Third-generation periodic table of elements©

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Background -

Implicit format and burdensome contents such as element symbols and group numbers of IUPAC periodic table, also a compulsory route followed to reach at valence shell for each element under study; are problematic for a learner, syllabus framer and even IUPAC.

Method -

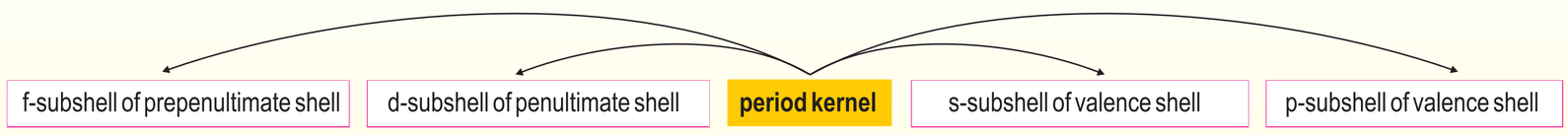
For this purpose,

1) Simple and informative code for each element by embodying available subshells and observed valence electronic configuration of that element was created and arranged in the form of aufbau principle.
2) A combination of a code of a particular element with those of inert gases previous to it , yields electronic configuration of that element.
3) Simple and informative code for each group by embodying the expected valence electronic configuration of a particular element, which is common to that group and longest period was also created.

Periodic Table -

Decoding codes –

1) Each element code consists of period kernel (P) and flanked electrons of various sub-shells of that element.



Punctuation Mark in a code	Indication
Inverted comma	filled subshell
Hyphen	presence of d-subshell of penultimate shell
Comma	presence of both d-subshell and f-subshell of penultimate and pre-penultimate shell.

2) Each group code consists of group kernel (G) and flanked electrons of various sub-shells.

Addition of all flanked electrons in a group code denotes group number of that group.

P/G →	G1	G'	"G'1	"G'2	"G'3	"G'4	"G'5	"G"	1G'	'2G'	'3G'	'4G'	'5G'	'6G'	'7G'	'8G'	'9G'	"G'
Uni (U) [118]	U1	U'																
Bi (B) [86]	,B1 francium	,B' radium	"B'1 nihonium	"B'2 ferovium	"B'3 moscovium	"B'4 livermonium	"B'5 tenessine	"B" oganesson										
Tri (T) [54]	,T1 caecium	,T' barium	"T'1 thallium	"T'2 lead	"T'3 bismuth	"T'4 polonium	"T'5 astatine	"T" radon	,1B' actinium	'2B' rutherfordium	'3B' dubnium	'4B' seaborgium	'5B' bohrium	'6B' hassium	'7B' meitnerrium	'9B1 darmstadtium	"B1 roentgenium	"B' copernicium
Quad (Q) [36]	-Q rubidium	-Q' strontium	'Q'1 indium	'Q'2 tin	'Q'3 antimony	'Q'4 tellurium	'Q'5 Iodine	'Q" xenon	,1T' lanthanum	'2T' hafnium	'3T' tantalum	'4T' tungsten	'5T' rhenium	'6T' osmium	'7T' iridium	'9T1 platinum	"T1 gold	"T' mercury
quad (q) [18]	-q1 potassium	-q' calcium	'q'1 gallium	'q'2 germanium	'q'3 arsenic	'q'4 selenium	'q'5 bromine	'q" krypton	1Q' Yttrium	2Q' zirconium	4Q1 niobium	5Q1 molybdenum	5Q' technetium	7Q1 ruthenium	8Q1 rhodium	'Q palladium	'Q1 silver	'Q' cadmium
tri (t) [10]	t1 sodium	t' magnesium	t'1 aluminum	t'2 silicon	t'3 phosphorus	t'4 sulfur	t'5 chlorine	t" argon	1q' scandium	2q' titanium	3q' vanadium	5q1 chromium	5q' manganese	6q' iron	7q' cobalt	8q' nickel	'q1 copper	'q' zinc
bi (b) [2]	b1 lithium	b' beryllium	b'1 boron	b'2 carbon	b'3 nitrogen	b'4 oxygen	b'5 fluorine	b" neon										
uni (u) [0]	u1 hydrogen	u' helium																

1,1G'	2,1G'	3,1G'	4,1G'	5,1G'	6,1G'	7,1G'	8,1G'	9,1G'	10,1G'	11,1G'	12,1G'	13,1G'	'1G'
,2B' thorium	2,1B' protactium	3,1B' uranoium	4,1B' neptinium	6,B' plutonium	7,B' americium	7,1B' curium	9,B' berkellium	10,B' californium	11,B' einstenium	12,B' fermium	13,B' mendelevium	',B' nobelium	'1B' lawrencium
1,1T' cerium	3,T' praseodymium	4,T' neodymium	5,T' promethium	6,T' samarium	7,T' europium	7,1T' gadolinium	9,T' terbium	10,T' dysprosium	11,T' holmium	12,T' erbium	13,T' thulium	',T' ytterbium	'1T' lutetium

Period kernel (u,b,t,q,Q,T,B,U) indicates number of subshells of valence shell

Number in square bracket added to number of flanked electrons to get atomic number of that element.

Example – Chlorine (t'5)

Electronic configuration	u' , b" , t'5
Valence electronic configuration	ts^2 , tp^5, td^0
Atomic number	10^*+2+5+0 = 17

[....*number 10 added to number of flanking electrons for period kernel (t)]

Result -

1) This is the third-generation periodic table(after those arranged by atomic numbers and atomic weights), which is visual representation of terms like periodic table, group, period and block , furthermore order of filling of various subshells of valence shells.
2) Simply decoding each element code yields independent information of that element such as atomic number, position in periodic table and the number of electrons available in various subshells of valence shell.
3) Writing electronic configuration of any element becomes simple and rapid.
4) Two vacant positions at eighth period were automatically created.

Conclusion -

1) Third-generation periodic table is free from any dilemma associated with IUPAC periodic table such as 18 or 32 column format and composition of group 3,
2) This Periodic table being informative could lower the education level for introduction of study of periodic table.

Reference - www.iupac.org