda orqali)	$S = 4NA$
219.	Tebranma harakat energiyasi	$W = \frac{m}{2} A^2 \omega^2$, $W = \frac{kA^2}{2}$
220.	Matematik mayatnik tebranish davri	$T = 2\pi\sqrt{\frac{l}{g}}$, $T = 2\pi\sqrt{\frac{l}{g \pm a}}$
221.	*a* tezlanish bilan ketayotgan jismdagi matematik mayatnik tebranishi.	$T = 2\pi\sqrt{\frac{l}{\sqrt{g^2 + a^2}}}$
222.	Matematik mayatnik chastotasi	$\nu = \frac{1}{2\pi}\sqrt{\frac{g}{l}}$
223.	Matematik mayatnik siklik chastotasi	$\omega = \sqrt{\frac{g}{l}}$
224.	Prujinali mayatnik tebranish davi	$T = 2\pi\sqrt{\frac{m}{k}}$

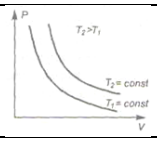
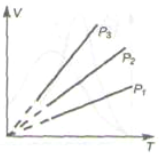
225.	Prujinali mayatnik siklik chastotasi	$\omega = \sqrt{\frac{k}{m}}$
226.	Prujinali mayatnik chastotasi	$\nu = \frac{1}{2\pi}\sqrt{\frac{k}{m}}$
227.	Maksimal tezlik	$\vartheta_{max} = \omega A$
228.	Matematik mayatnik tezligi	$\vartheta = x'$ $\vartheta = \vartheta_m \cdot \cos(\omega t + \varphi_0)$
229.	Matematik(Prujinali) mayatnik tezlanishi	$a = x''$ $a = a_m \cdot \sin(\omega t + \varphi_0)$ $a = -\omega^2 x$
230.	Matematik (Prujinali) mayatnik tezlanish amplitudasi	$a_m = \omega^2 A$, $a_m = A\frac{k}{m}$, $a_m = A\frac{g}{l}$, $a_0 = 4\pi^2\nu^2 A$
231.	Sinus yoki kosinus qonuni bo'yicha o'zgaruvchi harakatga garmonik tebranma harakat deyiladi.	$x = A \cdot \sin(\omega \cdot t + \varphi_0)$
232.	**Matematik mayatnik vertikaldan α burchak og'gan holda gorizontal tekislikda aylana bo'ylab harakat qilayotganda**	$T = 2\pi\sqrt{\frac{l\,cos\alpha}{g}}$,
233.	Matematik mayatnik	$x = A \cdot \sin(\sqrt{\frac{g}{l}} \cdot t + \varphi_0)$
234.	Prujinali mayatnik	$x = A \cdot \sin(\sqrt{\frac{k}{m}} \cdot t + \varphi_0)$
235.	S masofada N marta tebranadigan to'lqinning uzunligi.	$\lambda = \frac{S}{N}$
236.	Tovush to'lqinlarining chastota oralig'i.	17 Hz dan 20000 Hz gacha
237.	Infratovush to'lqinlarining chastota oralig'i.	17 Hz dan kichkina
238.	Ultrtovush to'lqinlarining chastota oralig'i.	20000 Hz dan kata
239.	Mexanik to'lqinlar tarqalish tezligi	$\vartheta = \frac{\lambda}{T}$ $\vartheta = \lambda \cdot \nu$
240.	Tarqalayotgan yassi to'lqin tenglamasi	$x = A \cdot \sin(\omega \cdot t + \varphi_0)$
241.	Eholot formulasi	$S = \frac{\vartheta t}{2}$
242.	Bir- biridan Δx masofada tebranayotgan yassi to'lqindagi fazalar farqi	$\Delta\varphi = \frac{2\pi}{\lambda}\Delta x$ $\Delta\varphi = \frac{2\pi\nu}{\vartheta}\Delta x$
243.	Tovushning kuch yoki intensivligi (balandligi)	$I = \frac{W}{S \cdot t}$ $I = \frac{P}{S}$ $I = \frac{1}{2}\rho\vartheta\omega^2 A^2$
244.	To'lqin energiya zichligi	$\bar{\omega} = \frac{1}{2}\rho\omega^2 A^2$
245.	Bernulli tenglamasi.	$P_1 + \rho g h_1 + \frac{\rho\vartheta_1^2}{2} = P_2 + \rho g h_2 + \frac{\rho\vartheta_2^2}{2}$
246.	Samalyot qanotining ko'tarish kuchi	$F = (P_{past} - P_{yuqori})S$
247.	Oqim uzluksizligi teoremasi	$S_1\vartheta_1 = S_2\vartheta_2$
248.	Agar S yuzadan ϑ tezlik bilan t vaqt V hajmli suyuqlik o'tsa	$V = S\vartheta t$
249.	Agar S yuzadan ϑ tezlik bilan t vaqt ρ zichlikli suyuqlik o'tsa	$m = \rho V = \rho S\vartheta t$
250.	**Gidravlik press.** O'zaro nay bilan biriktirilgan turli diametrli ikkita silindrik idishdan iborat.	$\frac{F_1}{S_1} = \frac{F_2}{S_2}$ $P_1 = P_2$

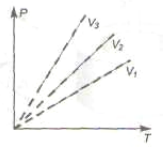
251.	Chig'iriq formulasi	$mg \cdot r = F \cdot R$
252.	Chig'iriq kuchdan necha marta yutuq beradi.	$\frac{R}{r}$

MOLEKULYAR

	Nisbiy molekular (atom) massa M_r	$M_N = \frac{m_0}{\frac{1}{12}m_C}$
2.	Modda miqdori. Formula va birligi.	$\nu = \frac{m}{\mu}, \quad [\nu] = 1mol$
3.	Modda miqdori.	$\nu = \frac{N}{N_A}$
4.	Massa atom birligi. (m.a.b). Kelib chiqishi.	*1 m.a.b.=1,66·10^{-27} kg* . $1m.a.b = \frac{1}{12}m_{0Uglerod}$
5.	Avagadro soni. Qiymati va birligi.	N_A*=6,023 ·10^{23} mol^{-1}*
6.	Molekulani massasini topish.	m_0*=*M_N *· m.a.b. , m_0=*M_N *·1,66·10^{-27}*
7.	Molekulani massasini topish. (molyar massa orqali)	$m_0 = \frac{\mu}{N_A}$
8.	N ta molekuladan iborat jism massasi.	$m = N \cdot m_0$
9.	Molyar massani topish formulasi. (asosiy)	$\mu = N_A \cdot m_0$
10.	Molyar massani topish formulasi. (modda miqdori orqali)	$\mu = \frac{m}{\nu}$
11.	Molekulalar soni. (massa orqali)	$N = \frac{m}{m_0}$
12.	Molekulalar soni. (modda miqdori orqali)	$N = \nu \cdot N_A$
13.	Molekulalar soni. (massa va molyar massa orqali)	$N = \frac{m}{\mu}N_A$
14.	Molekulalar soni. (zichlik, xajm va molyar massa orqali)	$N = \frac{\rho V}{\mu}N_A$
15.	Konsentratsiya	$n = \frac{N}{V}$
16.	Normal sharoitda bosim.	$P_0 = 10^5$ *(*P_0 *= 101325 Pa)*
17.	Normal sharoitda xarorat.	T_0*=273 K*
18.	Selsiy shkalasidan Kelvin shkalasiga o'tish.	*T = 273,15+ t*
19.	Kelvin shkalasidan Selsiy shkalasiga o'tish.	*t = T - 273,15*
20.	Agar m1 massali gaz m2 massali gaz bilan aralashtirilsa . Aralashmaning molyar massasi.	$\mu = \frac{\mu_1\mu_2(m_1+m_2)}{\mu_2 m_1 + \mu_1 m_2}$
21.	Normal sharoit 1 mol gazning egallagan molyar hajmi.	$V_\mu = 22{,}4\frac{l}{mol} = 22{,}4 \cdot 10^{-3}\frac{m^3}{mol}$
22.	Loshmidt soni deb normal sharoitdagi (1 m^3) hajm birligidagi molekulalar soniga	$N_L = \frac{N_A}{V_\mu} = \frac{6{,}023 \cdot 10^{23}}{22{,}4 \cdot 10^{-3}} = 2{,}69 \cdot 10^{25}\frac{1}{m^3}$

