CHEMISTRY

ALLEN

QUANTUM NUMBER & PERIODIC TABLE

Example

1. Write the increasing order of energies of 4s,3p,4p and 3d.

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2. Nitrogen

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3. A compound of vanadium has a magnetic moment of $1.73BM$. Work out the electronic configuration of vanadium in the compound

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4. Calculate the effective nuclear charge at the periphery of nitrogen atom when an extre electron is

added in the formation of anion . Also calculate the effective nuclear charge of N-atom.

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Exercise

1. Correct set of four quantum numbers for the valence (outermost) electron of rubidium $(Z = 37)$ is

A. $5, 0, 0, +\frac{1}{2}$

B. $5, 1, 0, +\frac{1}{2}$

C. $5, 1, 1, +\frac{1}{2}$

D. $6, 0, 0, +\frac{1}{2}$

Answer: A

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2. The correct set of quantum numbers for the unpaired electron of chlorine atom is

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3. Find out the number of phenotypes in F_2 generation if a character is controlled by 3 pair of

polygenes

A. 34

B. 40

C. 36

D. 38

Answer: B

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4. Principal quantum number of an atom represents :

A. Size of the orbital

B. Spin angular momentum

C. Orbital angular momentum

D. Space orientation of the orbital

Answer: A

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5. Which of the following sets of quantum numbers represent an impossible arrangement :-

	n	l	m	m_s
(A)	3	2	-2	$\frac{1}{2}$
(B)	4	0	0	$\frac{1}{2}$
(C)	3	2	-3	$\frac{1}{2}$
(D)	5	3	0	$\frac{1}{2}$

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6. The explanation for the presence of three unpaired electrons in the nitrogen atom can be given by -

A. Pauli's exclusion principle

B. Hund's rule

C. Aufbau's principle

D. Uncertainity principle

Answer: B

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7. the maximum number of electrons that can be accommodated in the $3^{rd}\Big)$ shell is :

A. 2

B. 8

C. 18

D. 32

Answer: C

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8. The quantum number which determines the shape of the orbital is

A. Principal quantum number

B. Azimuthal quantum number

C. Magnetic quantum number

D. Spin quantum number

Answer: B

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9. Which of the following has maximum number of unpaired electron (atomic number of $Fe26$)

A. Fe

B. Fe (II)

C. Fe (Ill)

D. Fe (IV)

Answer: C

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10. A neutral atom of an element has two K, eight L, nine M and two N electrons then electronic configuration of the element is _____

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11. The size of the following species increases in the order

A. $Mg^{2+} < Na^{+} < F^{-}$

B. $F^{-} < Na^{+} < Mg^{2+}$

C. $Mg < F^{-} < Na^{+}$

D. $Na^{+} < F^{-} < Mg^{2+}$

Answer: A

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12. Highest size will be of

A. Br^-

B. I

C. I^-

D. I^+

Answer: C

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13. Element Cu has two oxidation states Cu^{+1} & Cu^{+2} the right order of radii of these ions.

A. $Cu^{+1} > Cu^{+2}$

B. $Cu^{+2} > Cu^{+1}$

C. $Cu^{+1} = Cu^{+2}$

D. $Cu^{+2} \geq Cu^{+1}$

Answer: A

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14. The correct order of increasing atomic size of element N F Si & P.

A. $N < F < Si < P$

B. $F > N < P < Si$

C. $F < N < P < Si$

D. $F < N < Si < P$

Answer: C

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15. The correct order of atomic or ionic size

A. N $<$ Li $<$ B

B. Cl $<$ Mg $<$ Ca

C. $Ca^{2+} < S^{-2} < Cl^{-}$

D. $Na^{+} < Mg^{+2} < Cl^{-}$

Answer: B

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16. In which of the following electronic configuration ionisation energy will be maximum in

A. $[Ne]3s^2 3p^1$

B. $[Ne]3s^2 3p^2$

C. $[Ne]3s^2 3p^3$

D. $[Ar]3d^{10}4s^2 4p^3$

Answer: C

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17. The correct order of second ionisation potential of C, N, O and F is:

A. $C > N > O > F$

B. $O > N > F > C$

C. $O > F > N > C$

D. $F > O > N > C$

Answer: C

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18. The ionization energy will be maximum for the process.

A. $Ba \rightarrow Ba^{+}$

B. $Be \rightarrow Be^{+}$

C. $Cs \rightarrow CS^{+}$

D. $Li \rightarrow Li^+$

Answer: B

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19. The correct order of second I.P.

