(P6a) Effective Nuclear Change (Z)
aribally stroller metals marked service service and trumple
The effective nuclear charge is the net positive charge
experience de by an electron in a polyelectronic atom.
The second secon
Due to shielding effect inner
elections on outer elections valence elections experience
less attractive pull or force from the nucleus. The decrease
in the attractive force decreases the nuclear charge.
ruclear charge, shown by 2*
ruclear change, shown by 2*
All gents in shrapes
$Z^* = Z - \sigma \qquad \text{of if } \sigma = 0$
Z = atomic no of element ON C - DVI
o= screening constant of som
2002 19
Their effective nuclear charge 2* is actual nuclear charge
minus the screening effect caused by electrons.
present between the nucleus and outer electrons.
more the number of electrons between rucleus and outer
etections more will be the magnitude. of and hence the
refections more visit be the magnitude of and hence the magnitude of effective nuclear charge > will decrease
Variation of effective nuclear change en Periodic table:
In periode from left to right
It increases from left to right in a period, in periodictable.
clements of and period.
16 1 BO 1B IC IN 10 1P IND 1
1.30 1.32 2.60 3.25 3.90 4.25 5.70 5.85
periods.
from left 4 might in againsts. The atomic number is
from left to right in periods. The atomic number is increased by one at each next element, and the next
Scanned with CamScanner

ralence electron. with 0.35 and therefore effective nuclear 0.35 = 0.65 from top to Bottom: > group IA

Atomic Radij
Radius of an atom or ion is defined as the distance from the centre of the nucleus to the outermost shell of atom arion.
the centre of the nucleus 1 " and as me distance from
orion' to the ower most shall of whom
The state of the s
In periods from left to right:
The state of the s
The atomic radius decreases have but the
The atomic radius decreases from left to right in period.
Li Be B C N O F
152 111 88 77 .70 66 64
0-1:
Radius decreases because of 2 effects  i) Electrons get pulled in, due to increasing value of resident charge (z), as we more from left to eight in periods ?  greater the value of Z' greater is the contraction in size.
1) Electrons get pulled in, due to increasing volus of rudgez
(harge (2), as we more hom left to right in periods
greater is the contraction in size.
ii) As we more from left to right due to increase in
mutual repulsion and increased screening from he nudear
Charge due to intervening elections
by experiment we came to know that size dicreases
from to to f , it shows that effect (i) predominates over
Libe B C N Of
Atomiclati 152 111 88 77 70 66 64
(pm) is the contract of the co
Fletine 1.3. 1.85 2.60 3:25 3.90 4.55 5.20
nuclear (2)
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electronic 1525 1525 152520 152520 152520 152520 152520 152520 152520
conf.

In group from top to bottom:
The size of Helemonto in a desire of the minutes
The mental in Chicago in the second of the
The same of the sa
This increase in size is not regular as we go down the group but he areas
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Li 152 Mar Affective nuclear charge electronic conf.
N 15 - 25'21
k 231
01 2111
267
Cs 200 10 10 10 10 10 10 10 10 10 10 10 10 1
4 s <sup>2</sup> .3d1°.4p6 5-s <sup>2</sup> -4d1° 5p6
air menero Ponic Rodi; their of the man or man A. ( )
la remared transfer mile all models is reduced
When neutral atom gain or lose electrons, they are converted.
into ione and radii are changed, unha verne
milarile discago au to When datom looses electron
positive ion (cation) is formed prize of cation is always.
smaller Men neutral alom pit is be cause when alom loose election
then electron number decreases and magnitude of nuclear
al and remain the same. So nuclear charge act on fewer.
all change so after them more lightly and hence.
election cloud shrink in size.
election croud since When reutal atom gain election.
his ion is amed sized anion is always argenthen.
a negarire roll as a mo nuclear charge act over
bi call pr. Saint Lesses
its neutral atom, be called sale chron cloud is now
greater number of electrons, so electron cloud is now
election cloud shrink in size.  Nhen neutral atom gain election.  a negative ion is formed size of anion is always larger then.  its neutral atom, because same nuclear charge act over  greater number of elections, so election cloud is now  greater humber of elections, so election in the size.  less trightly held which cause an expansion in the size.