	aytiladi. (Normal sharoitdagi konsentratsiya)	
23.	Molekulyar-kinetik nazariyasining asosiy tenglamasi.	$\boldsymbol{P=\frac{1}{3}nm_0\vartheta^2}$
24.	Molekulyar-kinetik nazariyasining asosiy tenglamasi. (Zichlik orqali)	$\boldsymbol{P=\frac{1}{3}\rho\vartheta^2}$
25.	Molekulyar-kinetik nazariyasining asosiy tenglamasi. (Molekulalar soni orqali)	$\boldsymbol{P=\frac{1}{3}\frac{N}{V}m_0\vartheta^2}$
26.	Molekulyar-kinetik nazariyasining asosiy tenglamasi. (Molekulalarni kinetik energiyasi orqali)	$\boldsymbol{P=\frac{2}{3}nE_k}$
27.	Bolsman doimiysi. Qiymati va birligi. Bolsman doimiysi 1K temperaturaga mos kelgan o'rta kinetik energiya ulushini xarakterlaydi.	$k=1{,}38\cdot10^{-23}\frac{J}{k}$
28.	Gaz bosimi konsentratsiya orqali.	$\boldsymbol{P=nkT}$
29.	Gaz molekulasi ilgarilanma harakatining o'rtacha kinetik energiyasi. (Molekulani tezligi orqali)	$E_k=\frac{m_0\bar{\vartheta}^2}{2}$,
30.	Gaz molekulasi ilgarilanma harakatining o'rtacha kinetik energiyasi. (Xarorat orqali)	$E_k=\frac{3}{2}kT$
31.	Mendeleev-Klapeyron yoki holat tenglamasi.	$PV=\frac{m}{M}RT$
32.	Universal gaz doimiysi. Qiymati va birligi. Kelib chiqishi.	$R=8{,}31$, J/(mol ·K), $R=k\cdot N_A$
33.	Mendeleev-Klapeyron tenglamasi. (modda miqdori orqali)	$PV=\nu RT$
34.	Mendeleev-Klapeyron tenglamasi. (Molekulalar soni orqali)	$PV=\frac{N}{N_A}RT$
35.	Klapeyron tenglamasi.	$m=const.$ $\frac{PV}{T}=const.$ $\frac{P_1V_1}{T_1}=\frac{P_2V_2}{T_2}=\frac{P_3V_3}{T_3}=const$
36.	Molekula o'lchami.	$d=\sqrt[3]{\frac{V}{N}}$, $d=\sqrt[3]{\frac{\mu}{\rho\cdot N_A}}$
37.	Gaz molekulasi o'lchami.	$d=\sqrt[3]{\frac{kT}{P}}$
38.	Dalton qonuni.	$P=P_1+P_2+P_3+\ldots\ldots+P_n$
39.	Gaz molekulalarining tezligi. Shtern tajribasi (1920).	$\bar{\vartheta}=\frac{\omega R_B(R_B-R_A)}{S}$

40.	O’rtacha kvadratik tezlik (molekula massa orqali)	$\vartheta_{kv} = \sqrt{\frac{3kT}{m_0}}$
41.	O’rtacha kvadratik tezlik (molyar massa orqali)	$\vartheta_{kv} = \sqrt{\frac{3RT}{\mu}}$
42.	O’rtacha kvadratik tezlik (bosim va zichlik orqali)	$\vartheta_{kv} = \sqrt{\frac{3P}{\rho}}$
43.	O’rtacha kvadratik tezlik (konsentratsiya orqali)	$\vartheta_{kv} = \sqrt{\frac{3P}{m_0 n}}$
44.	O’rtacha kvadratik tezlik (bosim, xajm va gaz massasi orqali)	$\vartheta_{kv} = \sqrt{\frac{3PV}{m}}$, $\vartheta_{kv} = \sqrt{\frac{3PV}{Nm_0}}$
45.	Izotermik jarayon. Konstantalar. Klapeyron tenglamasini ko’rinishi.	$\mathrm{T} = \mathrm{const}, \mathrm{m} = \mathrm{const}.$ $PV = const.$ $P_1V_1 = P_2V_2 = P_3V_3 = const.$
46.	Izotermik jarayonni kim o’rgangan.	Boyl-Mariottlar o’rganishgan .
47.	Izotermik jarayonni grafigi. (PV kordinatada 2 ta grafik temperaturani solishtirish uchun)	
48.	Izotermik jarayonni grafigi. (PT kordinatada)	
49.	Izotermik jarayonni grafigi. (VT kordinatada)	
50.	Izobarik jarayonni kim o’rgangan.	Gey-Lyussaklar o’rganishgan (1802).
51.	Izobarik jarayonni grafigi. (PT kordinatada)	
52.	Izobarik jarayonni grafigi. (PV kordinatada)	
53.	Izobarik jarayon. Konstantalar. Klapeyron tenglamasini ko’rinishi.	$\mathrm{P} = \mathrm{const}, \mathrm{m} = \mathrm{const}.$ $\frac{V}{T} = const$ $\frac{V_1}{T_1} = \frac{V_2}{T_2} = \frac{V_3}{T_3} = const.$
54.	Izobarik jarayonni grafigi. (VT kordinatada 2 ta grafik bosimlarni solishtirish uchun) 	$P_3<P_2<P_1$
55.	Izoxorik jarayon. Konstantalar. Klapeyron tenglamasini ko’rinishi.	$\mathrm{V} = \mathrm{const}, \mathrm{m} = \mathrm{const}.$ $\frac{P_1}{T_1} = \frac{P_2}{T_2} = \frac{P_3}{T_3} = const$ $\frac{P}{T} = const$
56.	Izoxorik jarayonni kim o’rgangan.	Sharl o’rgangan (1787).

57.	Izoxorik jarayonni grafigi. (PT kordinatada 2 ta grafik temperaturani solishtirish uchun) 	$V_1 > V_2 > V_3$
58.	Izoxorik jarayonni grafigi. (VT kordinatada)	
59.	Izoxorik jarayonni grafigi. (PV kordinatada)	
60.	Gaz kengayganda bajargan ish.	$\boldsymbol{A = P \cdot \Delta V}$
61.	Gaz bajargan ish . (Xarorat ortganda massa orqali)	$A = \frac{m}{\mu} R\Delta T$
62.	Gaz bajargan ish . (Xarorat ortganda modda miqdori orqali)	$A = \nu R\Delta T$
63.	Gaz kengayganda bajargan ish. (Yuza orqali)	$\boldsymbol{A = P \cdot S \cdot \Delta h}$
64.	Ichki energiya	$U = NE_{um}, \quad U = N(E_{Pot} + E_{kin})$
65.	Gaz ichki energiyasi (Kinetik energiyasi orqali)	$U = NE_k,$
66.	Gaz ichki energiyasi (Bitta molekulani kinetik energiyasi orqali 2 ta formulasi)	$U = N\frac{m_0\vartheta^2}{2}, \quad U = N\frac{3}{2}kT$
67.	Gaz ichki energiyasi (Modda miqdori orqali 2 ta formulasi)	$U = \nu N_A \frac{3}{2}kT, \quad U = \frac{3}{2}\nu RT$
68.	Gaz ichki energiyasi (gaz massasi va temperaturasi orqali)	$U = \frac{3}{2}\frac{m}{\mu}RT$
69.	Gaz ichki energiyasi (gaz bosimi va xajmi orqali)	$U = \frac{3}{2}PV$
70.	Gaz ichki energiyasi (gaz massasi va tezligi orqali)	$U = \frac{m\vartheta^2}{2}$
71.	Gaz ichki energiyasi o'zgarishi (Bitta molekulani kinetik energiyasi)	$U = N\frac{3}{2}k\Delta T$
72.	Gaz ichki energiyasi o'zgarishi (Modda miqdori orqali 2 ta formulasi)	$U = \nu N_A \frac{3}{2}k\Delta T, \quad U = \frac{3}{2}\nu R\Delta T$
73.	Gaz ichki energiyasi o'zgarishi (gaz massasi va temperaturasi orqali)	$U = \frac{3}{2}\frac{m}{\mu}R\Delta T$
74.	Gaz ichki energiyasi o'zgarishi (gaz bosimi va xajmi orqali)	$U = \frac{3}{2}P\Delta V$
75.	Termodinamikaning birinchi qonuni.	$\boldsymbol{\Delta U = A + Q}, \ \boldsymbol{Q = \Delta U + A},$ $\boldsymbol{Q = \Delta U - A'}$
76.	Termodinamikaning birinchi qonuni. (Gaz massasi va molyar massasi orqali)	$Q = \frac{3}{2}\frac{m}{\mu}R\Delta T + \frac{m}{\mu}R\Delta T = \frac{5}{2}\frac{m}{\mu}R\Delta T$

