EXERCISE-01

:	SELECT THE CORR	<u>ECT ALTERNATIVE (OI</u>	NLY ONE CORRECT AN	<u>SWER)</u>			
##1 .	The atom having the	valence shell electronic c	onfiguration 4s ² 4p ² would	be in:-			
	(A) Group II A and p	eriod 3	(B) Group II B and period	d 4			
	(C) Group IV A and	period 4	(D) Group IV A and perio	od 3			
2 .	An element with ato	mic number 106 has be	en discovered recently. Wł	nich of the following electronic			
	configuration will it p	osses :-					
	(A) [Rn] 5f ¹⁴ 6d ⁵ 7s ¹	(B) [Rn] 5f ¹⁴ 6d ⁵ 7s ²	(C) [Rn] 5f ¹⁴ 6d ⁶ 7s ⁰	(D) [Rn] 5f ¹⁴ 6d ¹ 7s ² 7p ³			
3.	The electronic config	uration of transition eleme	ents is exhibited by :-				
	(A) ns ¹⁻² (n-1)d ¹⁻¹⁰	(B) ns ² (n - 1) d ¹⁰	(C) (n - 1)d ¹⁰ s ²	(D) ns ² np ⁵			
4.	Which of the followir	ng electronic configuration	s in the outermost shell is a	characteristic of alkali metals :-			
	(A) (n–1) s²p ⁶ ns²p ¹	(B) (n–1) s ² p ⁶ d ¹⁰ ns ¹	(C) (n–1) s ² p ⁶ ns ¹	(D) ns ² np ⁶ (n–1)d ¹⁰			
5.	The chemistry of lithiu	um is very similar to that of	magnesium even though the	ey are placed in different groups.			
	Its reason is :-						
	(A) Both are found to	ogether in nature	(B) Both have nearly the	same size			
	(C) Both have similar	electronic configurations	(D) The ratio of their char	ge to size is nearly the same			
6.	Configuration of Br-	is : [Ar] 3d ¹⁰ 4s ² 4p ⁶ . The	electronic configuration of	Br ⁺² would be identical with the			
	element :-						
	(A) Se	(B) As	(C) Ga	(D) Ge			
7 .	4d ³ 5s ² configuration	belongs to which group :-					
	(A) IIA	(B) IIB	(C) V B	(D) III B			
8.	The ionic radii of N^3	-, O ²⁻ and F ⁻ are respecti	vely given by :-				
	(A) 1.36, 1.40, 1.71	(B) 1.36, 1.71, 1.40	(C) 1.71, 1.40, 1.36	(D) 1.71, 1.36, 1.40			
9 .	From the given set o	f species, point out the sp	pecies from each set having	g least atomic radius:-			
	(a) O ⁻² , F ⁻ , Na ⁺	(b) Ni, Cu, Zn	(c) Li, Be, Mg	(d) He, Li ⁺ , H ⁻			
	correct answer is -						
	(A) O ⁻² ,Cu, Li, H ⁻	(B) Na ⁺ Ni, Be, Li ⁺	(C) F⁻, Zn, Mg, He	(D) Na+, Cu, Be, He			
10.	$K^{\scriptscriptstyle +},Ar,Ca^{2\scriptscriptstyle +}$ and $S^{2\scriptscriptstyle -}$	contains -					
	(A) Same electronic o	ic configuration and atomic volume					
	(B) Different electron	ic configuration but same	IP.				
	(C) Same electronic o	(C) Same electronic configuration but different atomic volume					
	(D) None						
11.	Which of the followin	ng is not isoelectronic serie	25 :-				
	(A) Cl ⁻ , P ³⁻ , Ar	(B) N ³⁻ , Ne, Mg ⁺²	(C) B ⁺³ , He, Li ⁺	(D) N ³⁻ , S ²⁻ , Cl ⁻			
12.	Atomic radii of Fluor	ine and Neon in Angstron	n units are given by :-				
	(A) 0.72, 1.60		(B) 1.60, 1.60				
	(C) 0.72, 0.72		(D) None of these				
13.	In the isoelectronic s	pecies the ionic radii (E) c	of N^{3-} , Ne and Al^{+3} are resp	pectively given by:-			
	(A) 1.36, 1.40, 1.71		(B) 1.36, 1.71, 1.40				
	(C) 1.71, 1.40, 1.36	,	(D) 1.71, 1.36, 1.40				
14.	S ⁻² is not isoelectroni	c with :-					
	(A) Ar	(B) Cl⁻	(C) HS [_]	(D) Ti ⁺³			
15.	The IP_1 , IP_2 , IP_3 , IP_4 as is likely to be:-	and IP_5 of an element are 7	7.1, 14.3, 34.5, 46.8, 162	.2 eV respectively. The element			
	(A) Na	(B) Si	(C) F	(D) Ca			

16 .	In which case the energy released is minimum:-					
	(A) Cl \rightarrow Cl ⁻	(B) P \rightarrow P ⁻	(C) N \rightarrow N ⁻	(D) C \rightarrow C ⁻		
17.	The electron affinit	y values for the halogens	shows the following trend :-	_		
	(A) $F < Cl > Br > I$		(B) $F < Cl < Br < I$			
	(C) $F > Cl > Br > 1$	[(D) $F < Cl > Br < I$			
18.	The process requiri	ng the absorption of ene	ergy is.			
	$(A) F \longrightarrow F^{-}$	$(B) Cl \rightarrow Cl^{-}$	$(C) O \rightarrow O^{2-}$	$(D) H \rightarrow H^{-}$		
19 .	The X – X bond ler	igth is 1.00 E and $\text{C} - \text{C}$	bond length is 1.54 E. If ele	ctronegativities of 'X' and 'C' are		
	3.0 and 2.0 respec	tively, the $C - X$ bond le	ength is likely to be :-			
	(A) 1.27 E	(B) 1.18 E	(C) 1.08 E	(D) 1.28 E		
20.	Correct order of ele	ectronegativity of N, P, C	C and Si is :-			
	(A) $N < P < C < S$	i	(B) $N > C > Si > P$			
	(C) $N = P > C = S$	i	(D) $N > C > P > Si$			
21.	Mulliken scale of el	ectronegativity uses the o	concept of :-			
	(A) E. A. and EN o	f pauling	(B) E. A. and atomic siz	e		
	(C) E.A. and I.P.		(D) E.A. and bond energy	39		
22.	Which of the follow	ring general electronic co	onfiguration for transition ele	ments is not correct :-		
	(A) (n + 1) s^{1-2} nd ¹⁻¹⁰		(B) $ns^{1-2} (n - 1)d^{1-10}$ (W)	(B) $ns^{1-2} (n-1)d^{1-10}$ (Where $n = 2, 3, 4$)		
	(C) ns ^{0,1,2} (n −1)s ² p	$b^{6} d^{1-10}$	(D) (n – 1)d ^{1–10} ns ^{0–2}	(D) $(n - 1)d^{1-10} ns^{0-2}$		
23.	Be and Mg have ze	ro value of electron affir	nity, because :-			
	(A) Be and Mg have	e [He] 2s² and [Ne]3s² cc	² and [Ne]3s ² configuration respectively.			
	(B) 2s and 3s orbit	als are filled to their capa	acity			
	(C) Be and Mg are	unable to accept electro	n.			
0.4	(D) All the above a	re correct.				
24.	The pair with mining $(A) \subseteq C^{1}$	num difference in electro	onegativity is :-			
95	(A) F, Cl	(B) C,H	(C) P, H	(D) Na, Cs		
25.	In the following electron 1^{2} (p 1^{2} d)-1 (p	ovr1-14				
	If value of $(n - 1) = 1$	- 2/11 - 11 - 6 the configuration will	ha of .			
	(Δ) L approximately $(11 - 1) = (\Delta)$	(B) d - block	(C) Actinidas	(D) s - block		
26	Which of the follow	ing match is correct :-	(C) Actinides	(D) S - Olock		
20.	(A) Base of mendel	leef neriodic table - Nun	nher of protons			
	(B) Doberenier's triad - Na. K. Rb					
	(C) Newland's octave rule is obeyed by H. F. Cl					
	(D) Lother mever c	urve plotted between - A	Atomic number V/S Atomic	weight		
27.	True statement is :-					
	(A) All the transura	nic elements are syntheti	ic elements			
	(B) Elements of this	rd group are called bridg	e elements			
	(C) Element of $1s^2$	configuration is placed in	n IIA group			
	(D) Electronic cnfig	uration of elements of a	group is same			
28.	The screening effec	ct of s orbital electron is	:-			
	(A) Greater than p	but lesser than d and f e	electrons			
	(B) Less than p, d a	and f electrons				
	(C) Greater than p,	d and f electrons				
	(D) Is equal to p , o	(D) Is equal to p, d and f electrons				

29.	In the first 100 eleme	ents, number of s-block el	ements are :-		
	(A) 88	(B) 12	(C) 14	(D) 22	
30.	The radius of isoelect	ronic series :-			
	(A) Decreases with de	ecreasing nuclear charge			
	(B) Decreases with ind	creasing effective nuclear	charge		
	(C) Same for all				
	(D) First increases tha	n decreases			
31.	In a period , the elem	nents having least melting	point are :-		
	(A) Noble gas	(B) Alkali metals	(C) Chalcogens	(D) Pnicogens	
32.	Which set of elements	s has strong tendency to f	form cations :-		
	(A) N, O, P	(B) F, Cl, Br	(C) Be, He, Mg	(D) Cs, Ba, K	
33.	A neutral atom (Ar) is	s converted to (Ar ⁺³) by th	e following process		
	Ar $\xrightarrow{E_1}$ Ar ⁺ $\xrightarrow{E_2}$	$\rightarrow \operatorname{Ar}^{+2} \xrightarrow{\operatorname{E_3}} \operatorname{Ar}^{+3}$			
	The correct order of l	E_1, E_2 and E_3 energies is:	-		
	(A) E ₁ < E ₂ < E ₃	(B) $E_1 > E_2 > E_3$	(C) $E_1 = E_2 = E_3$	(D) $E_1 > E_2 < E_3$	
34.	The maximum energy	y will be released in the fo	ollowing process :-		
	(A) B + $e^- \longrightarrow B^-$	(B) C + $e^- \longrightarrow C^-$	(C) N + $e^- \longrightarrow N^-$	(D) O + $e^- \longrightarrow O^-$	
35.	Which of the followin	g represents a correct sec	quence of electronegativity	values :-	
	(A) $F > N > O > C$		(B) $F > N < O > C$		
	(C) $F > N > C > O$		(D) $F < N < O < C$		
##36.	An element with the	electronic configuration [X	Ke] 4f ⁷ 5d ¹ 6s ² lies in the :-		
	(A) s-block II-A group)	(B) d-block III-B group		
	(C) f-block III-B group	p(D) d–block VIII group			
37.	In which of the follow	ing compounds cation and	d anion ratio is minimum :-		
	(A) CsF	(B) LiI	(C) LiF	(D) CsI	
38.	In which of the follow	ing the energy change co	rresponds to first ionisation	potential :-	
	(A) $X_{(g)} \rightarrow X^{+}_{(g)} + e$		(B) $2X_{(g)} \rightarrow 2X^{+}_{(g)} + 2e$		
	(C) $X_{(s)} \rightarrow X^{+}_{(g)} + e$		(D) $X_{(aq)} \rightarrow X^{+}_{(aq)} + e$		
##39.	Set of elements havin	ng one electron in their va	alence shell are :-		
	(A) Cl, Br, I		(B) Na, Mg, Al		
	(C) B, Al, Ga		(D) K, Rb, Cs		
40.	The covalent and van	der Waal's radii of hydrog	gen respectively are :-		
	(A) 0.37 E, 0.8 E	(B) 0.37 E, 0.37 E	(C) 0.8 E, 0.8 E	(D) 0.8 E, 0.37 E	
41.	The electronic configu	uration of two neutral eler	ments A and B are		
	$A = 1s^2 2s^2 2p^6 3s^1 a$	and B = $1s^2 2s^2 2p^5$			
	(A) A ⁺ B ⁻	(B) A ⁻ B ⁺	(C) A – B	(D) A^{2+} (B ⁻) ₂	
42.	If the ionic radii of K^{\oplus} are :-	and F^{Θ} are nearly the same	ne (i.e. 1.34 E) then the ator	nic radii of K and F respectively	
	(A) 1.34 E, 1.34 E	(B) 0.72 E, 1.96 E	(C) 1.96 E, 0.72 E	(D) 1.96 E, 1.34 E	
43.	The electronegativites	of the following elements	H, O, F, S and Cl increase	in the order:-	
	(A) H < O < F < S <	: Cl	(B) S < H < Cl < O < F		
	(C) H < S < O < Cl <	< F	(D) $H < S < Cl < O < F$		
44.	The correct order of s	size for iodine, species I, I	I , I ⁺ is :		
	(A) $I > I^{-} > I^{+}$	(B) $I > I^+ > I^-$	(C) $I^+ > I^- > I$	(D) $I^- > I > I^+$	