$P_{ij} = P_{ij}$
In periods:
In periode: Tradella an motor formal your to have sell
NO N
for isable chonic series (i.e ions which have same number of.
electrons), ionignadius decreases as nuclear charge
increases; The inneased nuclear charge is acting on same
number of electrone: 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
- 12-5 let mell i c -12 cht many is released.
when I note it was now and I had I noted
Radii C4- N3- 02- p- Nat. Mg 2-1- A13+ si4+
Radii 11260 1711 140 133 951 65 50 40
Maria Alle release for anno 50 mil. subsum more all
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Charge.
In groups:
The presents work place of the work through at
In groups: jonic radius increases, as abonic no increases
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- containing andless desired
The filling is odded in bigger sind 30 orbits robbet
* interest in the contract of

Electron Affinity
to neutral gaseous atom.
to neutral gaseous atom.
to all ourself and
$X(g) + \overline{e} \longrightarrow X^{-}(g) + Energy$
The same production of
example = electron affinity of a H' atom is  -72-8 kJ mol-1, i.e. 72-8 kJ energy is released.  when 1 mole of H atoms combine with 1 mole of electrons to  give 1 mole of H ions.
-72-8 kJ mol-1, i.e 72-8 kJ energy is released.
when I male of it atoms combine with I male of electrone to
the man as relies it is greater the electron affinity
The greater the electron affinity.  The more negative is the Af ratue and greater with energy.  released.
In Periods:
In periods from left to right, size of atom decreases
In periods from left to right, size of atom decreases and their nuclear charge increases; and both these tactors.
favorer increases in electron affinity.
Group 17 elements have.
highest value of electron affinity due to their tendency to acquire an additional electron to form stable actet.
acquire an additional electron to form stable octet.
ing emplement
on right side of periodic table always have tendency to acquire more electrons to complete their ocket, & so they have high electron affinities.
acquire more electrons to complete their ochet, & so they have
high electron affinities
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and be
In f &cl.
Chi lite in Chis mealer due to shong interdedicais
Flection affinity in charged by compact 2p subshell
repulsion in relatively struck
flection affinity in C) is greater due to strong interdectionic repulsion in relatively small & compact 2p substitution on addition of another electron.
in 1 1 1 which
In 'P' election is added in bigger sized 3p orbital which
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	-8	Wiring, (104) 1) d
		easily accomodate additional electron.
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	<u>-In g</u>	roups:
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	_lead	ho a decrease en meir electron affina y races
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1	علا	etron affinities of some Gaseone Atom - : 202000
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		seche organismily of carbon.  In a cepyland curbon in spendentized, there is not dechanged in
Sie		

Ele chrone galivity
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The measure of the ability of an atom in a molecule to athad the shared electron pair loward in itself
In periods:
- Charles and a surface of the surfa
from left to right in periods electronegalisty increases.
· · ·
from top to bottom., electronegativity decreases.
_ trom top to bottom. electronegativity decreases.
the ability of an atom to almost electron depend on the environment of that atom. 2 main factor which determine the almostion of atoms for electrons are.
debroise g mat atom. 2 main factor which
acresmine. me almostion. of atome for electrone are.
i) Charge on atom: — An atom with positive charge
uall attende electrone: more lile "
atom: A negatively channel when a newral.
then a neutral almo
O
Market 12 all all all
11/ Myonouzanon g arom:
Fle dronegaliste. d alon varios with hubridialization
The dronegalinty of atom varies with hybridization:
malhane: with co3 hubidization: (having a Tree
in unreactive: In allevelance cartered in a 23 / s charater)
(32% & change olse) is name a relies of a sp-rybridged.
-lash- nearly to deather
orbible Mate autos. with more s - character are more electronegative.  methane with sp3 hybridization. (having 25% s charater)  is unreactive. In ethylere carbon atom is sp2 hybridized.  (33% s character) is more reactive, showing increased.  electronegativity of carbon.  In acetylere carbon in sp.
Listande Mana mari a de la
In acetylere: carbon is sp.  hybridized., thus 50% s character is most electronegative.