77.	Termodinamikaning birinchi qonuni. (Gaz miqdori orqali)	$Q = \frac{3}{2}\nu R\Delta T + \nu R\Delta T = \frac{5}{2}\nu R\Delta T$
78.	Termodinamikaning birinchi qonuni. Izotermik jarayon uchun tenglamasi. (3 ta formula)	$Q = A,\quad Q = \nu R\Delta T,\quad Q = \frac{m}{\mu}R\Delta T$ ($\boldsymbol{T = const}.\ \Delta T = 0,\ \Delta U = 0$ va)
79.	Termodinamikaning birinchi qonuni. Izoxorik jarayon uchun tenglamasi. (3 ta formula)	$Q = \Delta U,\qquad Q = \frac{3}{2}\nu R\Delta T,\quad Q = \frac{3}{2}\frac{m}{\mu}R\Delta T$ $V = const.\quad \Delta V = 0,\quad A = P\cdot\Delta V = 0.$
80.	Termodinamikaning birinchi qonuni. Izobarik jarayon uchun tenglamasi. (3 ta formula)	$\boldsymbol{Q = \Delta U + A},\ \ Q = \frac{5}{2}\frac{m}{\mu}R\Delta T,\ \ Q = \frac{5}{2}A$
81.	Termodinamikaning birinchi qonuni. Adiabatik jarayon uchun tenglamasi. (3 ta formula)	$Q=0,\ \ A = -\Delta U,\ \ A` = \Delta U,$
82.	Ideal issiqlik mashinasining foydali ish koeffitsiyenti (fransuz muhandisi S. Karno, 1824).	$\eta_{\max} = \frac{T_1 - T_2}{T_1}100\%$
83.	Real issiqlik mashinasining foydali ish koeffitsiyenti. (2 ta formula)	$\eta_{\max} = \frac{Q_1 - Q_2}{Q_1}100\%,\qquad \eta_{\max} = \frac{A_{Foy}}{Q_1}100\%$
84.	Issiqlik mashinalarida foydali ish.	$A_{foy} = Q_1 - Q_2$
85.	Absolut namlik. Formulasi va birligi.	$\rho = \frac{m}{V}\qquad [\rho] = \text{kg/m}^3$
86.	Nisbiy namlik. (zichlik orqali)	$\varphi = \frac{\rho_{bug'}}{\rho_{T.bug'}}\cdot 100\%$
87.	Nisbiy namlik. (bosim orqali)	$\varphi = \frac{P_{bug'}}{P_{T.bug'}}\cdot 100\%$
88.	Sirt taranglik kuchi.	$F = \sigma\cdot l$
89.	Sirt taranglikda potensial energiya.	$W = \sigma\cdot S$
90.	Sirt taranglikka ega bo'lgan pardada sirtni kengaytirish uchun bajarilgan ish.	$A = \sigma\cdot\Delta S,\quad A = \sigma(S_2 - S_1)$
91.	Sovun pufagini kengaytirishda bajarilgan ish.	$A = 2\sigma(S_2 - S_1),\qquad A = 2\sigma(4\pi R_2^2 - 4\pi R_1^2)$
92.	Tomchilar soni. (sirt taranglik)	$N = \frac{mg}{\sigma\cdot l},\qquad N = \frac{mg}{\sigma\cdot 2\pi R}$
93.	Sirt taranglik koeffisienti. Formula va birligi. (Kuch orqali)	$\sigma = \frac{F}{l},\quad [\sigma] = \frac{N}{m};$
94.	Sirt taranglik koeffisienti. Formula va birligi. (Energiya orqali)	$\sigma = \frac{W}{S},\quad [\sigma] = \frac{J}{m^2}$
95.	Kapilyar nayda suyuqlik ko'tarilish balandligi. (Jyuren formulasi)	$h = \frac{2\sigma}{\rho\cdot g\cdot r}cos\alpha,\qquad h = \frac{4\sigma}{\rho\cdot g\cdot d}$
96.	Sirtlarning egrilanishi natijasida yuzaga keladigan qo'shimcha bosim. (Laplas formulasi)	$P = \frac{2\sigma}{R}.$

97.	Xavodagi sferik sovun pufagi ichidagi qo'shimcha bosim.	$P = \frac{4\sigma}{R}$
98.	Ikkita plastinka orasidagi suyuqlik ko'tarilish balandligi. (b plastinka orasidagi masofa)	$h = \frac{2\sigma}{\rho \cdot g \cdot b}$
99.	Issiqlik balansi tenglamisi.	$Q_{bergan} = Q_{olgan}, \quad Q_1 + Q_2 + Q_3 + Q_4 + \ldots\ldots + Q_n = 0$
100.	Temperaturasi t_1 va massasi m_1 suyuqlik t_2 teperaturalari m_2 massali auyuqlik bilan aralashtiriladi. Aralashmaning temperaturasi aniqlash formulasi.	$t = \frac{m_1 t_1 + m_2 t_2}{m_1 + m_2}$
101.	Temperaturasi t_1 va massasi V_1 suyuqlik t_2 teperaturalari V_2 massali auyuqlik bilan aralashtiriladi. Aralashmaning temperaturasi aniqlash formulasi.	$t = \frac{V_1 t_1 + V_2 t_2}{V_1 + V_2}$
102.	Manfiy t_1 xaroratli m massali muz bo'lagini t xaroratli suvga aylantirish uchun kerak bo'ladigan issiqlik miqdorini hisoblash formulasi.	$Q = c_m \cdot m(0 - t_1) + r \cdot m + c_m m(t - 0)$
103.	Mexanik kuchlanish. (Kuch va yuza orqali)	$\sigma = \frac{F}{S}$
104.	Nisbiy deformasiya (nisbiy uzayish)	$\varepsilon = \frac{\Delta l}{l_0}$
105.	Mexanik kuchlanish va nisbiy uzayish bog'lanishi	$\sigma = E \cdot \varepsilon$
106.	Bikrlik. Elastiklik koeffisienti.	$k = \frac{E \cdot S}{l_0}$
107.	Qattiq jismlar deformasiyalanganda hosil bo'ladigan kuch.	$F = E \cdot S \frac{\Delta l}{l_0}$
108.	Mexanik kuchlanishni chegaraviy qiymati va balandlik orasidagi bo'glanish. (Og'irlik kuchi ta'sirida)	$\sigma_{cheg} = \rho g h, \quad h = \frac{\sigma_{cheg}}{\rho g}$
109.	Mexanik kuchlanishni chegaraviy qiymati va balandlik orasidagi bo'glanish. (Og'irlik kuchi va suyuqlikda Arhimed kuchi ta'sirida)	$\sigma_{cheg} = (\rho_J - \rho_S) g h, \quad h = \frac{\sigma_{cheg}}{(\rho_J - \rho_S) g}$
110.	m massali jismni haroratini t_1 dan t_2 gacha o'zgartirish uchun kerak bo'ladigan (chiqadigan yoki yutiladigan) issiqlik miqdorini hisoblash formulasi	$Q = cm(t_2 - t_1)$
111.	Biror massali jismni haroratini t_1 dan t_2 gacha o'zgartirish uchun kerak bo'ladigan (chiqadigan yoki yutiladigan) issiqlik miqdorini	$Q = C\Delta T$

	hisoblash formulasi	
112.	Solishtirma erish issiqligi r bo'lgan m massali jismni erish haroratida eritish (qotish) uchun kerak bo'ladigan issiqlik miqdori.	$Q = rm$
113.	Solishtirma bug'lanish (konden-satsiyalanish) issiqligi λ bo'lgan m massali jismni biror haroratida bug'latib yuborish uchun kerak bo'ladigan issiqlik miqdori.	$Q = \lambda m$
114.	Solishtirma yonish issiqligi q bo'lgan m massali yoqilg'ini yonganda ajralib chiqadigan issiqlik miqdori.	$Q = qm$
115.	Yoqilg'i vositasida ishlovchi dvigatelning foydali ish koeffisienti.	$\eta = \frac{A_{foyda}}{A_{sarf}} 100\%,\ \eta = \frac{N_{foyda} \cdot t}{qm} 100\%$
116.	Molyar issiqlik sig'imi	$C_m = \mu \cdot c$
117.	O'zgarmas hajmda molyar issiqlik sug'imi	$C_v = \frac{i}{2} R$
118.	O'zgarmas bosimda molyar issiqlik sug'imi	$C_p = C_V + R$ A=R $C_p = \frac{i+2}{2} R$
119.	Xo'llash burchagi - xo'llaydigan suyuqlik - xo'llamaydigan suyuqlik	$\varphi < \frac{\pi}{2}$ $\varphi > \frac{\pi}{2}$

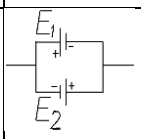
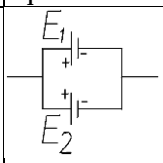
ELEKTR

	Elektr zaryadlarning saqlanish qonuni	$q_1 + q_2 + q_3 + \ldots + q_n = \text{const}$
2.	Elementar zaryad soni	$N = \frac{q}{e}$
3.	Elektr zaryadi orasidagi kulon kuchi	$F = k \cdot \frac{\lvert q_1 \rvert \cdot \lvert q_2 \rvert}{\varepsilon R^2}$
4.	Muhitning nisbiy dielektrik singdiruvchanligi.	$\varepsilon = \frac{F_{vakuum}}{F_{muhit}}$, $\varepsilon = \frac{E_{vakuum}}{E_{muhit}}$
5.	$k = \frac{1}{4\pi\varepsilon_0}$ qiymati va birligi	$9 \cdot 10^9$ n·m^2/c^2
6.	Elektr doimiysi.	$\varepsilon_0 = 8{,}85 \cdot 10^{-12}$
7.	Elektr maydon kuchlanganligi	$\vec{E} = \frac{\vec{F}}{q}$ $[E]$ =n/kl
8.	Zaryadlangan shar maydon kuchlanganligi	$E = k\frac{q}{R^2}$, $E = k\frac{q}{\varepsilon R^2}$.
9.	Elektr maydonning biror nuqtasida q zaryadga ta'sir etuvchi kuch	$F = q \cdot E$
10.	Nuqtaviy zaryadning maydon	$E = k\frac{q}{r^2}$., $E = k\frac{q}{\varepsilon r^2}$.