45. In the periodic table, the metallic character of element :

(C) large size

- (A) Decreases from left to right across a period and on descending a group
- (B) Decreases from left to right across a period and increases on descending a group
- (C) Increases from left to right across a period and on descending a group
- (D) Increases from left to right across a period and decreases on descending a group
- 46. Fluorine is the most reactive among all the halogens, because of it's : (A) small size
 - (B) low dissociation energy of F F bond
 - (D) high dissociation energy of F F bond

CHECH	k youf	R GRAS	P			A	NSW	ER k	KEY				H	EXERCI	SE -1
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	С	А	А	С	D	В	С	С	В	С	D	А	С	D	В
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	С	А	С	В	D	С	В	D	С	С	С	А	С	С	В
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	А	D	А	D	В	С	В	А	D	А	А	С	D	D	В
Que.	46														
Ans.	В														

EXERCISE-02

	SELECT THE CORR	RECT ALTERNATIVES (C	ONE OR MORE THEN O	NE CORRECT ANSWERS)			
1.	If the difference in at	omic size of :					
	Na - Li = x	Rb - K = y	Fr - Cs = z				
	Then correct order w	vill be:-					
	(A) $x = y = z$	(B) $x > y > z$	(C) x < y < z	(D) x < y << z			
2.	In the ions $P^{3\text{-}}$, $S^{2\text{-}}$ a	nd Cl- the increasing orde	r of size is:-				
	(A) Cl [_] , S ^{2_} , P ^{3_}	(B) P ³⁻ , S ^{2−} ,Cl [−]	(C) S ²⁻ , Cl ⁻ , P ³⁻	(D) S ²⁻ , P ³ , Cl ⁻			
3.	Which of the followir	ng order of atomic/ionic rae	dius is not correct :-				
	(A) $I^- > I > I^+$	(B) $Mg^{+2} > Na^+ > F^-$	(C) $P^{+5} < P^{+3}$	(D) Li > Be > B			
4 .	Ionic radii of :-						
	(A) $Ti^{4+} < Mn^{7+}$	(B) ³⁷ Cl ⁻ < ³⁵ Cl ⁻	(C) $K^+ > Cl^-$	(D) $P^{3+} > P^{5+}$			
5.	The best reason to ac	ccount for the general tende	ency of atomic diameters to	decrease as the atomic numbers			
	increase within a per	iod of the periodic table is	the fact that				
	(A) Outer electrons re	epel inner electrons					
	(B) Closer packing ar	mong the nuclear particles	is achieved				
	(C) The number of ne	eutrons increases					
	(D) The increasing n	uclear charge exerts a grea	ter attractive force on the e	electrons			
6 .	Correct orders of I^{st}	Ionisation Potential are :-					
	(a) Li < B < Be < C	(b) O < N < F	(c) Be < N < Ne				
	(A) a, b	(B) b, c	(C) a, c	(D) a, b, c			
7 .	The second ionisatio	on potentials in electron vo	lts of oxygen and fluorine	atoms are respectively given by			
	:-						
_	(A) 35.1, 38.3	(B) 38.3, 38.3	(C) 38.3, 35.1	(D) 35.1, 35.1			
8.	In which of the following	ng pairs, the ionisation energ	ly of the first species is less that	in that of the second :-			
	(A) O ⁻ , O ²⁻	(B) S, P	(C) N, P	(D) Be+, Be			
9.	The correct order of	stability of Al^+ , Al^{+2} , Al^{+3} is	S :-				
	(A) $Al^{+3} > Al^{+2} > Al^{+}$	(B) $Al^{+2} > Al^{+3} > Al^{+3}$	(C) $AI^{+2} < AI^{+} > AI^{+3}$	(D) $Al^{+3} > Al^{+} > Al^{+2}$			
10.	Mg forms Mg(II) because of :-						
	(A) The oxidation sta	(A) The oxidation state of Mg is $+2$					
	(B) Difference betwee	en $I.P_1$ and $I.P_2$ is greater t	han 16.0 eV				
	(C) I here are only two electrons in the outermost energy level of Mg						
1 1	(D) Difference betwee	179 and $1.P_2$ is less than 179 and 249 K as less than	1 II eV 1 The control for				
11.	IP_1 and IP_2 of Mg are	e 178 and 348 K. cal mol	. The enthalpy required for	The reaction			
	$Mg \rightarrow Mg^{2} + 2e \text{ is}$	$(\mathbf{P}) + \mathbf{E}\mathbf{P}(\mathbf{V}) = \mathbf{I}$	(C) 170 K and	$(D) = EQ(K_{col})$			
10	(A) + 170 K.Cal	(D) $+$ 520 K.Cal	(C) - 170 K.cal	(D) - 526 K.cal			
12.	(A) Ionia radius	(B) Atomic radius	(C) Ionisation potential	(D) Reiling point			
12	(A) Ionic Taulus	(D) Atomic radius	(C) Ionisation potential	(D) Boining point			
13.	ID	ID	ID	ID			
	^{IF} 1 165	105	IF 3 556	г ₄ 505			
	Floctronic configuration	i 90	000				
	(Δ) 1 c^2 $2c^2 2n^6$ $2c^2 2c^2$	Sn^2	(B) $1s^2 2s^1$				
	$(C) 1e^2 2e^{29}n^2$	Ą	(D) $1e^2 2e^{29}n^6 3e^2$				
14	The energy needed to	remove one electron from	uninositive ion is abbreviat	ad as			
17.	(A) I st I P	(B) 3 rd I P	(C) 2 nd I P	(D) 1 st F A			
	<u>, , , , , , , , , , , , , , , , , , , </u>	·····	\~/ - ··· ·				

15.	Which of the followi	ng has 2^{nd} IP < I st IP		
	(A) Mg	(B) Ne	(C) C	(D) None
16.	The correct order of	decreasing first ionization en	ergy is :-	
	(A) $S_i > A_l > M_g > N_g$	la	(B) $Si > Mg > Al > Na$	
	(C) $Al > Si > Mg > N$	la	(D) $Mg > Li > Al > Si$	
17.	Which of the followi	ng transitions involves maxim	um amount of energy.	
	(A) $M^{-}_{(g)} \rightarrow M_{(g)}$	$(B) \mathrel{M_{(g)}} \rightarrow \mathrel{M^+_{(g)}}$	(C) $M^+_{(g)} \rightarrow M^{2+}_{(g)}$	(D) $M^{2+}{}_{(g)} \rightarrow M^{3+}{}_{(g)}$
18.	Out of Na ⁺ , Mg ⁺² , C	D^{-2} and N^{-3} , the pair of specie	s showing minimum and ma	aximum IP would be.
	(A) Na ⁺ , Mg ⁺²	(B) Mg ⁺² , N ⁻³	(C) N^{-3} , Mg^{+2}	(D) O^{-2} , N^{-3}
19.	In the formation of	a chloride ion, from an iso	plated gaseous chlorine ato	om, 3.8 eV energy is released,
	which would be e	qual to :-		
	(A) Electron affinity	v of Cl⁻	(B) Ionisation potential of	of Cl
	(C) Electronegativity	y of Cl	(D) Ionisation potential of	of Cl ⁻
20.	The correct order	of electron affinity is :-		
	(A) Be < B < C <	N	(B) Be < N < B < C	
	(C) N < Be < C <	: B	(D) N < C < B < Be	
21.	Electron addition w	ould be easier in :-		
	(A) O	(B) O ⁺	(C) O ⁻	(D) O ⁺²
22.	Process Na ⁺ \rightarrow	$Na_{(g)} \xrightarrow{n} Na_{(s)}$		
	(A) In (I) energy released, (II) energy absorbed (B) In both (I) and (II) energy is absorbed			
	(C) In both (I) and (II) energy is released	(D) In (I) energy absorbed	l, (II) energy released
23.	In the process $\operatorname{Cl}_{(g)}$	+ $e^- \xrightarrow{\Delta H} Cl^-(g), \Delta H$ is		
	(A) Positive	(B) Negative	(C) Zero	(D) None
24.	$O_{(g)} + 2e^{-} \rightarrow O^{2-}_{(g)}$	$_{\rm g}$ $\Delta {\rm Heg}$ = 744.7 KJ/mole.	The positive value of ΔH	leg is due to :-
	(A) Energy is releas	sed to add on 1 e^- to O^{-1}		
	(B) Energy is requi	red to add on 1 e^- to O^{-1}		
	(C) Energy is need	ed to add on 1e ⁻ to O		
	(D) None of the at	pove is correct		
25.	Second electron aff	inity of an element is :-		
	(A) Always exothern	nic	(B) Endothermic for few	elements
	(C) Exothermic for f	ew elements	(D) Always endothermic	
26.	The electron affinity)		
	(A) Of carbon is gre	ater than oxygen	(B) Of fluorine is less than	n iodine
	(C) Of Cl ⁻ is less tha	n Cl	(D) Of S is less than oxyg	gen
27.	Which of the follow	ving statement is talse :-	1	
	(A) Elements of ns ⁴	² np ^o electronic configuration	n lies in 1 st to 6 th period	
	(B) Typical element	ts lies in 3 rd period	. 1 .	
	(C) The seventh pe	eriod will accommodate thir	ly two elements	
00	(D) Boron and silic	on are diagonally related		
28.	In boron atom scre	eening is due to :-		17 1 1 1
	(A) Electrons of K	shell only	(D) All the electrons of	n and L snell
20	(C) I WO electrons	or is and is each	(U) Unly by electrons of	L Shell
27.	0 = 1 and 21 .	ie maximum value of elect		J IX, Y and Z respectively are
	$(\Lambda) \cap \mathbf{x}$		$(C) \cap \mathbf{z}$	(D) All have equal
		$(D) U^{2}$		(D) All have equal