A. Na $<$ Mg $>$ Al $<$ Si

B. Na $>$ Mg $<$ Al $>$ Si

C. Na $>$ Mg $>$ Al $<$ Si

D. Na $>$ Mg $>$ Al $>$ Si

Answer: B

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20. Amongst the following, the incorrect statement is

A. $IE_1(Al) < IE_1(Mg)$

B. $IE_1(Na) < IE_1(Mg)$

C. $IE_2(Mg) < IE_2(Na)$

D. $IE_3(Mg) > IE_3(Al)$

Answer: C

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21. The process(es) requiring the absorption of energy is/are:

A. $F \rightarrow F^-$

B. $Cl \rightarrow Cl^-$

C. $O^- \rightarrow O^{2-}$

D. $H \rightarrow H^-$

Answer: C

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22. Electron affinities of O,F,S and Cl are in the order.

A. $O < S < Cl < F$

B. $O < S < F < Cl$

C. $S < O < Cl < F$

D. $S < O < F < Cl$

Answer: B

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23. Increasing order of Electron affinity for following configuration.

(a) $1s^2, 2s^2, 2p^2$ (b) $1s^2, 2s^2 2p^4$

(c) $1s^2, 2s^2, 2p^6, 3s^2, 3p^4$ (d) $1s^2, 2s^2, 2p^6, 3s^2, 3p^3$

A. d $<$ a $<$ b $<$ c

B. d $<$ a $<$ c $<$ b

C. a $<$ b $<$ c $<$ d

D. a $<$ b $<$ d $<$ c

Answer: A

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24. Highest electron affinity is shown by

A. F^-

B. Cl^-

C. Li^+

D. Na^+

Answer: C

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25. The outer shell configuration of the most electronegative element is

A. ns^2np^3

B. ns^2np^4

C. ns^2np^5

D. ns^2np^6

Answer: C

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26. In the following which configuration element has maximum electronegativity.

A. $1s^2, 2s^22p^5$

B. $1s^2, 2s^22p^6$

C. $1s^2, 2s^22p^4$

D. $1s^2, 2s^22p^6, 3s^2, 3p^3$

Answer: A

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27. On the Pauling's EN scale, the element next to F is _____

A. Cl

B. O

C. Br

D. Ne

Answer: B

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28. Bond distance $C-F$ in (CF_4) & $Si-F$ in (SiF_4) are respective 1.33Å & 1.54Å. $C-SI$ bond is 1.87Å. Calculate the colvalent radius of F atom ignoring the electronegativity differences.

A. 0.64 Å

B. $\frac{1.33+1.54+1.8}{3}\text{Å}$

C. 0.5 Å

D. $\frac{1.54}{2}\text{Å}$

Answer: C

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29. Which one is not correct order of electro negativity.

A. $F > Cl > Br > I$

B. $Si > Al > Mg > Na$

C. $Cl > S > P > Si$

D. None of these

Answer: D

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30. Choose the s-block element from the following:

A. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^5, 4s^1$

B. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^{10}, 4s^1$

C. $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$

D. all of the above

Answer: C

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31. Among the following which species is/are paramagnetic

(i) Sr^{2+} (ii) Fe^{3+} (iii) Co^{2+} (iv) S^{2-} (v) Pb^{2+}

A. i, iv, v

B. i, ii, iii

C. ii, iii

D. iv, v

Answer: C

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32. It each orbital can hold a maximum of three electrons, the number of elements in 9th period of periodic table (long form) are:

A. 48

B. 162

C. 50

D. 75

Answer: D

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33. Which of the following clement has highest metallic character

A. $\begin{matrix} \text{Element} & IP \\ P & 17eV \end{matrix}$

B. $\begin{matrix}\text{Element} & IP \\ Q & 2eV\end{matrix}$

C. $\begin{matrix}\text{Element} & IP \\ R & 10eV\end{matrix}$

D. $\begin{matrix}\text{Element} & IP \\ S & 13eV\end{matrix}$

Answer: B

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34. The electronic configuration of an clement is $1s^2, 2s^2, 2p^6, 3s^2, 3p^4$. The atomic number and the group number of the element 'X' which is just below the above element in the periodic table are respectively.

A. 24 & 6

B. 24 & 15

C. 34 & 16

D. 34 & 8

Answer: C

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35. the number of d- electrons in Mn^{2+} is equal to that of :

A. p-electrons in N

B. s-electron in Na

C. d-electrons in Fe^{+3}

D. p-electrons in O^{-2}

Answer: B::C

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36. Which of the following is correct order of EA.

A. $N < C < O < F$

B. $F > Cl > Br > I$

C. $Cl > F > Br > I$

D. C $<$ N $<$ O $<$ F

Answer: A::C

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37. Which of the following are correct

A. $IE_2(Mg) < IE_2(Na)$

B. $EA(N) < EA(P)$

C. Atomic size Mg^{+2} $>$ Atomic size $\left(Li^{+}\right)$

D. IP of Na $<$ Mg $<$ Al

Answer: A::B

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38. If Aufbau's principle and Hund's rule were not followed.