(-9.)
$\rho_{1}$ $\rho_{2}$
The power of an im to that the power of an im to the
11 har week will be to the
- the power of an ion to distort the alles in is called.
its polarizing power and the tendenced of the last
known as its polarie little
the power of an ion to distort the otherion is called:  its polarizing power and the tendency of the ton to distortion is known as its polarizability
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cation anion. Anion polarization covalent Bond
polarizability polarizability
polarize omer son
Thomas to a consider a mentioned of mentioned
2 1 realist degrees and leading to 150
fajaris Rule in mini comment de la
for detection of non polar character between two ions.
i) High charge of cotion or anion
ii) Small size of positive ion
ni) lange size of negative lan
and the state of t
i) high change of cation or anion: - highly changed cation
will exert more polarization on dechon density of anion
and inforeasimore covalence characterini compound.
And highery charged anion get more easily polarized.
Thus polarizing power of cation & polarizability of anion.
increase with horease of the charge of 1 are
ii) Small Hze of cation.
· Juliany read more and dispersion with the preservation
Small sized cation, will have high charge density and so.
it will be able of to distort the electron doud. of anion more
- offictively.
iii) Largesize of anion : - polarizability of anion increases.
usin increase in its size because. its electron doud is not

firmly held by its own nuclear charge and  there can be readily polarized by incoming eations  The periods:  In periods from left to right size of cation decreases.  The periods from left to readily bond formation increases.
In peride:
In peride:
In peride:
In peride: - (-) (-) (-)
In peride:
In peride:
min de greates.
and all bright size of cation decreases.
The party of Front Vol Front 1919
In periods from left to right &12e g. carron occases and so tendercy of coralent bond formation increases
and se removed
example -> Moving from: lithium to Carbon :
Mrough beny liven & boron in second period.
size of cation decreases and tendency of.
conalent bond formation increases
conalint bond formers, modern
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In groups wind a writing to words doith (:
In groups which is united to asia Il more (ii
from top to Bottom. size of eation: increases, so tendency.
d coralent bond formation decreages.
c covaled bond to meaning occupation to man to dell (i
example: 4 tes more polarizing. Than other members
10 11 restance on the distriction are the
objegnoup, meretore rompounde d'ilhium are
and potassium are ionic. Thus lies is covalenties.
and polascium are jorg con praise and and a design and and a design and and a design and a design are a design and a design and a design are a design and a design are a desig
nature unite Mail or kich or arejonic.
2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
In groups, size of anions increases. Mere polarizability increases & Merir compound. become more constent.
increases & their compound. Decome more covally
or han mann production of the second
if call be able to added the election cloud. of amon more
- idadinilia
The second of th
is) horne up of warn :- polarizability of animinouses
to a it fiests mobile di, remende asia di de marrori dica.

Oxidation States:
Oxidation states d'an element can be readily predicted
from the electronic combinatation of atomic
Oxidation states of an element can be readily predicted.  from the electronic configuration of atom.  Oxidation.
states of atom different elemente is due to gain or loss of electron by their atoms. so that they acquire a closed shell configuration of eight electrons (ns2 np6)
of electron by their atoms. so that they acquire a closed
shell configuration deight electrons (ne2 np6)
In group! 2 & 13 where the elements acquire  noble gas configuration by losing electrons and.  thus show a single positive exidation state equal  to their group number.  On the other hand elements on the
noble gas con liguration by losing electrons and.
thus show a cinale positive exidation state equal
to their group number.
states ranging from -3 to -1. In 14th gp. tendency.  is to form. covalent compound instead of gaining or
States ranging from -3 to -1 In 14th ap. tendency.
is to form, coralent compound, instead of gaining or
losing electrons.
In periods. eg. in 3rd period. positive
oxidation state increases, and reaches, a maximum valu
at aluminium.