30.	0. The electron affinity of fluorine is less than that of chlorine because :-						
	(A) The incoming electron enters the 3p orbital in fluorine						
	(B) The incoming electron enters the 2p orbitals in fluorine and 3p orbital in chlorine						
	(C) The electron density in fluorine is higher						
	(D) Fluorine has lower ionisation potential than chlorine						
31.	If the atomic number	of an element is 58, it v	will be placed in the perio	odic table in the -			
	(A) III B gp and 6 th period		(B) IV B gp and 6 th per	iod			
	(C) VB gp and 7 th period		(D) None of the above				
32.	Which of the following	g ion has largest size :-					
	(A) F [_]	(B) Al ⁺³	(C) Cs ⁺	(D) O ⁻²			
33.	Which ionisation pote	ntial (IP) in the following	equations involves the gre	eatest ammount of energy:-			
	(A) $K^+ \rightarrow K^{+2} + e^-$	(B) $Li^+ \rightarrow Li^{+2} + e^-$	(C) Fe \rightarrow Fe ⁺ + e ⁻	(D) $Ca^+ \rightarrow Ca^{+2} + e^-$			
34.	Which order is wrong :	-					
	(A) Electronegativity –	P < N < O < F					
	(B) I st ionisation potent	ial – $B < Be < O < N$					
	(C) Basic property – Mg	$O > CaO > FeO > Fe_2O_3$					
	(D) Reactivity – Be < L	i < K < Cs					
35.	The correct electron at	ffinity order of N, O, S, Cl	is:-				
	(A) O < N < Cl < S		(B) $Cl > O > S > N$				
	(C) N < O < S < Cl		(D) $N = Cl > O = S$				
36.	1 2 3 4						
	$H_3C - CH = C = CH_2$						
	In the given compound	l which carbon atom will sł	now maximum electronega	tivity -			
	(A) Fourth		(B) First				
	(C) Third		(D) EN of all the carbon a	atoms is same			
37.	Decreasing order of s	ize of ions is :-					
	(A) Br ⁻ > S ⁻² > Cl ⁻ >	> N ⁻³	(B) $N^{3-} > S^{-2} > Cl^{-} > H$	3r [_]			
	(C) $Br^- > Cl^- > S^{-2} >$	> N ⁻³	(D) $N^{-3} > Cl^{-} > S^{-2} > 1$	Br [_]			
38.	In which case the ma	ximum energy is needed	in the formation of mono	positive gaseous ion :			
	(A) 1 mole of Li atom	IS	(B) 1 mole of Na atoms				
	(C) 1 mole of Cs ator	ns	(D) 1 mole of Be atoms				
39.	(a) $M^{-}_{(\sigma)} \rightarrow M_{(\sigma)}$	(b) $M_{(\sigma)} \rightarrow M^+_{(\sigma)}$	(c) $M^+_{(\sigma)} \rightarrow M^{+2}_{(\sigma)}$	(d) $M^{+2}_{(\alpha)} \rightarrow M^{+3}_{(\alpha)}$			
	Minimum and maxim	um I.P. would be of :-					
	(A) a, d	(B) b, c	(C) c, d	(D) d, a			
40.	Correct order of ionic	size of elements :-					
	(A) $Mn^{+7} > Mn^{+6} > N$	In ⁺⁴	(B) $C^+ > C > C^-$				
	(C) $Fe^{+3} > Fe^{+2} > Fe$		(D) All are incorrect				
41.	If the ionisation potent	ial is IP, electron affinity is	s EA and electronegativity	is x then which of the following			
	relation is correct :-						
	(A) $2X - EA - IP = 0$)	(B) $2EA - X - IP = 0$				
	(C) $2IP - X - EA = 0$)	(D) All of the above				
42.	Which are correct mat	ch :-					
	(A) O < C < S < Se —	Atomic size					
	(B) Na < Al < Mg < Si	— I st I.P					
	(C) MgO $<$ SrO $<$ Cs _o	$O < K_2 O - Basic charact$	er				
	(D) $P_4 O_{10} > SO_0 > Cl_0$	O_7 - Acidic character					
	, 4 10 2 3 2 3 2 2	/					

43 .	Which are correct match :-		
	(A) $O > F > N > C$ — IInd I.P.		
	(B) $S^{-2} > Cl^{-} > K^{+} > Ca^{+2}$ — Ionic radius		
	(C) $N > C > P > Si$ — E. N.		
	(D) $F > Na > Ne - I^{st} I.P.$		
44.	In the third period Na to Cl seven element	is/are called:-	
	(A) Lanthanides	(B) Typical elements	
	(C) Halogen elements	(D) Metalloids	
45.	Which of the following statement is/are not	correct:-	
	(A) I.P. increases down the group		
	(B) IP of s-block elements is less than corre	sponding d- block elements	5
	(C) If $\Delta IP > 16 \text{ eV}$ higher oxidation state is	more stable	
	(D) IP of halogen elements is maximum in	their respective period	
46.	Out of the following statements which is/are	e correct :-	
	(A) H is an element of minimum atomic radius	(B) He is an element of hi	ghest I.P.
	(C) Cl is an element of highest EA	(D) Li is an element of	lowest I.P.
47.	Triad - I [N ³⁻ , O^- , Na ⁺]		
	Triad - II [N ⁺ , C ⁺ , O ⁺]		
	Choose the species of lowest IP from triad	d–I and highest IP from tri	ad—II respectively
	(A) N^{3-} , O^+ (B) Na^+ , C^+	(C) N ³⁻ , N ⁺	(D) O ⁻ , C ⁺
48.	The correct values of ionization energies (in kJ	mol ⁻¹) of Be, Ne, He and N re	espectively are
	(A) 899, 2080, 1403, 2372	(B) 2080, 899, 1403,	2372
	(C) 899, 2080, 2372, 1403	(D) 899, 1403, 2080,	2372
49.	Which of the following processes involve ab	sorption of energy :-	
	(A) S (g) + $e^- \rightarrow S^-$ (g)	(B) O ⁻ (g) + $e^- \rightarrow O^{2-}$	(g)
	(C) Cl (g) + $e^- \rightarrow$ Cl ⁻ (g)	(D) O (g) + $e^- \rightarrow O^-$ ((g)
50.	Following graph shows variation of I.P. with	atomic number in second p	eriod (Li – Ne). Value of I.P. of
	Na (11) will be :-		
	(A) Above Ne	N	Ne
	(B) Below Ne but above O	$\begin{bmatrix} \widehat{\mathbf{d}} \\ \mathbf{d} \end{bmatrix}$ Be $\begin{bmatrix} \mathbf{h} \\ \mathbf{h} \end{bmatrix}$	F
	(C) Below Li		
	(D) Between N and O	Li B	
		++++++ 3 4 5 6 7 8	++++
		$Z \rightarrow$	
51	$M(-)$, $M^+(-)$, $-$ ALL 100 - U $M(-)$, $M(-)$		-h :- / :
51.	$M(g) \rightarrow M^{*}(g) + e, \Delta H = 100 \text{ eV}, M(g) \rightarrow M^{*}$	$(g) + 2e$, $\Delta H = 250 eV$ which (D) ID (1) (1) (1) (1) (1)	ch is/ are incorrect statement(s) :-
	(A) IP_1 of M(g) is 100 eV	(B) IP_1 of M ⁺ (g) is 150 (D) ID of M(g) is 150) ev
50	(C) IP_2 of M(g) is 250 eV	(D) IP_2 of M(g) is 150 e	20
52.	AB is predominantly ionic as $A^{+}B^{-}B^{-}$:	(\mathcal{O}) (EN) $\langle \mathcal{O} \rangle$	(D) Sing of A is sing of B
52	(A) $(IP)_A < (IP)_B$ (B) $(LA)_A < (LA)_B$	(C) $(EN)_A < (EN)_B$	(D) Size of $A <$ size of B
55.	within is correct order of size of O, O^2, F (A) $O^{2-} > O > F^- > F$	$(\mathbf{R}) \cap \mathbf{n} \cap \mathbf{n} \cap \mathbf{n} \cap \mathbf{n} = \mathbf{n} \cdot \mathbf{n}$	
	$(n) \cup 2 \cup 2 \Gamma \ge \Gamma$ $(n) \cap 2^{-} \times \Gamma = \Sigma \cap \Omega$	$(D) O^2 - \langle F - \langle O \rangle F$	
54	Both motals and non-motals are found amo	$\frac{1}{10} = \frac{1}{20} $	odic table :-
J 4 .	(Δ) p-block (B) d block	(C) Transition	(D) Inner transition