A. K would have been d-block element & paramagnetic

B. Cu would have been s-block element.

C. Cr would have been diamagnetic

D. None of these

Answer: A::B::C

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39. In halogen, which of the following properties increase from iodine to fluroine

A. Ionisation energy

B. Electronegativity

C. Bond length

D. Electron affinity

Answer: A::B

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40. Amongst the following statements, which is/are correct?

A. Electronegtaivity of sulphur is greater than that of oxygen

B. Electron affinity of oxygen is smaller than that of sulphur.

C. Electron gain enthalpy of fluorine is most negative

D. Electron gain enthalpy of chlorine is most negative

Answer: B::D

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41. Select the correct statements (s)

A. IE_1 of F $>$ IE_1 of Cl

B. EA of O $>$ EA of S

C. Ionic radius of Cl^- $>$ ionic radius of K^+

D. None of these

Answer: A::C

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42. Statement-1 : The groundstate configuration of Cr is [Ar] $3d^5 4s^1$

Statement-2 : The energy of atom is lesser in $3d^5 4s^1$ configuration compared to $3d^4 4s^2$ configuration.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Staterment-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: A

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43. Assertion: The first ionisation energy of Be is greater than that of B.

Reason: 2p-orbital is lower in energy than 2s-orbital.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Staterment-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: C

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44. Statement-1 : IE_1 ofN is greater than 0 .

Statement-2: N-atom is bigger than O in size.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Staterment-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: B

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45. Statement-1 : First electron gain enthalpy is alway -ve for an element.

Statement-2 : Magnitude of electron gain enthalpy irregularly increases from left to right in a period.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Staterment-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: D

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46. Statement-1: Ionization potential of Sn is less than Pb.

Statement-2 : Ionization potential is inversaly proportional to atomic size.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: B

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47. Statement-1 : Electron gain enthalpy of Cl is largest in periodic table.

Statement-2 : Halogen's have largest electron gain enthalpy in a period.

A. Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.

B. Staterment-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: B

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48. Match the column :

Column I	Column II
(A) Cl	(P) Metal
(B) F	(Q) Highest electron affinity
(C) Cu	(R) Highest Electronegative element
(D) He	(S) Highest ionisation energy.

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49. Minimum number of electrons having $m_s = \left(-\frac{1}{2}\right)$ in Cr is "_____"

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J Main Exercise

1. Which one of the following groups represent a collection of isolectronic species ? (At.no $Cs = 55, Br = 35$)

A. N^{3-}, F^{-}, Na^{+}

B. Be, Al^{3+}, Cl^{-}

C. Ca^{2+}, Cs^{+}, Br

D. Na^{+}, Ca^{2+}, Mg^{2+}

Answer: A

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2. Which of the following sets of quantum numbers is correct for an electron in 4f-orbtial ?

A. $n = 3, l = 2, m = -2, s = +\frac{1}{2}$

B. $n = 4, l = 4, m = -2, s = -\frac{1}{2}$

C. $n = 4, l = 3, m = +1, s = +\frac{1}{2}$

D. $n = 4, l = 3, m = +4, s = +\frac{1}{2}$

Answer: C

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3. Among Al_2O_3, SiO_2, P_2O_5 and SO_3 the correct order of acid strength is :-

A. $Al_2O_3 < SiO_2 < SO_3 < P_2O_5$

B. $SiO_2 < SO_3 < Al_2O_3 < P_2O_5$

C. $SO_3 < P_2O_5 < SiO_2 < Al_2O_3$

D. $Al_2O_3 < SiO_2 < P_2O_5 < SO_3$

Answer: D

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4. On the basic of the following $\Delta_r G^{\Theta}$ values at $1073K$:

$S_1(s) + 2O_2(g) \rightarrow 2SO_2(g) \Delta_r G^{\Theta} = -544kJmol^{-1}$

$2Zn(s) + O_2(g) \rightarrow 2ZnO(s) \Delta_r G^{\Theta} = -480kJmol^{-1}$

$2Zn(s) + S_2(s) \rightarrow 2ZnS(s) \Delta_r G^{\Theta} = -293KJmol^{-1}$

Show that roasting of zinc sulphide to zinc oxide is a spontaneous process.

A. O^- ion will tend to resist the addition of another electron

B. Oxygen has high electron affinity

C. Oxygen is more electronegative

D. O^- ion has comparitively larger size than oxygen atom

Answer: A

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5. Which of the following paramagnetic ions would exhibit a magnetic moment (spin only) of the order of 5 BM?

(At. No : Mn = 25, Cr = 24,V = 23, Ti = 22)

A. V^{2+}

B. Ti^{2+}

C. Mn^{2+}

D. Cr^{2+}

Answer: C

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6. In which of the following arrangements, the sequence is not strictly according to the property written against it ?