	kuchlanganligi	
11.	Dipol momenti	$P = q \cdot l$
12.	Shar ichida maydon kuchlanganligi	E =0
13.	Zaryadlarning sirt zichligi formulasi va birligi	$\sigma = \frac{q}{S}$, [σ]=c/m^2
14.	Cheksiz katta zaryadlangan tekislik hosil qilgan maydon kuchlanganligi	$E = \frac{\sigma}{2\varepsilon_0}$, $E = \frac{\sigma}{2\varepsilon_0\varepsilon}$
15.	Cheksiz katta qarama-qarshi zaryadlangan ikkita tekislik orasidagi maydon kuchlanganligi	$E = \frac{\sigma}{\varepsilon_0}$, $E = \frac{\sigma}{\varepsilon_0\varepsilon}$
16.	Ikki zaryadning o'zaro potensial energiyasi (vakumda)	$W_p = k\frac{q_1q_2}{r}$, $W_p = \frac{1}{4\pi\varepsilon_0}\frac{q_1q_2}{r}$
17.	Ikki zaryadning o'zaro potensial energiyasi (muhitda)	$W_p = k\frac{q_1q_2}{\varepsilon r}$, $W_p = \frac{1}{4\pi\varepsilon_0\varepsilon}\frac{q_1q_2}{r}$
18.	Zaryadni elektr maydonda bir nuqtadan ikkinchi nuqtaga ko'chirishda bajarilgan ish.	$A = W_{p1} - W_{p2}$, $A = q(\varphi_1 - \varphi_2)$, $A = qU$
19.	Maydonning biror nuqtasidagi *potensiali* deyiladi. Formulasi va birligi	$\varphi = \frac{W_p}{q}$ [φ]=J/C=V (Volt)
20.	Nuqtaviy zaryadning potensiali.	$\varphi = k\frac{q}{\varepsilon r}$
21.	Maydondagi ikkita nuqta potensiallari orasidagi farq *potensiallar ayirmasi* yoki *kuchlanish*	$\Delta\varphi = U = \varphi_1 - \varphi_2 = \frac{A}{q}$. $U = E \cdot \Delta d$
22.	Shar ichidagi istalgan nuqtada potensial R — shar radiusi;	$\varphi = k\frac{q}{R}$;
23.	Shar sirtidan naridagi nuqtalarda potensial r — shar markazidan Berilgan nuqtagacha bo'lgan masofa.	$\varphi = k\frac{q}{r}$;
24.	n ta φ_0 potensialli tomchi birikib xosil qilgan katta tomchi potensialini φ topish formulasi.	$\varphi = \varphi_0\sqrt[3]{n^2}$
25.	***Elektr sig'imi*** formulasi va birligi	$C = \frac{q}{\varphi}$ $[C]$ = c/v=f (farad).
26.	Shar *elektr sig'imi*	$C = 4\pi\varepsilon_0\varepsilon R$.
27.	q_1 zaryadli R_1 radiusli shar q_2 zaryadli R_2 radiusli shar bilan tutashtirilgandan keyingi zaryadlar	$q_1' = \frac{q_1+q_2}{R_1+R_2}R_1$ $q_2' = \frac{q_1+q_2}{R_1+R_2}R_2$
28.	φ_1 potensialli R_1 radiusli shar φ_2 potensialli R_2 radiusli shar bilan tutashtirilgandan keyingi potensial	$\varphi_{um} = \frac{R_1\varphi_1 + R_2\varphi_2}{R_1+R_2}$
29.	Yassi kondensator *elektr* sig'imi	$C = \frac{\varepsilon\varepsilon_0 S}{d}$
30.	Sferik kondensatorni elektr sig'imi	$C = \frac{4\pi\varepsilon_0\varepsilon \cdot R \cdot r}{R-r}$

31.	**Silindrik kondensatorni elektr sig'imi**	$C = \frac{2\pi\varepsilon_0\varepsilon L}{ln\frac{R_2}{R_1}}$
32.	**Yassi kondensator qoplamalari orasidagi fazoning yarmi ε_1 qolgan yarmi ε_2 dielektrik bilan toldirilgan bo'lsa, uning sig'imi** **- vertikal yarmi** **- gorizontal yarmi**	$C = \frac{2\varepsilon_1\varepsilon_2\varepsilon_0 S}{(\varepsilon_1+\varepsilon_2)d}$ $C = \frac{(\varepsilon_1+\varepsilon_2)\varepsilon_0 S}{2d}$
33.	Kondensatorlarni ketma-ket ulash	$\frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{C_3} + \ldots + \frac{1}{C_n}$
34.	Kondensatorlarni parallel ulash	$C = C_1 + C_2 + C_3 + \ldots C_n$
35.	Parallel ulangan kondensatorlarda umumiy zaryad va zaryad taqsimlanishi . (3ta kondensator)	$q = q_1 + q_2 + q_3$, $q \sim C$
36.	Ketma-ket ulangan kondensatorlar -da zaryad taqsimlanishi. (3ta kondensator)	$q = q_1 = q_2 = q_3$
37.	Ketma-ket ulangan kondensa-torlarda kuchlanish taqsimlanishi. (2 ta kondensator C_1 va C_2, U umumiy kuchlanish)	$\boldsymbol{U_1' = \frac{U}{C_1+C_2}C_2}$, $\boldsymbol{U_2' = \frac{U}{C_1+C_2}C_1}$
38.	Kondensator plastinkalari orasidagi elektr maydon kuchlanganligi.	$\boldsymbol{E = \frac{U}{d}}$, $\boldsymbol{E = \frac{\varphi_1-\varphi_2}{d}}$
39.	Kondensator energiyasi topish formulalari.	$\boldsymbol{W = \frac{qU}{2} = \frac{q^2}{2C} = \frac{CU^2}{2}}$, $\boldsymbol{W = \frac{qEd}{2}}$
40.	Zaryadlangan va manbadan uzilgan kondensatorni energiyasi.	$\boldsymbol{W = \frac{q^2}{2C}}$
41.	Manbadan uzilmagan kondensatorni energiyasi.	$\boldsymbol{W = \frac{CU^2}{2}}$
42.	Zaryadiangan kondensator energiyasi. Energiya zichligi	$E = \frac{W}{V} = \frac{\varepsilon\varepsilon_0}{2}E^2$
43.	Tok kuchini topish formulasi .	$I = \frac{\Delta q}{\Delta t}$, $I = n\,e\,\vartheta\,S$, $I = j \cdot S$
44.	Tok zichligi formulasi va birligi	$\boldsymbol{j = \frac{I}{S} = q_0 n \vartheta}$ $[j]$ =A/m^2
45.	Elektr qarshiligi formulasi va birligi	$R = \rho\frac{l}{S}$ $[R]$ =v/a=om (Ω)
46.	O'tkazgich solishtirma qarshiligi . Formulasi va birligi	$\rho = \frac{RS}{l}$ $[\rho]$ =om · m
47.	Om qonuni (tok kuchini topish)	$I = \frac{U}{R}$
48.	Elektr o'tkazuvchanlik. Formulasi va birligi.	$G = \frac{1}{R}$. $[G] = \frac{1}{Om} = \frac{1}{\Omega} = 1S$ Simens (S)
49.	Om qonuni (qarshilikni topish)	$R = \frac{U}{I}$
50.	Om qonuni (kuchlanishni topish)	$U = I \cdot R$
51.	Metallarda elektr qarshiligi temperaturaga bog'lanishi	$R = R_0(1 + \alpha \cdot \Delta t)$
52.	Metallarda solishtirma elektr	$\rho = \rho_0(1 + \alpha \cdot \Delta t)$

	qarshiligi temperaturaga bog'lanishi	
53.	O'tkazgichlarni ketma-ket ulashda tok kuchi.	$I_1 = I_2 = I_3 = I = const$
54.	O'tkazgichlarni ketma-ket ulashda kuchlanish	$U_1 + U_2 + U_3 = U$
55.	O'tkazgichlarni ketma-ket ulashda qarshilik	$R = R_1 + R_2 + R_3 + \ldots . R_n$
56.	Ikkita ketma-ket ulangan R_1 va R_2 qarshilikda kuchlanish taqsimlanishi.	$\boldsymbol{U_1' = \frac{U}{R_1+R_2} R_1}$, $\boldsymbol{U_2' = \frac{U}{R_1+R_2} R_2}$
57.	O'tkazgichlarni parallel ulashda tok kuchi.	$I_1 + I_2 + I_3 = I$
58.	O'tkazgichlarni parallel ulashda kuchlanish	$U_1 = U_2 = U_3 = U = const$
59.	O'tkazgichlarni parallel ulashda qarshilik.	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots$
60.	n ta bir xil qarshilik parallel ulansa	$R = \frac{R_1}{n}$
61.	n ta bir xil qarshilik ketma-ket ulansa	$R = R_1 \cdot n$
62.	Ampermetrning o'lchash chega-rasini oshirish uchun unga ulan-gan shunt qarshiligi (kamida 2ta)	$R_{sh} = \frac{R_A}{n-1}$, $R_{sh} = \frac{R_A I_A}{I - I_A}$
63.	Voltmetrning o'lchash chegarasini oshirish uchun unga ulangan shunt qarshiligi (kamida 2ta)	$R_{sh} = (\frac{U}{U_v} - 1) R_v$, $R_{sh} = (n-1) R_v$
64.	O'zgarmas tokning bajargan ishi . (kamida 3 ta)	$A = I \cdot U \cdot t$ $A = I^2 \cdot R \cdot t$ $A = \frac{U^2}{R} \cdot t$
65.	O'zgarmas tokning quvvati. (kamida 3 ta)	$P = \frac{A}{t}$, $P = I \cdot U$, $P = I^2 R$, $P = \frac{U^2}{R}$
66.	Ketma – ket ulangan lampalarni umumiy quvvati.	$\frac{1}{P_{UM}} = \frac{1}{P_1} + \frac{1}{P_2} + \frac{1}{P_3}$
67.	Parallel ulangan lampalarni umumiy quvvati.	$P_{UM} = P_1 + P_2 + P_3$
68.	Joul-Lens qonuni.	$Q = I^2 \cdot R \cdot t$
69.	Biror m massali suvni t_1 vaqtda qaynatadigan isitgich bilan o'sha massali suvni t_2 vaqtda qaynatadigan isitgich parallel ulanganda qaynash vaqti	$t = \frac{t_1 \cdot t_2}{t_1 + t_2}$
70.	Biror m massali suvni t_1 vaqtda qaynatadigan isitgich bilan o'sha massali suvni t_2 vaqtda qaynatadigan isitgich ketma-ket ulanganda qaynash vaqti	$t = t_1 + t_2$
71.	Elektr yurituvchi kuch formulasi va birligi	$E = \frac{A}{q}$; $[E] = \text{J/C} = 1\ \text{V}$