55.	In the plot of the fi	rst ionization energy agai	nst atomic number the p	eaks are occupied by :-		
	(A) Inert gases		(B) Alkali metals			
	(C) Halogens		(D) Transition element	S		
56.	The corret values of ionization energies (in K		KJ mole ⁻¹) of Si, P, Cl ar	nd S respectively are		
	(A) 786, 1012, 999, 1256		(B) 1012, 786, 999,	1256		
	(C) 786, 1012, 125	56, 999	(D) 786, 999, 1012,	1256		
57.	Which of the following sequence is correct		or decreasing order of ion	nic radius :-		
	(A) Se ⁻² , I ⁻ , Br ⁻ , O ⁻² , F ⁻		(B) I ⁻ , Se ⁻² , O ⁻² , Br ⁻ ,	F-		
	(C) Se ⁻² , I ⁻ , Br ⁻ , F ⁻ ,	, O ⁻²	(D) I ⁻ , Se ⁻² , Br ⁻ , O ⁻² ,	F		
58.	Which of the follow	ing orders for electron af	finity is /are correct :-			
	(a) S > O < Se	(b) Cl > F	(c) $S > O$	(d) $O > S$		
	(e) N > P	(f) $C > N$				
	(A) a, b, c, e	(B) a, b, c, f	(C) b, c, d, e	(D) b, c, f		
59.	The electronic confi	guration of some neutral	atoms are given below :	_		
	(1) $1s^2 2s^1$	(2) $1s^2 2s^2 2p^3$	(3) 1s ² 2s ² 2p ⁴	(4) $1s^2 2s^2 2p^6 3s^1$		
	In which of these el	lectronic configuration wo	ould you expect to have h	nighest :-		
	(i) IE ₁	(ii) IE ₂				
	(A) 3, 1	(B) 2, 1	(C) 3, 2	(D) 2, 4		
60.	Which of the following	ng pairs has elements cont	aining same number of ele	ectrons in outer most orbit		
	(A) Sc, Cu	(B) Na, Ca	(C) Pb, Sb	(D) As, Bi		
61.	Zinc does not show t	the variable valency as eler	ments of d-block, because	:		
	(A) This is soft metal		(B) d-orbital is full			
	(C) Its melting point i	s low	(D) Volatile Metal			
62.	The right order of io	nization potential of Li, Be	e, B & C is :			
	(A) C > Be > B > Li	(B) C > B > Be > Li	(C) C > B > Li > Be	(D) $B > C > Be > Li$		
63.	Increasing order of n	Increasing order of metallic characteristic of C,		1:		
	(A) C, Si, As, Sb, Bi		(B) C, Si, Bi, Sb, As			
	(C) C, Si, Sb, Bi, As		(D) C, Si, As, Bi, Sb			
64.	The correct order of	second ionization potentia	al of C, N, O and F is			
	(A) $C > N > O > F$	(B) $O > N > F > C$	(C) $O > F > N > C$	(D) $F > O > N > C$		
65.	The correct sequence	e of the electron affinity of	FC, N, O and F is :			
	(A) $C > N < O < F$	(B) $O > N > C > F$	(C) $C < N > O < F$	(D) $C > N > O > F$		
66.	The correct order of	The correct order of ionization energies of F ⁻ , Cl ⁻ , F and Cl is:				
	(A) $Cl < F < Cl^{-} < F$	<u>`</u>	(B) $Cl^- < F^- < Cl < F$			
	(C) $F^- < Cl^- < Cl <$	F	(D) $Cl^- < Cl < F^- < F$	(D) $Cl^- < Cl < F^- < F$		
67.	Atomic radii of alkali	i metals (M) follow the orde	er Li < Na < K < Rb but io	nic radii in aqueous solution follow		
	the reverse order Li ⁺	$^{\scriptscriptstyle +} > \mathrm{Na^{\scriptscriptstyle +}} > \mathrm{K}$ $^{\scriptscriptstyle +} > \mathrm{Rb^{\scriptscriptstyle +}}$. The	e reason of the reverse or	der is :		
	(A) Increase in the io	nisation energy	(B) Decrease in the metallic bond character			
	(C) Increase in the el	ectropositive character	(D) Decrease in the am	ount of hydration		
68.	The first ionization p	potentials (eV) of Be and B	respectively are :			
	(A) 8.29eV, 9.32 eV	1	(B) 9.32 eV, 9.32 eV			
	(C) 8.29 eV, 8.29 eV	J	(D) 9.32 eV, 8.29 eV			
69.	The decreasing orde	r of the ionization potentia	I of the following elements	s is :		
	(A) Ne > Cl > P > S	> Al > Mg	(B) Ne > Cl > P > S >	Mg > Al		
	(C) Ne > $Cl > S > P$	> Mg > Al	(D) Ne > $Cl > S > P >$	AI > Mg		

One element has a			15, 25 2p ² , 35 3p ² 45. The lide			
statement for that e	lement is :		[111 95]			
(A) More (IE)	36 (D) C) 11 11 11	(B) I ransition eleme	ent			
(C) Isotone with $_{18}$ And $_{1$		20 1				
In which of the following arrangements the order is not according to the property indicated against it : (A) Δl^{3+} $\leq Ma^{2+} \leq Na^{+}$ $\leq E^{-}$ increasing ionic size						
$(A) AI^{\circ} < MIG^{\circ} < N$	in a second first isoniza	tion notontial				
(D) $B < C < N < O$ - increasing first ionization potential						
$(C) I < DI < I' < CI^{2}$	h increasing electron ga	an enaipy (win negative si a radius	ign)			
(D) $Li < Na < R < I$	tion is caused due to .	l'idulus				
(A) the same effectiv	ue nuclear charge from	n Ce to Lu				
(B) the imperfect sh	ielding on outer electr	ons by 4f electrons from th	e nuclear charge			
(C) the appreciable	shielding on outer elec	ctrons by 4f electrons from	the nuclear charge			
(D) the appreciable shielding on outer electrons by 5d electrons from the nuclear charge						
Is a data sufficiency	problem in which it is	to be decided on the basis of	of given statements whether the given			
question can be an	swered or not. (No ma	atter whether the answer is	s yes or no)			
If $\Delta H_{\text{solution}} < 0$ then	n compound acts as io	onic in aqueous solution. Is	AlCl ₃ (s) ionic in aqueous solution.			
Statement 1 : L.E.	of $AlCl_3$ is 5137 kJ,	/mol				
Statement 2 : ΔH_{H}	_{IE} of Al ⁺³ ion is – 466	65 kJ/mol ⁻¹ & ΔH _{HE} of Cl	⊢ is –381 kJ/mol ⁻¹			
(A) Statments (A) al	one is sufficient but st	atement (B) is not sufficien	t			
(B) Statments (B) al	one is sufficient but st	atement (A) is not sufficien	t			
(C) Both statement	(C) Both statement together are sufficient but neither statement alone is sufficient					
(D) Statement (A) &	c (B) together are not	sufficient	area 1 and 17 of noniadia tables are			
(A) Electropositive	ch are common to the	e elements belonging to gro	Sups 1 and 17 of periodic lables are-			
(R) Reactivity decre	ases from top to botto	om				
(C) Atomic radii inc	reases as atomic num	ber increases				
(D) Electronegativity	decreases on moving	g down a group				
The number of whi	ch subatomic particle	is same in case of chlorine	e atom and chloride ion :			
(A) Electron	(B) Proton	(C) Neutrons	(D) All of the above			
Which of the follow	ing show amphoteric	behaviour :				
(A) Zn(OH) ₂	(B) BeO	(C) Al_2O_3	(D) Pb(OH) ₂			
Fluorine is stronger oxidizing agent than chlorine in aqueous solution. This can be attributed to the						
property :						
(A) Heat of dissocia	tion	(B) Electron affinity	J			
(C) Ionization poten	C) Ionization potential (D) Heat of hydration					
Electron attinity of	the elements or ions s	shown correct :				
(A) $S > O^{-}$	(B) $O > S^-$	(C) $O^{-} > S^{-}$	(D) $N^- > S$			
Ionization energy o						
(A) Equal in magnitude but opposite in sign to the electron gain enthalpy of the cation of the element						
(A) Equal in magnit	an element is : ude but opposite in si	gn to the electron gain ent	thalpy of the cation of the element			
(A) Equal in magnit(B) Same as electro	t an element is : ude but opposite in si on affinity of the eleme	gn to the electron gain ent ent	thalpy of the cation of the element			
(A) Equal in magnit(B) Same as electro(C) Energy required	t an element is : ude but opposite in si on affinity of the elema to remove one valen	gn to the electron gain ent ent ce electron from an isolate	thalpy of the cation of the element ed gaseous atom in its ground state			
(A) Equal in magnit(B) Same as electro(C) Energy required(D) Equal in magnit	f an element is : ude but opposite in si on affinity of the eleme to remove one valen ude but opposite in si	gn to the electron gain ent ent ce electron from an isolate gn to the electron gain ent	thalpy of the cation of the element ed gaseous atom in its ground state thalpy of the anion of the element			
(A) Equal in magnit(B) Same as electro(C) Energy required(D) Equal in magnitSelect equations has	an element is : ude but opposite in si on affinity of the elema to remove one valen ude but opposite in si ving endothermic step	gn to the electron gain ent ent ce electron from an isolate gn to the electron gain ent o :	thalpy of the cation of the element ed gaseous atom in its ground state thalpy of the anion of the element			
(A) Equal in magnit (B) Same as electron (C) Energy required (D) Equal in magnit Select equations had (A) $S^{-}(g) \longrightarrow S^{2-1}$	an element is : ude but opposite in si on affinity of the eleme to remove one valen ude but opposite in si ving endothermic step (g)	gn to the electron gain ent ent ce electron from an isolate gn to the electron gain ent o :	thalpy of the cation of the element ed gaseous atom in its ground state thalpy of the anion of the element			
(A) Equal in magnit (B) Same as electron (C) Energy required (D) Equal in magnit Select equations have (A) $S^{-}(g) \longrightarrow S^{2-1}(g)$ (B) $Na^{+}(g) + Cl^{-}(g)$	an element is : ude but opposite in si on affinity of the element to remove one valen ude but opposite in si ving endothermic step (g) → NaCl(s)	gn to the electron gain ent ent ce electron from an isolate gn to the electron gain ent o :	thalpy of the cation of the element ed gaseous atom in its ground state thalpy of the anion of the element			
(A) Equal in magnit (B) Same as electron (C) Energy required (D) Equal in magnit Select equations have (A) $S^{-}(g) \longrightarrow S^{2-g}$ (B) $Na^{+}(g) + Cl^{-}(g)$ (C) $N(g) \longrightarrow N^{-}(g)$	an element is : ude but opposite in si on affinity of the element to remove one valen ude but opposite in si ving endothermic step (g) → NaCl(s) (j)	gn to the electron gain ent ent ce electron from an isolate gn to the electron gain ent o :	thalpy of the cation of the element ed gaseous atom in its ground state thalpy of the anion of the element			
	(A) More (IE) (C) Isotone with ${}_{18}Ar$ In which of the follor (A) Al ³⁺ < Mg ²⁺ < N (B) B < C < N < O + (C) I < Br < F < CI + (D) Li < Na < K < F Lanthanoid contract (A) the same effective (B) the imperfect sh (C) the appreciable (D) the same effective (Q) the appreciable (D) Statement (A) al (C) Both statement (D) Statement (A) 8 The properties which (A) Electronegativity The number of whit (A) Electron Which of the follow (A) Zn(OH) ₂ Fluorine is stronge property : (A) Heat of dissociat (C) Ionization potent Electron affinify of the (A) S > O ⁻ L to the the follow	(A) More (IE) (C) Isotone with ${}_{18}Ar^{36}$. (D) Stable oxide M In which of the following arrangements th (A) Al ³⁺ < Mg ²⁺ < Na ⁺ < F ⁻ - increasing ic (B) B < C < N < O - increasing first ioniza (C) I < Br < F < Cl - increasing electron ga (D) Li < Na < K < Rb - increasing metallic Lanthanoid contraction is caused due to : (A) the same effective nuclear charge from (B) the imperfect shielding on outer electr (C) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (C) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (C) the appreciable shielding on outer electr (C) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (D) the appreciable shielding on outer electr (A) Statement 2 : ΔH_{HE} of Al ¹⁺³ ion is - 466 (A) Statement (A) alone is sufficient but st (C) Both statement together are sufficient (D) Statement (A) & (B) together are not The properties which are common to the (A) Electropositive character increases do (B) Reactivity decreases from top to bottor (C) Atomic radii increases as atomic num (D) Electronegativity decreases on moving The number of which subatomic particle (A) Electron (B) Proton Which of the following show amphoteric (A) Zn(OH) ₂ (B) BeO Fluorine is stronger oxidizing agent that property : (A) Heat of dissociation (C) Ionization potential (D) Heat of hydrat Electron affinify of the elements or ions s (A) S > O ⁻ (B) O > S ⁻	(A) More (IE) (B) Transition elements (C) Isotone with ${}_{18}Ar^{36}$. (D) Stable oxide M_2O In which of the following arrangements the order is not according to (A) $AI^{3+} < Mg^{2+} < Na^+ < F^-$ increasing ionic size (B) $B < C < N < O^-$ increasing first ionization potential (C) $I < Br < F < CI^-$ increasing electron gain ethalpy (with negative sidd). Li < Na < K < Rb - increasing metallic radius Lanthanoid contraction is caused due to: (A) the same effective nuclear charge from Ce to Lu (B) the imperfect shielding on outer electrons by 4f electrons from th (C) the appreciable shielding on outer electrons by 4f electrons from th (C) the appreciable shielding on outer electrons by 5d electrons from Ib a data sufficiency problem in which it is to be decided on the basis of question can be answered or not. (No matter whether the answer is If $\Delta H_{solution} < 0$ then compound acts as ionic in aqueous solution. Is Statement 1 : L.E. of AICl ₃ is 5137 kJ/mol Statement 2 : ΔH_{HE} of AI^{+3} ion is -4665 kJ/mol ⁻¹ & ΔH_{HE} of CI (A) Statement 6) alone is sufficient but statement (B) is not sufficient (B) Statement together are sufficient but neither statement alor (D) Statement (A) alone is sufficient but neither statement alor (D) Statement (A) & (B) together are not sufficient The properties which are common to the elements belonging to grad (A) Electropositive character increases down the group (B) Reactivity decreases from top to bottom (C) Atomic radii increases as atomic number increases (D) Electronegativity decreases on moving down a group The number of which subatomic particle is same in case of chlorine (A) Zn(OH) ₂ (B) BeO (C) Al ₂ O ₃ Fluorine is stronger oxidizing agent than chlorine in aqueous sol property : (A) Heat of dissociation (B) Proton (C) Neutrons Which of the following show amphoteric behaviour : (A) Heat of dissociation (B) C) Heat of hydration Electron affinity of the elements or ions shown correct : (A) S > O ⁻ (B) O > S ⁻ (C) O			

