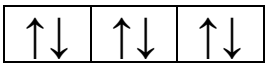
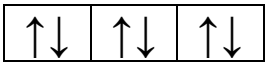
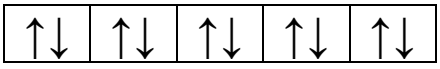
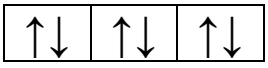
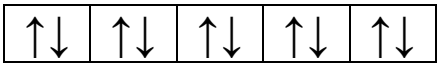
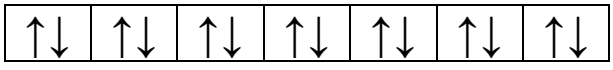
SCH3U

QUANTUM NUMBERS

Principal Quantum Number 'n'	Angular momentum Quantum Number 'l'		Magnetic Moment Quantum Number 'm'	Spin Quantum Number 's' (and number of sub shells)
Size and Energy	Shape		Orientation	Spin
1 to α	0 to (n-1)		(2l + 1) values or -l …..0…..+l	± ½
1	0	1s	0	
2	0	2s	0	
	1	2p	-1, 0 +1	
3	0	3s	0	
	1	3p	-1, 0 +1	
	2	3d	-2,-1,0,+1,+2	
4	0	4s	0	
	1	4p	-1, 0 +1	
	2	4d	-2,-1,0,+1,+2	
	3	4f	-3,-2,-1,0,+1,+2,+3	

SCH3U

ELECTRONIC CONFIGURATION OF ATOMS:

Rules governing the filling up of electrons in the different orbital's of an atom:

ORBITAL'S:

are arranged in the increasing order of energy which is based on Aufbau order and can be verified using the (n+l) rule.

AUFBAU ORDER:

1s, 2s, 2p, 3s, 3p, 4s, 3d, 4p, 5s, 4d, 5p, 6s, 4f, 5d, 6p, 7s

or

$1s^2$, $2s^2$, $2p^6$, $3s^2$, $3p^6$, $4s^2$, $3d^{10}$, $4p^6$, $5s^2$, $4d^{10}$, $5p^6$, $6s^2$, 4f, $5d^{10}$, $6p^6$, $7s^2$

The number of electrons that can be accommodated in an 'orbit' is $2n^2$ where n is the principal quantum number.

PEP OR PAULI'S EXCLUSION PRINCIPLE:

No two electrons in an atom can have all the four quantum numbers alike or an orbital can accommodate a maximum of 2 electrons in an atom.
Example: He

HUND'S RULE OF MAXIMUM MULTIPLICITY:

Electron pairing will not take place in orbital's of the same energy (same sub shell) until each orbital is singly filled.
Example: C, N,

C Z = 6

$1s^2$	$2s^2$	$2p^1_x$	$2p^1_y$	$2p^0_z$
↑↓	↑↓	↑	↑	

N Z = 7

$1s^2$	$2s^2$	$2p^1_x$	$2p^1_y$	$2p^1_z$
↑↓	↑↓	↑	↑	↑

$$\lambda = \frac{h}{mv}$$