72.	Butun zanjir uchun Om qonuni	$I = \frac{E}{R+r}$
73.	Berk zanjirda tokning umumiy bajargan ishi. *(3 ta formula)*	$A_{um}=I\cdot E\cdot t,\ A_{um}=I^2\cdot(R+r)\cdot t,\ A_{um}=\frac{E^2}{R+r}t$
74.	Berk zanjirda tokning umumiy quvvati. *(3 ta formula)*	$N_{um}=I\cdot E,\ A_{um}=I^2\cdot(R+r),\ A_{um}=\frac{E^2}{R+r}$
75.	Tok manbaining qisqa tutashuv toki.	$I_q = \frac{E}{r}$
76.	Tok manbalarini ketma-ket ulash:	$E = E_1 + E_2 + E_3 + \ldots$
77.	Tok manbalarini parallel ulash: $E = E_1 = E_2 = E_3 = \ldots.$	$E = E_1$
78.	 Umumiy E.Yu.K. ni va umumiy ichki qarshilikni topish formulasi. Ichki qarshiliklari r_1 va r_2	$E = \frac{r_1\cdot r_2}{r_1+r_2}\left(\frac{E_1}{r_1}-\frac{E_2}{r_2}\right),\ r_{um}=\frac{r_1\cdot r_2}{r_1+r_2}$
79.	 Umumiy E.Yu.K. ni va umumiy ichki qarshilikni topish formulasi. Ichki qarshiliklari r_1 va r_2	$E = \frac{r_1\cdot r_2}{r_1+r_2}\left(\frac{E_1}{r_1}+\frac{E_2}{r_2}\right),r_{um}=\frac{r_1\cdot r_2}{r_1+r_2}$
80.	Akkumulyatorni zaryadlash	$U_{zar}=E+Ir,\quad E=U_{raz}-Ir$
81.	Akkumulyatorni razryadlash	$U_{raz}=E-Ir,\quad E=U_{raz}+Ir$
82.	Tok manbaining F.I.K.i	$\eta = \frac{R}{R+r},\quad \eta = \frac{U}{E}$
83.	**Tok manbaidagi samarasiz quvvat**	$N_s = I^2\cdot r$
84.	***Agar tashqi qarshilik R_1 bo'lganda kuchlanish U_1 va tok kuchi I_1 , tashqi qarshilik R_2 bo'lganda kuchlanish U_2 va tok kuchi I_2***	$E = \frac{I_2U_1-I_1U_2}{I_2-I_1}\qquad r = \frac{U_1-U_2}{I_1-I_2}$
85.	Kirxgof 1- qonuni.	$I_1 + I_2 + I_3 = 0$
86.	Kirxgof 2- qonuni.	$E_1+E_2+E_3\ldots+E_n = U_1+U_2+U_3+\ldots+U_n$
87.	Faradeyning I qonuni. (elektroliz 2 ta formula)	$m = k\cdot q,\quad m = k\cdot I\cdot t$
88.	Faradeyning II qonuni. Elektrokimyoviy ekvivalentlikni topish.	$k = \frac{1}{F}\cdot\frac{M_r}{n}$
89.	**Elektrolitdan o'tayotgan umumiy tok**	$I = I^+ + I^-$
90.	*Faradeyning*— birlashgan qonun.	$m = \frac{1}{F}\cdot\frac{M_r}{n}\cdot k$
91.	***Dissotsiatsiyalanish darajasi***	$\beta = \frac{n}{n_0}$
92.	Metallarda asosoy zaryad tashuvchilar.	*elektronlar*
93.	Yarimo'tkazgichlarda asosoy zaryad tashuvchilar.	*kovaklar (teshiklar) va elektronlar*

94.	Vakumdan elektr toki o'tganda asosoy zaryad tashuvchilar.	*elektronlar*
95.	Suyuqliklarda asosoy zaryad tashuvchilar.	*musbat va manfiy ionlar*
96.	Gazlarda asosoy zaryad tashuvchilar.	*musbat va manfiy ionlar va elektronlar*
97.	Yarimo'tkazgichda akseptor aralashma bor. Bu qanday hosil qilinadi, asosiy zaryad tashuvchi, o'tkazuvchanlik turi.	*IV+III, kovak (teshik) , p- tur*
98.	Yarimo'tkazgichda donor aralashma bor. Bu qanday hosil qilinadi, asosiy zaryad tashuvchi, o'tkazuvchanlik turi.	*IV+V, elektron , n - tur*
99.	Vakumda elektr toki elektron tezligini topish formulasi	$\vartheta = \sqrt{\frac{2eU}{m_e}}$
100.	Tokli yassi konturning magnit momenti	$P_m = IS_0$
101.	Tokli yassi konturga ta'sir etuvchi kuch momenti	$M = IS_0 B\sin\alpha$ $M = P_m B\sin\alpha$
102.	To'gri tokni magnit induksiyasi	$B = \frac{\mu\mu_0}{2\pi}\frac{I}{R}$
103.	To'gri tokni magnit maydon kuchlanganligi	$H = \frac{1}{2\pi}\frac{I}{R}$
104.	Aylana tokning magnit induksiyasi	$B = \mu\mu_0\frac{I}{2R}$
105.	**Bio-Savar-Laplas qonuni**	$\Delta B = \frac{\mu\mu_0}{4\pi}\cdot\frac{I\Delta l}{r^2}sin\alpha$
106.	Aylana tokning magnit maydon kuchlanganligi	$H = \frac{I}{2R}$
107.	Solenoidning magnit induksiyasi ;	$B = \mu\mu_0 I_n = \mu\mu_0 I\frac{N}{l}$
108.	Solenoidning magnit maydon kuchlanganligi	$H = I\frac{N}{l}$
109.	Amper kuchi	$F_A = B\cdot I\cdot l\sin\alpha$
110.	Lorens kuchi.	$F = q\cdot\vartheta\cdot B\sin\alpha$
111.	Zarryadli zarrachani bir jinsli magnit maydonda Lorens kuchi ta'sirida aylanish radiusi	$R = \frac{m\cdot\vartheta}{\lvert q_0\rvert\cdot B}$
112.	Zarryadli zarrachani bir jinsli magnit maydonda Lorens kuchi	$T = \frac{2\pi m}{\lvert q_0\rvert\cdot B}.$

	ta’sirida aylanish davri	
113.	Zarryadli zarrachani bir jinsli magnit maydonga α burchak ostida kirib kelganda vintsimon traektoriyaning qadam uzunligi	$d = \frac{2\pi m}{\lvert q_0 \rvert \cdot B}\vartheta \cdot \cos\alpha$
114.	Parallel o’zgarmas toklarning o’zaro ta'siri. Bu ta'sirni Amper aniqlagan.	$F = \frac{\mu\mu_0}{4\pi}\frac{2I_1 \cdot I_2}{r_0} \cdot \Delta l$
115.	Modda maydonni necha marta ko’chaytirishi yoki susaytirishini ko’rsatuvchi kattalik — *muhitning magnit kirituvchanligi*	$\mu = \frac{B}{B_0}$
116.	*diamagnetiklar* (vismut, qo’rg’oshin).	$\mu < 1$
117.	*Paramagnetiklar* (aluminiy, magnit)	$\mu > 1$
118.	*Ferromagnetiklar* (temir, nikel)	$\mu >> 1$
119.	Magnit oqimi. Formulasi va birligi	$\Phi = B \cdot S\cos\alpha$ $[\Phi]$ =1 T·1 m^2=l Wb (veber).
120.	Induktivlik. Formulasi va birligi	$L = \frac{\Phi}{I}$; $[L]$ =l H (genri)
121.	Solenoid induktivligi	$L = \mu\mu_0\frac{N^2}{l}S$
122.	Induktivlik g’altagi ketma-ket ulanganda	$L=L_1+ L_2$
123.	Induktivlik g’altagi parallel ulanganda	$L = \frac{L_1 \cdot L_2}{L_1 + L_2}$
124.	Magnit maydon energiyasi (3 ta formulasi)	$W_M = \frac{LI^2}{2}$, $W_M = \frac{\Phi I}{2}$, $W_M = \frac{\Phi^2}{2L}$
125.	Magnit maydon energiya zichligi	$W_M = \frac{\Delta W}{\Delta V} = \frac{1}{2}\frac{B^2}{\mu_0\mu}$
126.	Elektromagnit induksiya qonuni	$E = -\frac{\Delta\Phi}{\Delta t}$
127.	Magnit maydonida harakatlanayotgan o’tkazgichda hosil bo’lgan induksiya E.Yu.K	$E_{ind} = B \cdot l \cdot \vartheta \cdot \sin\alpha$
128.	Fuko toki	$I_f = \frac{\varepsilon_i}{R}$
129.	Elektromagnit induksiya qonuni n ta o’ram bo’lsa	$E = -n\frac{\Delta\Phi}{\Delta t}$
130.	Aylanuvchi ramkada hosil bo’lgan E.Yu.K	$E_{ind} = N\omega \cdot B \cdot S \cdot \sin\omega t$ $E_{ind} = E_{\max} \cdot \sin\omega t$
131.	Aylanuvchi ramkada hosil bo’lgan E.Yu.K ni maksimal qiymati.	$E_{\max} = \omega \cdot B \cdot S$
132.	O’zinduksiya E.Yu.K	$E_{ind} = -L\frac{\Delta I}{\Delta t}$
133.	Tebranishlar davri (Tomson formulasi). Elektr tebranish konturi	$T = 2\pi\sqrt{LC}$