81. Consider the following ionization steps :

M(g) —	$\longrightarrow M^+(g) + e^-$; $\Delta H = 100 eV$
M(g) —	\longrightarrow M ²⁺ (g) + 2e- ; Δ H = 250 eV

select correct statement(s) :

(A) I.E. ₁ of M(g) is 100 eV	(B) I.E. $_1$ of M ⁺ (g) is 150 eV
(C) I.E. ₂ of M(g) is 250 eV	(D) I.E. $_2$ of M (g) is 150 eV

82. The ground state electronic configurations of the elements, U, V, W, X and Y (these symbols do not have any chemical significance) are as follows :

- U $1s^2 2s^2 2p^3$ V $1s^2 2s^2 2p^6 3s^1$ W $1s^2 2s^2 2p^6 3s^2 3p^2$ X $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^2$
 - Y $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6$

Determine which sequence of elements satisfy the following statements :

(i) Element forms a carbonate which is not decomposed by heating

- (ii) Element is most likely to form coloured ionic compounds
- (iii) Element has largest atomic radius
- (iv) Element forms only acidic oxide

(A) V W Y U	(B) V X Y W	(C) V W Y X	(D) V X W U

- **83.** Consider the following chages :

 - $M(g) \longrightarrow M^{2+}(g) + 2e^{-}$

The second ionization energy of M could be calculated from the energy values associated with :

(A) 1 + 3 + 4	(B) 2 – 1 + 3	(C) 1 + 5	(D) 5 – 3

84. Which of the following statements are correct :

(A) F is the most electronegative and Cs is the most electropositive element.

(B) The electronegativity of halogens decreases from F to I

(C) The electron affinity of Cl is higher than that of F though their electronegativities are in the reverse order

Ρ

(D) The electron affinity of noble gases is almost zero.

85. Diagonal relationships are shown by :

	(A) Be and Al	(B) Li and Mg	(C) Mg and Al	(D) B and
86.	Match List I with List	II and select the correct	answer using the codes	given below :

List I List II A. 1s², 2s² 2p⁶, 3s² 3p⁶, 4s² 1. In B. 1s², 2s² 2p⁶, 3s² 3p⁶ 3p⁶ 3d¹⁰, 4s¹ 2. Pd C. 1s², 2s² 2p⁶, 3s² 3p⁶ 3d¹⁰, 4s² 4p⁶ 4d¹⁰ 3. Ca D. 1s², 2s² 2p⁶, 3d¹⁰, 4s² 4p⁶ 4d¹⁰, 5s² 5p¹ 4. Cu Code : A Β С D (A) 1 2 3 4 (B) 1 3 2 4 3 4 2 (C)1 3 2 (D) 1 4

87.	Match I	List I (Atomic Nun answer using the	ber of Element) with List	II (Block to which the Element Belongs) and select the					
	List	I	codes given below .	List II					
	(Atomio	c Number of Elem	ent)	(Block to which the elem	ent belongs)				
	A. 24			1. p					
	B. 38			2. f					
	C. 49			3. s					
	D. 59			4. d					
	Code :	А	В	С	D				
	(A)	2	1	3	4				
	(B)	4	3	1	2				
	(C)	2	3	1	4				
	(D) 4 1			3 2					
88.	Match List I (Element) with List II (Electronegativity on Pauling Scale) and select the correct answer using								
	the cod	es given below :							
	List I			List II					
	(Elemer	nt)		(Electronegativity on Pauling scale)					
	A. Carl	oon		1. 0.8					
	B. Nitro	ogen		2. 1.6					
	C. Alun	ninium		3. 2.5					
	D. Cesi	um		4. 3.0					
				5. 4.0					
	Code :	Α	В	С	D				
	(A)	2	4	5	1				
	(B)	3	1	2	4				
	(C)	2	1	5	4				
	(D)	3	4	2	1				

BRAIN	I TEAS	ERS				F	ANSW	/ER I	KEY				I	EXERCI	SE -2
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	В	А	В	D	D	D	С	В	D	D	В	С	D	С	D
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	В	D	С	D	В	D	С	В	В	D	С	А	С	А	С
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	А	С	В	С	С	С	А	D	А	D	А	A,B	A,B,C	В	A, C, D
Que.	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ans.	A, B, C	А	С	В	С	С	A,B,C	D	А	А	С	D	В	В	D
Que.	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Ans.	В	А	А	С	А	С	D	D	В	D	В	В	С	A, C, D	В, С
Que.	76	77	78	79	80	81	82	83	84	85	86	87	88		
Ans.	A,B,C,D	A, B, D	Α, Β	А, С	A, C,D	A, B, D	В	D	A,B,C,D	Α, Β	С	В	D		

EXERCISE-03

MISCELLANEOUS TYPE QUESTIONS

<u>TRUE / FALSE</u>

- **1.** Al_2O_3 is an amphoteric oxide.
- **2**. Third group of periodic table accommodates maximum number of elements.
- **3**. First ionisation potential of Mg is higher than that of Al.
- 4. The ionic radii of trivalent lanthanides (La^{3+} , Ce^{3+} , Pr^{3+}) decreases with the increasing atomic number.
- 5. Successive ionisation potentials are lower.
- 6. The alkali metals show increasing electronegativities from Li to Cs.
- **7.** In group I of alkali metals, the ionization potential decreases down the group. Therefore lithium is a poor reducing agent in gaseous state.
- 8. The decreasing order of electron affinity of F, Cl, Br is F > Cl > Br [IIT-1993]
- 9. The basic nature of the hydroxides of Group 13 (Gr. III B) decreases progressively down the group.

[IIT-1992]

FILL IN THE BLANKS

- 1. Most electropositive elements belong to group.
- 2. Most electronegative elements belong to group.
- **3.** Transition elements are characterised by valency.
- **4.** The second ionisation energy of calcium is than the ionisation energy of calcium.
- 5. The electronegativity of the elements C, N. Si and P increases in the order of
- **6**. Total number of inner transition elements are
- 7. Two elements of equal electronegative values they form bond.
- 8. Among Na, Mg, Al & Si elements element has zero electron affinity.
- **9.** Elements of group have greater tendency to form positive ions than elements of group IIA.
- **10.** In aqueous solution is the best reducing agent among the alkali metals.

MATCH THE COLUMN

1. Match Column–I (atomic number of elements) withColumn–II (position of element in periodic table) and select the correct answer using the codes given below :

\square	<u>Column-I</u>	<u>Column-II</u>				
(A)	19	(p)	p-block			
(B)	22	(q)	f-block			
(C)	32	(r)	d-block			
(D)	64	(s)	s-block			

2. Match Column–I (Elements) withColumn–II (configuration of elements) and select the correct answer using the codes given below :

\bigcap	<u>Column-I</u>						
(A)	The third alkali metal						
(B)	The second transition element						
(C)	The fourth noble gas element						
(D)	The second helogen element						

<u>Column-II</u>						
(p)	$1s^2 2s^2 2p^6 3s^2 3p^5$					
(q)	$1s^2 \ 2s^2 \ 2p^6 \ 3s^2 \ 3p^6 \ 3d^{10} \ 4s^2 \ 4p^6$					
(r)	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 3d ² 4s ²					
(s)	$1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$					

3.		<u>Column-I</u>	\square	<u>Column-II</u>
	(A)	Increasing ionisation potential	(p)	N > O > F
	(B)	Increasing electronegativity	(q)	N < O < F
	(C)	Decreasing Zeff	(r)	O < N < F
	(D)	Decreasing electron affinity	(s)	O > C > N

4.	<u>Column-I</u>			Column-II					
	(A)	Metalloid	(p)	Selenium					
	(B)	Radioactive	(q)	Silver					
	(C)	Transition	(r)	Arsenic					
	(D)	Chalcogen	(s)	Uranium					

5.

<u>Column-I</u>	<u>Column-II</u>			
Increasing atomic size	(p)	Cl < O < F		
Decreasing atomic radius	(q)	Li < Be < B		
Increasing electronegativity	(r)	Si < Al < Mg		
Increasing effective	(s)	N > O > F		
nuclear charge				
	<u>Column-I</u> Increasing atomic size Decreasing atomic radius Increasing electronegativity Increasing effective nuclear charge	Column-IIncreasing atomic size(p)Decreasing atomic radius(q)Increasing electronegativity(r)Increasing effective(s)nuclear charge(s)		

ASSERTION & REASON QUESTIONS

These questions contains, Statement I (assertion) and Statement II (reason).