134.	Elektr tebranish konturi chastotasi	$\nu = \frac{1}{2\pi\sqrt{LC}}$
135.	Elektr tebranish konturi siklik chastotasi	$\omega = \frac{1}{\sqrt{LC}}$
136.	Kondensatordagi kuchlanishni maksimal qiymati	$U_{max} = \omega \cdot LI_0$
137.	Tebranish konturdagi energiyaning saqlanish qonuni formulalari.	$\frac{LI_m^2}{2} = \frac{q_m^2}{2C}$, $\frac{LI_m^2}{2} = \frac{CU_m^2}{2}$
138.	Tebranish konturidagi tokning maksimal qiymati.	$I_m = \frac{q_m}{\sqrt{LC}}$, $I_m = \sqrt{\frac{C}{L}} \cdot U_m$, $I_m = q_m \cdot \omega$
139.	Tebranish konturidagi kuchlanishning maksimal qiymati.	$U_m = \frac{q_m}{C}$, $U_m = I_m\sqrt{\frac{L}{C}}$
140.	Tebranish konturidagi zaryadning maksimal qiymati.	$q_m = I_m \cdot \sqrt{LC}$, $q_m = \frac{I_m}{\omega}$, $q_m = CU_m$
141.	Tebranish konturdagi zaryad o'zgarishi	$q = q_m cos\omega_0 t$
142.	Tebranish konturdagi tok kuchi o'zgarishi	$i = I_m \cos(\omega_0 t + \varphi)$
143.	Tebranish konturdagi kuchlanish o'zgarishi	$u = u_m \cos(\omega_0 t + \varphi)$
144.	Elektromagnit to'lqinlarni muhitda tarqalish tezligi	$\vartheta = \frac{c}{\sqrt{\varepsilon\mu}}$
145.	Elektromagnit to'lqin maydonining energiyasi zichligi	$\omega = \frac{E \cdot B}{\vartheta \cdot \mu_0\mu}$
146.	Elektromagnit to'lqin intensivligi;	$I = \bar{\omega}\vartheta = \frac{\bar{E}\cdot\bar{B}}{\mu_0\mu}$, $I = \frac{\Delta W}{S\Delta t}$ $I = \frac{\Delta W}{4\pi\Delta t} \cdot \frac{1}{R^2}$, $I \sim E^2$
147.	O'zgaruvchan tok kuchining oniy qiymati	$i = I_m \cdot \sin\omega t$ $i = I_m \cdot \sin(\omega t + \varphi_0)$
148.	O'zgaruvchan tok kuchlanishining oniy qiymati	$u = U_m \cdot \sin(\omega t + \varphi_0)$
149.	O'zgaruvchan tok kuchlanishining ta'sir etuvchi qiymati	$U_t = \frac{U_{\max}}{\sqrt{2}}$
150.	O'zgaruvchan tok kuchining samarador qiymati	$I_{eff} = \frac{I_{\max}}{\sqrt{2}}$
151.	O'zgaruvchan tok quvvati	$P = \frac{I_m U_m}{2}$, $P = \frac{I_m^2 R}{2}$, $P = \frac{U_m^2}{2R}$
152.	Induktiv qarshilik.	$X_L = \omega L$
153.	Induktiv g'altakli o'zgaruvchan tok zanjirida tok kuchi va kuchlanish orasidagi bog'lanish	$U_m = I_m \cdot \omega L$
154.	Sig'im qarshilik	$X_c = \frac{1}{\omega c}$
155.	Kondensatorli o'zgaruvchan tok zanjirida tok kuchi va kuchlanish orasidagi bog'lanish	$I_m = U_m \cdot \omega \cdot C$
156.	Ketma – ket ulangan R , L va C dan iborat o'zgaruvchan tok zanjirida tok kuchi.	$I = I_R = I_C = I_L$

157.	Ketma – ket ulangan *R* , *L* va *C* dan iborat o'zgaruvchan tok zanjirida tok kuchlanishi.	$U = \sqrt{U_R^2 + (U_L - U_C)^2}$
158.	Parallel ulangan *R* va *C* dan iborat o'zgaruvchan tok zanjirida tok kuchi.	$I = \sqrt{I_R^2 + I_C^2}$
159.	To'la qarshilik.	$Z = \sqrt{R^2 + (X_L - X_C)^2}$
160.	Tok kuchlanishdan faza bo'yicha orqada qolish sharti.	$X_L > X_C$
161.	Tok kuchlanishdan faza bo'yicha oldinda bo'lish sharti.	$X_L < X_C$
162.	Ketma – ket ulangan *R* , *L* va *C* dan iborat o'zgaruvchan tok zanjirida tok va kuchlanish orasidagi faza farqi.	$\Delta\varphi = arctg\dfrac{X_L - X_C}{R}$ $\Delta\varphi = arctg\dfrac{\omega L - 1/\omega C}{R}$
163.	Rezonans sharti	$\omega_{o'z.t.ch} = \frac{1}{\sqrt{LC}}$, $X_L = X_C$, $Z_{min} = R$, $\Delta\varphi = 0$
164.	O'zgaruvchan tok quvvati (reaktiv elementlar bo'lsa)	$P = I_s \cdot U_s \cos\varphi$, $P = \frac{1}{2} I_m \cdot U_m \cos\varphi$
165.	O'zgaruvchan tok (reaktiv elementlar bo'lsa) quvvat koeffisienti.	$\cos\varphi = R/\sqrt{R^2 + (X_L - X_C)^2}$, $\cos\varphi = R/Z$, $\cos\varphi = \frac{2P}{I_m U_m}$, $\cos\varphi = \frac{P}{I_t U_t}$
166.	Transformasiya koeffisienti. (3ta formula)	$k = \frac{U_1}{U_2}$, $k = \frac{N_1}{N_2}$, $k = \frac{I_2}{I_1}$
167.	Transformatorning F.I.K.	$\eta = \frac{P_2}{P_1} \cdot 100\%$, $\eta = \frac{I_2 U_2}{I_1 U_1} \cdot 100\%$
168.	Radiolokatsiya (radar) yordamida biror obyektgacha bo'lgan masofani aniqlash	$R = \dfrac{c \cdot \Delta t}{2}$
169.	Radiolokatsiya (radar) yordamida biror obyektgacha bo'lgan masofani aniqlash. (Δt vaqtda N ta impuls yuborilsa).	$R = \dfrac{c \cdot \Delta t}{2N}$

OPTIKA

	Yorug'lik muhitlardagi tezligi	$\vartheta_{muh.} = \frac{c}{n}$, $\vartheta = \lambda \cdot v$
2.	Yorug'lik bir muhitdan ikkinchi muhitga o'tganda tushish burchagi α va sinish burchagi β orasida bog'lanish. (Sindirish ko'rsatkichi orqali)	$\boldsymbol{n_{2,1} = \frac{\sin\alpha}{\sin\beta}}$, $\boldsymbol{\frac{n_2}{n_1} = \frac{\sin\alpha}{\sin\beta}}$
3.	Yorug'lik bir muhitdan ikkinchi muhitga o'tganda tushish burchagi α va sinish burchagi β orasida bog'lanish. (tezlik va to'lqin uzunligi orqali)	$\boldsymbol{\frac{\lambda_1}{\lambda_2} = \frac{\sin\alpha}{\sin\beta}}$, $\boldsymbol{\frac{\vartheta_1}{\vartheta_2} = \frac{\sin\alpha}{\sin\beta}}$
4.	d qalinlikdagi parallel plastinada nurning siljishi.	$x = \dfrac{d\sin(\alpha - \beta)}{\cos\beta}$
5.	Yorug'lik nuri muhitdan vakuumga o'tganda to'la qaytishning chegaraviy burchagi.	$\sin\alpha_0 = \dfrac{1}{n}$