(A) Statement-I is true, Statement-II is true ; Statement-II is correct explanation for Statement-I.

(B) Statement-I is true, Statement-II is true ; Statement-II is NOT a correct explanation for statement-I

(C) Statement-I is true, Statement-II is false

(D) Statement-I is false, Statement-II is true

because

because

- 1. Statement -1 : Two successive ionisation energies of Argon are 56.8 eV and 36.8 eV respectively. because
 - **Statement -2** : Zeff of Ar $(3s^23p^6)$ is greater than Ar⁺ $(3s^23p^5)$.

2.	Statement -1	:	Electron	affinity	of	fluorine	is	greater	than	chlorine.
	because									

- Statement -2 : Ionisation potential of fluorine is less than chlorine.
- **3.** Statement -1 : Size of anion is larger than their parent atom.
 - **Statement -2** : Zeff of anion is greater than that of their parent atom.
- Statement -1 : Atomic radius of inert gases is largest in the period because
 Statement -2 : Effective nuclear charge of inert gases is minimum
- 5. Statement -1 : 2nd IP of alkali metals is maximum in the period.
 - **Statement -2** : Alkali metals has smallest atomic size in the period.
- 6. Statement -1 : First ionization energy of nitrogen is lower than oxygen. because
- **Statement -2** : Across the period effective nuclear charge decreases.
- 7. Statement -1 : The third period contains only 8 elements and not 18 like 4th period. because
 - **Statement -2** : In III period filling starts from $3s^1$ and complete at $3p^6$ whereas in IV period it starts from $4s^1$ and complete after $3d^{10}$ and $4s^2$.

COMPREHENSION BASED QUESTIONS

	Comprehension # 1	L							
	Ionization energies of	five elements in kcal/mol	are given below :						
	Atom	Ι	II	III					
	Р	300	549	920					
	Q	99	734	1100					
	R	118	1091	1652					
	S	176	347	1848					
	Т	497	947	1500					
1.	Which element is a no	bble gas ?							
	(A) P	(B) T	(C) R	(D) S					
2.	Which element form stable unipositive ion :								
	(A) P	(B) Q	(C) R	(D) S					
3.	The element having most stable oxidation state $+2$ is :								
	(A) Q	(B) R	(C) S	(D) T					
4.	Which is a non-metal	(excluding noble gas) :	noble gas) :						
	(A) P	(B) Q	(C) R	(D) S					
5.	If Q reacts with fluorin	ne and oxygen, the molect	ular formula of fluoride an	d oxide will be respectively :					
	(A) QF ₃ , Q ₂ O ₃	(B) QF, Q ₂ O	(C) QF ₂ , QO	(D) None of these					
6.	Which of the following	g pair represents elements	of same group :						
	(A) Q, R	(B) P, Q	(C) P, S	(D) Q, S					
	Comprehension # 2)							
	Four elements P O R	- & S have ground state ele	ctronic configuration as ·						
	$P \rightarrow 1s^2 2s^2 2n^6 3s^2$.3n ³	$0 \rightarrow 1s^2 2s^2 2n^6 3s^2 3t$	1					
	$R \rightarrow 1s^2 2s^2 2p^6 3s^2$	$2_{2n6}^{2} 3_{d10}^{2} 4_{s2}^{2} 4_{n3}^{3}$	$S \rightarrow 1s^2 2s^2 2p^6 3s^2 3r$	5_{0}^{6} 3d ¹⁰ 4s ² 4n ¹					
1	Which of the following	option represent the cor	rect order of true (T) and l	False (F) Statement:					
	I size of $P < size of \Omega$	g option represent the con	Il size of $R < size of S$						
	III size of $P < size of Q$	R (appreciable difference)	IV size of $\Omega < size of S$	(appreciable difference)					
	(Δ) TTTT	(R) TTTF	(C) FFTT	(D) TTEF					
2	Order of IF, values an	nong the following is .	(<i>v</i>)						
<i>L</i> .	(A) $P > R > S > O$	$(\mathbf{R}) \mathbf{P} < \mathbf{R} < \mathbf{S} < \mathbf{O}$	$(C) \mathbb{R} > \mathbb{S} > \mathbb{P} > O$	(D) P > S > R > O					

MISCELLANEOUS TYPE QUESTION

ANSWER KEY

EXERCISE -3

	<i>T</i> (D)										
•	<u> Irue / False</u>										
	1 . T 2 . T	3 . T	4 . T	5 . F	6 . F	7 . T	8 . F	9 . T			
•	Fill in the Blanks	Ē									
	1. IA group /1	2 . VIIA/17	3 . Variabl	e		4. higher, fir	st				
	5. Si, P, C, N 6. 28 7. (non polar) covalent 8. Mg										
	9. IA	12. Iner pair	r effect								
•	Match the Colum	<u>n</u>									
	1. (A)-s (B)-r (C)-p (D))-q	2. (A)-s (B)-r	· (C)-q (d)-p	-r (B)-q (C)-p)-q (C)-p (D)-s					
	4. (A)-r (B)-s (C)-q (D))-p	5. (A)-r (B)-s	s (C)-p (D)-q							
•	Assertion - Reaso	on Question	<u>s</u>								
	1 . D 2 . D	3 . C	4 . C	5 . C	6 . D	7 . A					
•	Comprehension	Based Ques	<u>ions</u>								
	Comprehension #1	: 1. B	2. B,C	3. C	4.A	5.B	6.A				
	Comprehension #2	: 1. B	2. A								

EXERCISE-04 [A]

CONCEPTUAL SUBJECTIVE EXERCISE

D

- 1. Can an element with atomic number 126, if discovered, be accommodated in the present long from of periodic table ?
- 2. Third period of the periodic table contains 8 and not18 elements. Justify.
- **3.** If scientist succeed in obtaining element with atomic number 114, which well known element would you expect it to resemble ?
- **4**. I^{st} and 2^{nd} IE of few elements have been given below –

IE ₁ (KJ/mole)	IE ₂ (KJ/mole)
(A) 520	7300
(B) 1680	3380
(C) 2370	5250
(D) 900	1760

- (i) Which is reactive metal?
- (ii) Which is reactive non metal?
- (iii) Which is inert gas ?
- (iv) A metal that form a stable binary halide of formulae AX_2 (X = Halogen)
- 5. Among the elements B, Al, C and Si,
 - (a) which has the highest first ionization enthalpy?
 - (b) which has the most negative electron gain enthalpy?
 - (c) which has the largest atomic radius ?
 - (d) which has the most metallic character ?
- **6.** Which of the elements Na, Mg, Si and P would have the greatest difference between the first and second ionization enthalpies. Briefly explain your answer.
- 7. The diagram below shows part of the skeleton of the periodic table in which element are indicated by letters which are not their usual symbols :



Answer the following on the basis of periodic table :

- (I) Alkali metal(s)
- (II) An elements with the outer configuration of d^8s^2
- (III) Lanthanoids
- (IV) Representative elements(s)
- (V) Elements with incomplete f-subshell
- (VI) Halogen(s)
- (VII) s-block element(s)

(VIII) Transition element (s)

(IX) Noble gase (s)

(X) Non-transition element (s)

8. The diagram below shows part of the skeleton of the periodic table in which element are indicated by letter which are not their usual symbols :

															Q	
Н	L													R		
									J							Т

Answer the following on the basis of modern periodic table

(1) Element having greatest ionic character in its compound with non-metals

- $({\rm I\!I})$ Metal cation which is coloured in its aqueous solution
- (III) Element (s) of which carbonate salt is/are water soluble
- (IV) Which element is monoatomic gas at room temperature
- 9. Electronegativity of F on Pauling scale is 4.0. Calculate its value on Mulliken scale :
- 10. Calculate the electronegativity of fluorine from the following data :

$$\begin{split} E_{H-H} &= 104.2 \ \text{kcal} \ \text{mol}^{-1} \ ; \\ E_{F-F} &= 36.6 \ \text{kcal} \ \text{mol}^{-1} \ ; \end{split}$$

$$E_{H-F} = 134.6 \text{ kcal mol}^{-1};$$

Electronegativity of hydrogen = 2.1

- 11. Ionisation potential and electron affinity of fluorine are 17.42 and 3.45 eV respectively. Calculate the electronegativity of fluorine on Mulliken scale and Pauling scale :
- CONCEPTUAL SUBJECTIVE EXERCISE

ANSWER KEY

EXERCISE -4(A)

- 1. No. because there no provision for filling of g-block element in periodic table.
- **3**. 14th group, carbon family
- 4. (i) Most reactive metal will be an alkali metal of 1st group with its $IE_2 > > IE_1$. Thus most reactive metal is (a). (ii) Most reactive non-metal will be a halogen of 17th group. Its IE_1 will be quite high. Thus most reactive non metal is (b).

(iii) A noble gas will have very, very high $\mathrm{IE}_{\mathrm{1}}.$ Thus (c) is a noble gas.

(iv) A metal that forms a stable binary halide will be an alkaline earth metal of 2nd group. Its IE_2 will not be much higher than IE_1 . Thus (d) is such a metal that forms a stable binary halide of formula AX_2 .

- **5**. (a) C (b) Si (c) Al (d) Al
- **6.** Na, because during IP_2 electron is removed from stable octet configuration (ns² np⁶).
- 7. (i) B, (ii) H, (iii) A, (iv) B, C, F, J, I, (v) A, (vi) I (vii) B, J (viii) E, H, K (ix) G (x) L
- 8. (i) H, (ii) J^{2+} , (iii) H (iv) T
- **9.** 11.2 **10.** 3.87 **11.** 10.435, 3.726

EXERCISE-04 [B]

BRAIN STORMING SUBJECTIVE EXERCISE

- 1. Arrange the following ions in increasing order of their radius ? V^{+5} , K^+ , S^{2-} , Mn^{+7} , Ca^{+2} , Cl^- , P^{3-}
- 2. The ionic radii of S^{2-} and Te^{2-} are 1.84 and 2.2 E respectively. What would you predict for the ionic radius of Se^{2-} .
- **3**. Out of Li^+ , Be^{+2} and B^{+3} ions, which has the smallest ionic radius and why?
- **4.** A student reported the radii of Cu, Cu⁺ and Cu²⁺ as 122 pm, 96 pm and 72 pm. Do you agree with the reported values. Justify the answer. Explain why ?
- 5. How many chlorine atoms will be ionised (Cl \rightarrow Cl⁺ + e⁻) by the energy released from the process Cl + e⁻ \rightarrow Cl⁻ for 6.023 \lor 10²³ atom (IP for Cl = 1250 kj mole⁻¹ and EA = 350 KJ mole⁻¹)
- 6. Na and Mg⁺ have same number of electrons. But removal of electron from Mg⁺ requires more energy. Explain.
- **7.** The first ionisation energy of beryllium is greater than that of lithium but reverse is true for the second ionisation energy.
- **8** Based on location in P.T., which of the following would you expect to be acidic & which basic.