6.	Yorug'lik nuri n_1 muhitdan n_2 muhitga o'tganda to'la qaytishning chegaraviy burchagi. ($n_1>n_2$)	$\sin\alpha_0 = \frac{n_2}{n_1}$
7.	Muhitni nur sindirish ko'rsatkichi.	$n = \sqrt{\varepsilon\mu}$
8.	Yorug'lik to'lqini chastotasi	$v = \frac{c}{\lambda}$
9.	Yorug'lik to'lqini uzunligi	$\lambda = \frac{c}{v}$
10.	Ikki to'lqinni kogorentlik sharti.	$v_1 = v_2 \quad \Delta\varphi = const$
11.	To'lqinlar bosib o'tgan yo'llari farqi.	$\Delta l = l_2 - l_1$
12.	Interferension kuchaytirish (max) sharti. Natijaviy amplituda.	$\Delta l = 2k\frac{\lambda}{2} = k\lambda, \qquad A_n = 2a$
13.	Interferension susaytirish (min) sharti. Natijaviy amplituda.	$\Delta l = (2k+1)\frac{\lambda}{2}, \qquad A_n = 0$
14.	**Yorug'lik to'lqinlarini superpozitsiya prinsipi; $x_1 = A_1 cos(\omega t + \varphi_1)$ va $x_2 = A_2 cos(\omega t + \varphi_2)$**	$A = \sqrt{A_1^2 + A_2^2 + 2A_1A_2 cos(\varphi_2 - \varphi_1)}$
15.	**Agar to'lqin intensivligi amplitude kvadratiga proporsionalligini e'tiborga olsak, u holda**	$I = I_1 + I_2 + 2\sqrt{I_1 I_2}\, cos(\varphi_2 - \varphi_1)$
16.	**Yo'lning optik uzunligi:** ***Bu yerda: s – to'lqinning berilgan muhitda o'tgan yo'lining geometric uzunligi, n – muhitning absolyut nur sindirish ko'rsatgichi.***	$L = n\,s$
17.	**Biri n_1 sindirish ko'rastkichli muhitda s_1 yo'l o'tgan, boshqasi esa n_2 sindirish ko'rastkichli muhitda s_2 yo'l o'tgan, ikki to'lqin yo'llarining optik uzunliklari farqi Δl , va fazalar farqi $\Delta\varphi$:** ***Bu yerda λ va λ_0 - muhitdagi va bo'shliqdagi to'lqin uzunliklari, φ_1 va φ_2 1- va 2- to'lqinlarning boshlang'ich fazalari.***	$\Delta l = L_2 - L_1 = n_2 s_2 - n_1 s_1;$ $\Delta\varphi = \frac{2\pi}{\lambda}(s_2 - s_1) + \varphi_2 - \varphi_1$ $\Delta\varphi = \frac{2\pi}{\lambda_0}(L_2 - L_1) + \varphi_2 - \varphi_1$
18.	**Monoxromatik yorug'lik to'lqini tenglamasi ($\underset{E}{\rightarrow}$ vektori proeksiyasining vaqt t va o'tilgan yo'l s ga bog'lanishi.** ***Bu yerda: E_0 – E ning amplitudasi, φ to'lqinning boshlang'ich fazasi (to'lqin fazasi $2\pi\nu t - \frac{2\pi}{\lambda}s + \varphi$ ning s=0 nuqtadagi va t=0 paytdagi qiymati)***	$E = E_0 \cos\left(2\pi\nu t - \frac{2\pi}{\lambda}s + \varphi\right)$
19.	**Yorug'lik oqimi** W – yorug'lik energiyasi, t – vaqt , S - yuza	$\Phi = \frac{W}{S \cdot t}$
20.	**Sfera uchun fazoviy burchak** r – manbadan yoritilayotgan sirtgacha masofa	$\Delta\Omega = \frac{\Delta S}{r^2}$
21.	**Yorug'lik kuchi**	$I = \frac{\Phi}{\Delta\Omega}$
22.	**Yoritilganlik**	$E = \frac{\Phi}{\Delta S}$

23.	**Ravshanlik**	$B = \frac{I}{\Delta S}$
24.	**Yorug'likning birinchi qonuni**	$\Phi_0 = 4\pi I; \quad E_0 = \frac{I}{r^2}$
25.	**Yorug'likning ikkinchi qonuni** α – yorug'likning sirtga tushish burchagi (normal bilan)	$E = E_0 \cdot cos\alpha$
26.	Yorug'lik Intensivligi (N quvvat)	$I = \frac{N}{S}, \quad I = \frac{W}{S\,t}$
27.	Yorug` halqalar radusi	$r_m = \sqrt{(2m-1)\frac{\lambda_0 R}{2}}, \quad r_m = \sqrt{(2m+1)\frac{\lambda_0 R}{2n}}$
28.	Qorong`u halqalar radiusi.	$r_m = \sqrt{m\lambda_0 R}, \quad r_m = \sqrt{mR\frac{\lambda_0}{n}}$
29.	Absolyut sindirish ko'rsatkichi *n* bo'lgan shaffof moddadan tayyorlangan yupqa pardaabsolyut sindirish ko'rsatkichlari n_1 *va* n_2 bo'lgan muhitlarni o'rtasida bo'lsa, Pardaga γ to'lqin uzunlikli yorug'lik nuri α burchak ostida tushganida, undan qaytgan nurlarning maksimum va minimum bo'lishi uchun pardaning qalinligini d topish.	max $d = \frac{k\,\lambda}{2\sqrt{n^2 - n_1^2 sin^2\alpha}}$ min $d = \frac{\lambda\left(k-\frac{1}{2}\right)}{2\sqrt{n^2 - n_1^2 sin^2\alpha}}$
30.	Difraksion panjara doimiysi (davri)	$d = \frac{l}{N}$
31.	Difraksiya kuzatish uchun to'siq yoki tirqish o'lchamlari uchun shart.	$d \le \lambda$
32.	Difraksiani maksimum sharti	$d\sin\varphi = \mathrm{k} \cdot \lambda$
33.	Bosh maksimumlarni eng katta tartibi.	$k_{max} = \left[\frac{d}{\lambda}\right]$
34.	Bosh maksimumlar soni	$N = 2\left[\frac{d}{\lambda}\right] + 1$
35.	Difraksion panjara va ekran orasidagi masofa bog'lanishi.	$\lambda = \frac{d \cdot X}{k\sqrt{L^2 + X^2}}, \quad \lambda = \frac{d \cdot X}{kL}$
36.	(Dispersiya) Nurning sindirish ko'rsatkichi.	$n_Q < n_Z < n_S < n_Y < n_H < n_K < n_B$
37.	nurning to'lqin uzunligi.	$\lambda_Q > \lambda_Z > \lambda_S > \lambda_Y > \lambda_H > \lambda_K > \lambda_B$
38.	nurning energiyasi.	$E_Q < E_Z < E_S < E_Y < E_H < E_K < E_B$
39.	nurning sinish burchagi.-	$\alpha_Q < \alpha_Z < \alpha_S < \alpha_Y < \alpha_H < \alpha_K < \alpha_B$
40.	nurning tarqalish tezligi.	$\vartheta_Q > \vartheta_Z > \vartheta_S > \vartheta_Y > \vartheta_H > \vartheta_K > \vartheta_B$
41.	Yorug'lik qutblanishi. Malyus qonuni	$I = I_0 cos^2\varphi$
42.	Qutblantirgichdan o'tgan nur intensivligi.	$I = \frac{I_0}{2}$
43.	**Buger qonuni**	$I = I_0 e^{\alpha x}$
44.	**Absolyut qora jismning nur yutish qobiliyati**	$E_q = \sigma T^4 \quad \sigma = 5{,}67 \cdot 10^{-8} \ \frac{W}{m^2 \cdot K^2}$
45.	Inersial sanoq sistemasiga nisbatan harakatlanayotgan jismning chiziqli o'lchamlari harakat yo'nalishida kamayadi.	$l = l_0\sqrt{1 - \frac{\vartheta^2}{c^2}}$

46.	Harakatlanuvchi sistemada vaqt o'tishi sekinlashadi.	$t = \frac{t_0}{\sqrt{1-\frac{\vartheta^2}{c^2}}}$
47.	Inersial sanoq sistemasiga nisbatan harakatlanayotgan jismning massasi ortadi.	$m = \frac{m_0}{\sqrt{1-\frac{\vartheta^2}{c^2}}}$
48.	Inersial sanoq sistemasiga nisbatan harakatlanayotgan jismning impulsi ortadi.	$\vec{p} = \frac{m_0\vec{\vartheta}}{\sqrt{1-\frac{\vartheta^2}{c^2}}}$
49.	Tezliklarni qo'shishning relativistik qonuni	$\vartheta = \frac{\vartheta_1+\vartheta_1}{1+\frac{\vartheta_1\vartheta_2}{c^2}}$ yoki $\vartheta_2 = \frac{\vartheta-\vartheta_1}{1-\frac{\vartheta_1\vartheta}{c^2}}$
50.	Massa va energiya orasidagi bog'lanish. Jismning tinch holatdagi energiyasi.	$E_0 = m_0c^2$
51.	Zarrachaning to'la energiyasi	$E_t = mc^2 = \frac{m_0c^2}{\sqrt{1-\frac{\vartheta^2}{c^2}}}$, $E_t = E_O + E_K$
52.	Zarrachaning kinetik energiyasi.	$E_k = E - m_0c^2 = m_0c^2\left(\frac{1}{\sqrt{1-\frac{\vartheta^2}{c^2}}} - 1\right)$
53.	Foton impulsi.	$p = \frac{h\nu}{c}$, $p = \frac{E}{c}$, $p = \frac{h}{\lambda}$
54.	Yorug'lik bosimi qora jism uchun	$P = \frac{I}{c}$, $P = \frac{W}{Sc\Delta t}$, $P = \frac{N}{S\cdot c}$
55.	Yorug'lik bosimi oq jism uchun (N- quvvat)	$P = 2\frac{I}{c}$, $P = 2\frac{W}{Sc\Delta t}$, $P = 2\frac{N}{S\cdot c}$
56.	**Yorug'lik bosimi** R – qaytarish koeffisiyenti	$P = \frac{E}{c}(1+R)$ $P = \frac{I}{c}$
57.	**Nur yutilish koeffisiyenti** *I_1 va I_2 birinchi va ikkinchi muhitdagi nur intensivligi. d Yorug'lik o'tayotgan shaffof muhit qalinligi*	$k = \frac{ln\frac{I_1}{I_2}}{d}$
58.	Foton massasi.	$m_0 = \frac{h\nu}{c^2}$, $m_0 = \frac{E}{c^2}$ $m = \frac{h}{c\lambda}$
59.	Jism ΔT temperaturada qizdirilsa, uning massasi Δm ga ortadi.	$\Delta m = \frac{C_s m\cdot\Delta T}{c^2}$
60.	Prujina Δx siqilsa uning massasi Δm ga ortadi.	$\Delta m = \frac{k\cdot\Delta x^2}{2c^2}$
61.	Fotoeffekt uchun Eynshteyn formulasi.	$h\nu = A + \frac{m\vartheta^2}{2}$, $h\nu = A + eU_t$, $(eU_t = \frac{m\vartheta^2}{2})$
62.	Fotoeffekt uchun qizil chegara; (chastota bo'yicha)	$\nu_q \geq \frac{A}{h}$
63.	Fotoeffekt uchun qizil chegara; (to'lqin uzunligi bo'yicha)	$\lambda_q \geq \frac{hc}{A}$
64.	Linzaning optik kuchi. Birligi. n_l – linza materialining nur sindirish ko'rsatgichi. n_m – linzani o'rab turgan muxitni nur sindirish ko'rsatgichi. n – linza materialining nisbiy nur sindirish ko'rsatgichi. *($n = n_l / n_m$)*	$D = (n_l - 1)\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$ $D = (n_l - n_m)\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$ $D = n_m(n-1)\left(\frac{1}{R_1}+\frac{1}{R_2}\right) = \frac{n_m}{F}$ $[D]$=1/m= 1 dioptriya (dptr).
65.	Yupqa linzani fokus masofasi. n_l – linza materialining nur sindirish ko'rsatgichi. n_m	$\frac{1}{F} = (n_l - 1)\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$