(A) CsOH	(B) IOH	(C) Sr(OH ₂)	(D) Se(OH) $_2$
(E) FrOH	(F) BrOH		

9. From among the elements, choose the following : Cl, Br, F, Al, C, Li, Cs & Xe.

- (ii) The element with lowest ionisation potential.
- (iii) The element whose oxide is amphoteric.
- (iv) The element which has smallest radii.
- (v) The element whose atom has 8 electrons in the outermost shell.
- **10.** For the gaseous reaction,

 $K + F \longrightarrow K^+ F^-$, ΔH was calculated to be 19 kcal under conditions where the cations and anions were prevented by electrostatic separation from combining with each other. The ionisation potential of K is 4.3 eV atom. What is the electron affinity of F?

- **11.** The ionisation potentials of atoms A and B are 400 and 300 kcal mol⁻¹ respectively. The electron affinities of these atoms are 80.0 and 85.0 kcal mol⁻¹ respectively. Prove that which of the atoms has higher electronegativity.
- 12. (a) If internuclear distance between Cl atoms in Cl_2 is 10 E & between H atoms in H_2 is 2 E, then calculate internuclear distance between H & Cl (Electronegativity of H = 2.1 & Cl = 3.0)
 - (b) Compare the following giving reasons

Acidic nature of oxides : CaO, CO, CO₂, N_2O_5 , SO₃

13. With the help of EN values $[EN_A = 1.8, EN_B = 2.6, EN_C = 1.6, EN_D = 2.8]$ answer the following questions for the compounds

HAO, HBO, HCO, HDO

- (a) Compounds whose aqueous solution is acidic and order of their acidic strength
- (b) Compounds whose aqueous solution is basic and order of their basic strength
- (c) Comment on the chances of being coloured on the basis of percent ionic character for the compounds CD & AB.

⁽i) The element with highest electron affinity.

BRAIN STORMING SUBJECTIVE EXERCISE ANSWER KEY

EXERCISE -4(B)

1. $Mn^{+7} < V^{+5} < Ca^{+2} < K^+ < Cl^- < S^{2-} < P^{3-}$

2. Ionic radius of Se^{2-} is expected to be in between the ionic radii of S^{2-} and Te^{2-} . Thus

Ionic radius of Se²⁻ = $\frac{1.84 + 2.21}{2}$ = 2.025 A⁰

- **3.** B^{+3} due to more zeff.
- 4. Cu, Cu⁺ and Cu²⁺ have same number of protons but different number of electrons. In moving from Cu to Cu⁺ to Cu²⁺, the number of electrons decreases thus effective nucelar charge and force of attraction between the nucleus and valence elecron increases and hence size decreases. Thus the correct order is cu (0.122 nm) > Cu⁺ (0.096 nm)> Cu⁺² (0.072 nm).
- 5. Since $1250 \text{ kJ} \text{ mole}^{-1}$ energy is required to ionise $6.023 \text{ H} 10^{23}$ atoms. But $350 \text{ kJ} \text{ mol}^{-1}$ energy is released hence the no. of ionised atoms –

$$= \frac{6.023 \times 10^{23} \times 350 \text{ kJ mole}^{-1}}{1250 \text{ kJ mole}^{-1}} = 1.686 \text{ Y} 10^{23}$$

- **6.** Mg⁺ has more Zeff.
- 7. The electronic configuration of Li and Be are $1s^2 2s^1$ and $1s^2 2s^2$ respectively.

Since in beryllium 2s orbital is complete while in lithium it is incomplete, it requires more energy to pull out an electron from beryllium than from lithium. Moreever beryllium has higher nuclear charge.

After removal of one electron, Li^+ and Be^+ ions have electronic configuration $1s^2$ and $1s^2 2s^1$ respectively. Now it will be easier to remove $2s^1$ electron rather than $1s^2$. Thus IE_2 of Li higher.

- 8. (A) Basic, (B) Acidic, (C), Basic, (D) Acidic, (E) Basic, (F) Acidic.
- 9. (i) Cl, (ii) Cs, (iii) Al, (iv) F, (v) Xe.
- **10.** 3.476 ev.
- **11.** $EN_1 > EN_2$
- **12**. (a) 5.919 E (b) CaO < CO < $CO_2 < N_2O_5 < SO_3$
- **13.** (a) Acidic HBO, HDO

- acidic strength HDO > HBO
- (b) Basic HAO, HCO Basic strength HCO > HAO
 - (c) % Ionic character = 16 $|X_A X_B| + 3.5 (X_A X_B)^2$

for CD = 16 (1.2) + 3.5 (1.2)2= 24.24 %

.: Colourless.

EXERCISE - 05 [A]

JEE-[MAIN] : PREVIOUS YEAR QUESTIONS

1.	According to the Per their	iodic law of elements, tl	he variation in propertie	es of elements is related to [AIEEE-2003]							
	(1) Nuclear masses		(2) Atomic numbers	[
	(3) Nuclear neutron-pro	ton number ratio	(4) Atomic masses								
2.	The reduction in atomic	c size with increase in ator	nic number is a characteris	stic of elements of :-							
				[AIEEE-2003]							
	(1) d-block	(2) f-block	(3) Radioactive series	(4) High atomic masses							
3.	Which of the following	groupings represent a colle	ection of isoelectronic spec	ties ?							
	(At. no. Cs = 55, Br =	= 35)	-	[AIEEE-2003]							
	(1) N ^{3−} , F [−] , Na ⁺	(2) Be, Al ³⁺ , Cl ⁻	(3) Ca ²⁺ , Cs ⁺ , Br	(4) Na ⁺ , Ca ²⁺ , Mg ²⁺							
4.	The atomic numbers of	vanadium, (V), chromium	(Cr), manganese (Mn) and	iron (Fe) are respectively 23							
	24, 25 and 26. Which one of these may be expected to have the highest second ionization enthalpy ?										
	(1) Cr	(2) Mn	(3) Fe	(4) V [AIEEE-2003]							
5.	Which one of the follow	ving sets of ions represents	s the collection of isoelectr	onic species ?							
				[AIEEE-2004]							
	(1) K ⁺ , Cl ⁻ , Mg ²⁺ , Sc ³⁺	(2) Na ⁺ , Ca ²⁺ , Sc ³⁺ , F ⁻	(3) K ⁺ , Ca ²⁺ , Sc ³⁺ , Cl ⁻	(4) Na ⁺ , Mg ²⁺ , Al ³⁺ , Cl ⁻							
6.	Which of the following	ions has the highest value	of ionic radius ?	[AIEEE-2004]							
	(1) O ²⁻	(2) B ³⁺	(3) Li ⁺	(4) F [_]							
7.	Among Al ₂ O ₃ , SiO ₂ , P ₂	$_{2}O_{3}$ and SO_{2} , the correct of	order of acid strength is :-	[AIEEE-2004]							
	(1) $Al_2O_3 < SiO_2 < SO_2$	$_2 < P_2O_3$	$(2) \operatorname{SiO}_2 < \operatorname{SO}_2 < \operatorname{Al}_2 \operatorname{O}_3$	$_{3} < P_{2}O_{3}$							
	(3) $SO_2 < P_2O_3 < SiO_2$	$_{2}$ < Al ₂ O ₃	(4) $Al_2O_3 < SiO_2 < P_2O_3$	$O_3 < SO_2$							
8.	The formation of the ox	kide ion O²-(g) requires first	t an exothermic and then a	an endothermic step as shown							
	below :- [AIEEE-2004]										
	$O(g) + e^- = O^-(g), \ \Delta H^\circ$	$= -142 \text{ kJ mol}^{-1}$									
	$O^{-}(g) + e^{-} = O^{2-}(g), \ \Delta H^{\circ} = 844 \ \text{kJ mol}^{-1}$										
	This is because :-										
	(1) O^- ion will tend to r	resist the addition of anoth	er electron								
	(2) Oxygen has high ele	ectron attinity									
	(4) O ⁻ ion has comparit	tively larger size than oxyg	en atom								
9.	In which of the followir	ng arrangements the order	is NOT according to the j	property indicated against it							
				[AIEEE-2005]							
	(1) $Al^{3+} < Mg^{2+} < Na^+$	< F ⁻ – increasing ionic size	e								
	(2) $B < C < N < O - i$	ncreasing first ionization en	nthalpy								
	(3) $I < Br < F < Cl - in$	ncreasing electron gain ent	thalpy (with negative sign)								
10	(4) $\text{Li} < \text{Na} < \text{K} < \text{Rb}$	- increasing metallic radiu	s								
10.	Which of the following	oxides is amphoteric in ch	aracter ?	[AIEEE-2005]							
	(1) SnO_2	(2) SiO_2	(3) CO ₂								
11.	PICK OUT THE ISOElectron	IL LL O+	wing :								
	I. CH_3	II. $H_3 O'$	III. INH_3	$IV.CH_3$							
10	(1) I and II The lenther: de contract:	(\mathcal{L}) III and IV	(S) I and III								
12.	(1) 7r and V have about	the same radius	(2) 7r and Nh have similar	[AILLE-2005] ar ovidation state							
	(3) 7r and Hf have about	t the same radius	(4) $7r$ and $7n$ have the set	an oxidation state							
	U LI UIU I II HAVE AUOU	LINE SUITE TAULUS	(T) LI UNU LII Have INE So	THE UNICATION STATE							