	– linzani o'rab turgan muxitni nur sindirish ko'rsatgichi. *n* – linza materialining nisbiy nur sindirish ko'rsatgichi. *(n= n_l / n_m)*	$\frac{1}{F}=(n_l-n_m)\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$ $\frac{1}{F}=n_m(n-1)\left(\frac{1}{R_1}+\frac{1}{R_2}\right)$ $F=\frac{n_m}{n_l-n_m}\frac{R_1R_2}{R_1+R_2}$ $F=\frac{1}{n-1}\frac{R_1R_2}{R_1+R_2}=\frac{n_m}{D}$
66.	Linzaning optik kuchi. (fokus masofa orqali)	$D=\frac{1}{F}$
67.	Linza formulasi. ± larni izohlang	$\pm\frac{1}{F}=\frac{1}{d}\pm\frac{1}{f}$ $F=\frac{f\pm d}{fd}$
68.	Linzanlng chiziqli kattalashtirishi	$\Gamma=\frac{H}{h}$, $\Gamma=\frac{f}{d}$
69.	Lupani kattalashtirishi.	$k=\frac{L_0}{F}$, (Taqribiy hisoblar uchun F<<L holda o'rinli)
70.	Lupani optimal kattalashtirishi	$k=\frac{L_0}{F}+1$
71.	**O'zaro α burchak ostida tushirilgan 2 ta ko'zgu orasidagi nuqtaning tasvirlar soni.**	$N=\frac{360}{\alpha}=\frac{2\pi}{\alpha}$
72.	**Fotoaparatda d_1 masofadan suratga olinagan jism tasvirining o'lchami h_1 , d_2 masofada esa h_2 bo'lsa, obyektiv linzaning fokus masofasi**	$F=\frac{h_1d_1-h_2d_2}{h_1-h_2}$
73.	**Mikroskopni kattalashtirishi**	$k=\frac{d_0L}{F_1F_2}$
74.	**Qavariq ko'zgu uchun formula** ***(qavariq ko'zgu sochuvchi linza qonuniyatiga mos keladi)***	$-\frac{1}{F}=\frac{1}{d}-\frac{1}{f}$
75.	**Botiq ko'zgu uchun formula** ***(botiq ko'zgu yig'uvchi linza qonuniyatiga mos keladi)***	$\frac{1}{F}=\frac{1}{d}\pm\frac{1}{f}$ *+d>F* *- d<F*
76.	**Ko'zguning fokus masofasini uning geometrik o'lchamiga bog'liqligi.**	$F=\frac{R}{2}$
77.	Yonma-yon turgan ikki linzani umumiy optik kuchi.	$D=D_1+D_2$
78.	Yonma-yon turgan ikki linzani umumiy fokus masofasi.	$\frac{1}{F}=\frac{1}{F_1}+\frac{1}{F_2}$
79.	Ko'zoynakni optik kuchi.	$D=4-\frac{1}{d}$ *d – nuqsonli ko'zni eng yaxshi ko'rish masofasi*
80.	Nurlanib chiqan yoki yutilgan nur chastotasi.	$\boldsymbol{\nu=\frac{E_k-E_n}{h}}$
81.	*n* – orbitadagi tezlik	$\vartheta_1=\frac{e^2}{2\varepsilon_0hn}=\frac{\vartheta_1}{n}$, $\vartheta_n=\frac{\vartheta_1}{n}$, $\vartheta_1=\frac{e^2}{2\varepsilon_0h}=2188\frac{km}{s}$
82.	*n* — orbitadagi elektronning aylanish radiusi.	$r_n=\frac{nh}{2\pi m\vartheta}$
83.	α- yemirilish.	${}^{A}_{Z}X\rightarrow{}^{A-4}_{Z-2}Y+{}^{4}_{2}He$ Yadro 2e ga teng musbat zaryadni yo'qotadi. Massasi 4 atom massa birligiga kamayadi. Natijada element davriy sistemada ikkita katak oldinga siljiydi. *M:* ${}^{210}_{84}Po\rightarrow{}^{206}_{86}Pb+{}^{4}_{2}He$

84.	β- yemirilishi.	${}^{A}_{Z}X \rightarrow {}^{A}_{Z+1}Y + {}^{0}_{-1}e$. Yadro zaryadi 1e musbat zaryadga ortadi, massasi o'zgarmaydi. Natijada element davriy sistemada bitta katak orqaga siljiydi. *M:* ${}^{214}_{82}Pb \rightarrow {}^{214}_{83}Y + {}^{0}_{-1}e$
85.	β^+ - yemirilish	yadrolarning β^+ yemirilishda yadroning massasi o'zgarmaydi, atom nomeri bir birlikka kamayadi. Ya'ni davriy sistema boshiga qarab bir katak siljiydi. ${}^{A}_{Z}X \overset{\beta^+}{\rightarrow} {}^{A}_{Z-1}Y + {}^{0}_{+1}e$ ${}^{214}_{82}Pb \overset{\beta^+}{\rightarrow} {}^{214}_{81}Bi + {}^{0}_{+1}e$
86.	λ - yemirilish.	Yadro zaryadi va massasini o'zgartirmaydi.
87.	t vaqt davomida yemirilmay qolgan yadrolar soni.	$N_q = N_0 \cdot 2^{-\frac{t}{T}}$
88.	t vaqt davomida yemirilgan yadrolar soni.	$N_{yem} = N_0\left(1 - 2^{-\frac{t}{T}}\right)$
89.	Yarim yemirilish davri T va o'rtacha yashash vaqti τ o'zaro bog'lanishi.	$T = \tau\, ln2 \quad T \approx 0{,}69\tau \quad \tau = 1{,}44T$
90.	Atom yadrolarining bog'lanish energiyasi.	$E_{bog'} = \Delta Mc^2$ $E_{bog'} = \left(Zm_p + (A-Z)m_n - M_{ya}\right)c^2$
91.	Massa defekti	$\Delta M = Zm_p + Nm_n - M_{ya}$
92.	Solishtirma bog'lanish energiyasi.	$E_{SB} = \frac{E_{bog'}}{A}$
93.	Proton	${}^{1}_{1}p$
94.	Neytron	${}^{1}_{0}n$
95.	Elektron	${}^{0}_{-1}e$
96.	Vodorod	${}^{1}_{1}H$
97.	Pozitron	${}^{0}_{1}e$
98.	Neytrino	${}^{0}_{0}v$
99.	Foton	${}^{0}_{0}v$
100.	Deyteriy	${}^{2}_{1}H$
101.	Tritiy (Triton)	${}^{\mathbf{3}}_{\mathbf{1}}\boldsymbol{H}$
102.	α zarra yoki Geliy yadrosi.	${}^{4}_{2}He$
103.	Yadro yoqilg'si	Uran izotoplari va Plutoniy $({}^{235}_{92}U; {}^{238}_{92}U; {}^{239}_{94}U; {}^{239}_{94}Pu)$
104.	Neytronlarning sekinlatkich.	og'r suv, grafit
105.	Issiqlikni tashuvchi	suv, suyuq natriy.
106.	Reaksiyani boshqaruvchi qurulma.	*kadmiy, bor*.
107.	Himoya.	*beton, qo'rg'oshin, temirdan qobiq*
108.	Yadroviy reaksiya doimiy bo'lish sharti. (k - Bo'linishning keyingi aktidagi neytronlar sonining oldingi neytronlar soniga nisbati ***ko'payish koeffitsiyentpi*** deyiladi.)	$K = 1$
109.	Yadroviy reaksiya so'nish sharti.	K<1
110.	Yadroviy reaksiya portlash sharti.	K>1