13.	Which c	ot the fo	ollowing	tactors	s may b	e regar	ded as t	he maii	n cause	ot lant	hanide	contrac	tion ?		00051
	(1) poo	r shield	ling of c	one of 4	t electr	on by a	nother	in the s	ubshell				[4	AIEEE-	2005]
	(2) effec	tive shi	elding c	ot one c	ot 4f ele	ctrons	by anot	her in tl	he subs	hell					
	(3) poor	er shiel	lding of	5d elec	ctrons b	y 4f ele	ectrons								
	(4) grea	ter shie	lding of	5d ele	ctrons ł	oy 4f ele	ectrons								
14.	The inc	reasing	order	of the	first ior	nization	enthal	pies of	the ele	ements	B, P, S	S and F	ilowes] ⁷ (lowes]	st first) AIEEE -	is :- 2006]
	(1) F <	S < P	' < B	(2)) P < 5	S < B ⋅	< F	(3) H	3 < P	< S <	F	(4) B	< S <	P < F	
15.	Which o	one of	the foll	owing s	sets of	ions re	present	s a coll	ection	of isoe	lectroni	c speci	es ?		
		_												[AIE]	EE-06]
	(1)N ^{3–} ,C	0²-, F⁻,	S ²⁻	(2)) LI+,Na	a+,Mg+2	, Ca+2	(3)K	+,Cl⁻, C	Ca+2, Sc	+3	(4) Ba	$^{+2}, Sr^{+2}$, K ⁺² , C	Ca ⁺²
16.	Followir	ng state	ments r	egardir	ng the p	periodic	trends	of chen	nical rea	activity	of the a	alkali m	etals an	nd the h	alogens
	are give	en. Wh	ich of t	hese st	atemer	nts give	s the c	orrect 1	oicture	?			[4	AIEEE-	2006]
	(1) In bo	oth the a	alkali m	etals ar	nd the h	alogens	s the ch	emical	reactivi	ty decre	eases w	ith incre	ease in a	atomic	number
		n the g	group			1			1		41		1 11 11.	11 1	
	(2) Chemical reactivity increases with increase in atomic number down the group in both the alkali metals														
	(3) In al	lkali ma	etals the	, reacti	vitu inc	roasos	but in t	he hal	ogen it	decrea	ses wit	h incre	ase in a	atomic	numher
	dow	n the o	group	e reach	vity inc	100303		ine nui	Jgen n	ueereu	.565 WIL	ii iiiciea			number
	(4) The	reactiv	vity deci	reases	in the	alkali n	netals b	ut incre	eases in	the hal	ogens v	vith incr	ease in	atomic	number
	dow	n the g	group								5				
17.	The set	repres	enting t	he con	rect orc	ler of id	onic rac	lius is :-	-				[4	AIEEE-	2009]
	(1) Li+ :	> Na+ :	> Mg ²⁺	> Be ²⁻	+			(2) N	/lg ²⁺ >	Be ²⁺ >	> Li+ >	Na+			
	(3) Li+ >	> Be ²⁺	> Na+	> Mg ²	+			(4) 1	Na+ > I	$_{i^{+}} > M$	$[g^{2+} >]$	Be ²⁺			
18.	The cor	rect se	quence	which	shows	decreas	sing ord	ler of tl	he ionio	c radii (of the e	element	s is :- [/	AIEEE-	2010]
	(1) O ^{2–}	> F ⁻ >	$Na^+ >$	Mg ²⁺ >	> Al ³⁺			(2) A	$Al^{3+} > I$	$Mg^{2+} >$	Na ⁺ >	$F^- > C$) ²⁻		
	(3) Na+	$> Mg^2$	$^{+} > Al^{3}$	$^{+} > 0^{2}$	- > F-			(4) 1	$Va^+ > F$	> Mg	$g^{2+} > C$	$0^{2-} > A$	l^{3+}		
19.	Which o	one of t	the follo	owing c	orders p	resents	the co	rrect se	quence	of the	increas	sing bas	sic natu	re of th	ie given
	oxides ?	2											[A	IEEE-	2011]
	(1) Na ₂ ($O < K_2$	0 < Mg	$_{\rm gO} < {\rm A}$	l_2O_3			(2) $K_2O < Na_2O < Al_2O_3 < MgO$							
	(3) Al ₂ C	$P_3 < M_2$	gO < N	$a_2 O < 1$	K ₂ O			(4) N	/lgO <	K ₂ O <	$< Al_2O_3$	$< Na_2$	0		
20.	The out	er elec	tron co	nfigurat	tion of	Gd (Ato	omic No	o. : 64)	is :-	0			A]	IEEE-	2011]
	(1) $4f^4$ 5	$5d^4 6s^2$		(2)	4f' 5d	1^{1} 6s ²		(3) 4	$f^3 5 d^5$	$6s^2$		$(4) 4f^{2}$	3 5d ⁰ 6	s ²	
21.	The cor	rect ord	der of el	lectron	gain en	ithalpy	with ne	gative s	ign of F	F, Cl, B	r and I,	having	atomic	numbe	r 9, 17,
	35 and	53 res	pectivel	y, is :-			-			-			[A]	IEEE-	2011]
	(1) > 1	3r > Cl	l > F	(2)) F > C	1 > Br	> 1	(3) (J > F :	> Br >	1	(4) Br	> Cl >	> I > F	00101
22.	The inc	reasing	order a^{2+}	of the i	onic rad	dii of th	ie given	isoeleo	ctronic	species	is :-		2+ 17+	AIEEE-	2012]
	(1) K ⁺ , S	S ^{2–} , Ca	1 ²⁺ , CΓ	(2)) CΓ, C	a²⁺, K⁺	, S ²⁻	(3) 5	5²⁻, CΓ,	, Ca²⁺,	K⁺	(4) Ca	α ²⁺ , Κ ⁺ ,	CΓ, S ²	_
PRE	VIOU	S YE	AR Q	UES'	TION	S	PERI	ODIC	C TAE	BLE		EX	ERC	ISE-0	5(A)
0110	1	2	2	4	5	6	7	0	0	10	11	10	12	14	15
Ane	2	2	1 1	4 1	3	1	4	0 1	י פ	10	<u> </u>	<u> </u>	<u>3</u>	1 4 4	<u> </u>
Que	16	17	18	19	20	21	22	-	-	<u> </u>	<u> </u>			<u> </u>	
Ans	3	4	1	3	2	3	4								
		ļ	<u> </u>	<u> </u>	ļ	<u> </u>	<i>_</i>	4							
								4							

EXERCISE - 05 [B] JEE-[ADVANCED] : PREVIOUS YEAR QUESTIONS

1.	Moving from right to left	in a periodic table, the atc	omic size is:		[JEE	1995]					
	(A) increased	(B) decreased	(C) remains constant	(D) none of	these						
2.	The increasing order of e	electronegativity in the follo	owing elements:		[JEE	1995]					
	(A) C, N, Si, P	(B) N, Si, C, P	(C) Si, P, C, N	(D) P, Si, N,	С						
3.	One element has atomic	weight 39. Its electronic co	nfiguration is $1s^2$, $2s^2 2p^6$, 3	3s² 3p ⁶ 4s¹. Th	ne true s	tatement					
	for that element is:				[JEE	1995]					
	(A) High value of IE		(B) Transition element								
	(C) Isotone with $_{18}$ Ar 38		(D) None								
4.	The number of paired ele	ectrons in oxygen atom is:			[JEE	1995]					
	(A) 6	(B) 16	(C) 8	(D) 32							
5.	The decreasing size of K^+ , Ca^{2+} , Cl^- & S^{2-} follows the order:										
	(A) $K^+ > Ca^{+2} > S^{-2} > Cl^{-2}$	-	(B) $K^+ > Ca^{+2} > Cl^- > S^{-2}$	2							
	(C) $Ca^{+2} > K^+ > Cl^- > S^{-2}$		(D) $S^{-2} > Cl^{-} > K^{+} > Ca^{+2}$	2							
6.	Which of the following h	as the maximum number o	f unpaired electrons		[JEE	1996]					
	(A) Mg ²⁺	(B) Ti ³⁺	(C) V ³⁺	(D) Fe ²⁺							
7.	The incorrect statement among the following is:										
	(A) the first ionisation potential of Al is less then the first ionisation potential of Mg										
	(B) the second ionisation potential of Mg is greater then the second ionisation potential of Na										
	(C) the first ionisation po	tential of Na is less then the	e first ionisation potential o	f Mg							
	(D) the third ionisation po	otential of Mg is greater the	en the third ionisation poter	ntial of Al							
8.	$Li^{+}, Mg^{2+}, K^{+}, Al^{3+}$ (Arran	ge in increasing order of ra	adii)		[JEE	1997]					
9.	Which one of the following	ng statement (s) is (are) com	rect?		[JEE	1998]					
	(A) The electronic config	uration of Cr is [Ar] 3d ⁵ 4s ³	1 .(Atomic No. of Cr = 24)								
	(B) The magnetic quantu	m number may have a neg	gative value								
	(C) In silver atom, 23 elec	ctrons have a spin of one ty	pe and 24 of the opposite t	type. (Atomic	No. of	Ag = 47)					
	(D) The oxidation state o	f nitrogen in HN_3 is –3.									
10.	The electrons, identified	by n & / ;			[JEE	1999]					
	(i) $n = 4$, $l = 1$	(ii) $n = 4$, $l = 0$	(iii) $n = 3$, $l = 2$								
	(iv) $n = 3$, $l = 1$ can b	e placed in order of increa	sing energy, from the lowe	est to highest	as :						
	(A) (iv) < (ii) < (iii) <	(i)	(B) (iii) < (ii) < (iv) < (i)								
	(C) (i) < (iii) < (ii) < (iv)		(D) (iii) < (i) < (iv) < (ii)								
11.	Gaseous state electronic	configuration of nitrogen a	atom can be represented as	5:	[JEE	1999]					
	(A) $\uparrow \downarrow \uparrow \downarrow \uparrow \uparrow \uparrow$	(B) $\uparrow \downarrow \uparrow \downarrow \uparrow \downarrow \uparrow$	(C) $\uparrow \downarrow \uparrow \downarrow \uparrow \downarrow \downarrow \downarrow$	(D) $\uparrow \downarrow \uparrow \downarrow \downarrow$	$\downarrow\downarrow\downarrow$						
12.	The electronic configurat	tion of an element is $1s^2$ 2s	s² 2p ⁶ 3s² 3p ⁶ 3d ⁵ 4s ¹ . Thi	s represents it	s :						
	(A) excited state	(B) ground state	(C) cationic form	(D) none	[JEE	2000]					

13.	. Assertion: F atom has a less negative electron gain enthalpy than Cl atom.										
	Reason: Additional e	lectron is repelled more effi	ciently by 3p electron in	Cl atom than by 2pelectron in F							
	atom.										
	(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.										
	(B) Statement-1 is true	e, statement-2 is true and stat	tement-2 is NOT the corre	ct explanation for statement-1.							
	(C) Statement-1 is true, statement-2 is false.										
(D) Statement-1 is false, statement-2 is true.											
14.	The correct order of	[JEE 2000]									
	(A) N < Be < B	(B) $F^- < O^{2-} < N^{3-}$	(C) Na < Li < K	(D) $Fe^{3+} < Fe^{2+} < Fe^{4+}$							
15.	The IE ₁ of Be is great	ter than that of B.	[T/F]	[JEE 2001]							
16.	The set representing	correct order of IP_1 is		[JEE 2001]							
	(A) K > Na > Li	(B) Be > Mg > Ca	(C) B > C > N	(D) Fe > Si > C							
17.	Identify the least stabl	[JEE 2002]									
	(A) Li⁻	(B) Be⁻	(C) B⁻	(D) C⁻							
10	The maximum numb		nuinainal avantum numba	n 2 and anin quantum number							

18. The maximum number of electrons that can have principal quantum number n=3, and spin quantum number, $m_s = -1/2$, is [JEE 2011]

PRE	VIOUS YEARS	6 QUES	STIONS		A	NSW	ER I	KEY					EXERCISE-5 [B]
1.	А	2.	С	3.	С		4.	А		5.	D		
6.	D	7.	В										
8	$Mg^{2+} < Li^+$	< K ⁺	Q.9	A,B,C	10.	А							
11.	A,D	12.	B,C	13.	С		14.	В	15.	True		16.	В
17.	В	18.	9										