A. $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power

B. $B < C < O < N$: increasing first ionisation enthalpy

C. $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing basic strength

D. $HF < HCl < HBr < HI$: increasing acid strength

Answer: C

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7. For how many orbitals are the quantum numbers $n = 3, l = 2, m = +2$ possible?

A. 1

B. 5

C. 3

D. 7

Answer: A

8. The numbers of protons, electrons and neutrons in a molecule of heavy water are respectively

A. 10,10,10

B. 8,10,11

C. 10,11,10

D. 11,10,10

Answer: A

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9. Given

(a) $n = 5, m_i = +1$ (b)

$n = 2, l = 1, m_i = -1, m_s = -1/2$

The maximum number of electron(s) in an atom that

can have the quanturm numbers as given in (a) and (b) are respectively:

A. 8 and 1

B. 25 and 1

C. 2 and 4

D. 4 and 1

Answer: A

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10. The order of increasing sizes of atomic radii among the elements O,S, Se and As is :

A. AS $<$ S $<$ O $<$ Se

B. O $<$ S $<$ As $<$ Se

C. Se $<$ S $<$ As $<$ O

D. $O < S < Se < As$

Answer: D

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11. The correct order of second ionisation potential of C, N, O and F is:

A. O $>$ F $>$ N $>$ C

B. O $>$ N $>$ F $>$ C

C. C $>$ N $>$ O $>$ F

D. $F > O > N > C$

Answer: A

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12. Correct set of four quantum numbers for valence electron of rubidium(Z = 37) is

A. $5, 1, 1, +\frac{1}{2}$

B. $5, 0, 1, +\frac{1}{2}$

C. $5, 0, 0, +\frac{1}{2}$

D. $5, 1, 0, +\frac{1}{2}$

Answer: C

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13. Which of the following series correctly represents relations between the elements from X to Y ?

$X \rightarrow Y$

	X ⟶ Y	
(1)	$_{18}Ar \rightarrow {}_{54}Xe$	Noble character increases
(2)	$_{3}Li \rightarrow {}_{19}K$	Ionization enthalpy increases
(3)	$_{6}C \rightarrow {}_{32}Ge$	Atomic radii increases
(4)	$_{9}F \rightarrow {}_{35}Br$	Electron gain enthalpy with negative sign increases

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14. The ionic radii (in Å) of N^{3-}, O^{2-} and F^{-} are respectively :

A. 1.71, 1.40 and 1.36

B. 1.71, 1.36 and 1.40

C. 1,36 1.40 and 1.71 .

D. 1.36 1.71 and 1.40

Answer: A

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15. In the long form of the periodic table the valence shell electronic configuration of $5s^2 5p^4$ corresponds to the element present in:

A. Group 16 and period 5

B. Group 17 and period 6

C. Group 17 and period 5

D. Group 16 and period 6

Answer: A

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16. Which element has highest first ionization energy?

A. Sc

B. Rb

C. Na

D. K

Answer: A

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17. The non-metal that does not exhibit posittve oxidation state is:

A. Oxygen

B. Fluorine

C. Iodine

D. Chlorine

Answer: B

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18. The electronic configuration with the highest ionization enthalpy 'A' and 'B' :

A. $[Ar]3d^{10}4s^24p^3$

B. $[Ne]3s^23p^1$

C. $[Ne]3s^23p^2$

D. $[Ne]3s^23p^3$

Answer: D

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19. Consider the following ionization enthalpies of two elements 'A' and 'B'.

Element	Ionization enthalpy (kJ/mol)		
	1^{st}	2^{nd}	3^{rd}
A	899	1757	14847
B	737	1450	7731

Which of the following statements is correct?

A. Both A and B belong to group-2 where A comes below B

B. Both A and B belong to group-1 where A comes below B

C. Both A and B belong to group 1 where B comes below A

D. Both A and B belong to group-2 where B comes below A

Answer: D

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20. In the following reactions, ZnO is respectively acting as a/an:-

(a) $ZnO + Na_2 \rightarrow Na_2ZnO_2$

(b) $ZnO + CO_2 \rightarrow ZnCO_3$

A. base and acid

B. base and base

C. acid and acid

D. acid and base

Answer: D

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21. The group having isoelectronic species is:

A. $O^{2-}, F^{-}, Na^{+}, Mg^{2+}$

B. O^{-}, F^{-}, Na, Mg^{+}

C. $O^{2-}, F^{-}, Na, Mg^{2+}$

D. $O^{-}, F^{-}, Na^{+}, Mg^{2+}$

Answer: A

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22. The correct order of electron affinity is :-

A. $Cl > F > O$

B. $F > O > Cl$

C. $F > Cl > O$

D. $O > F > Cl$

Answer: A

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23. Arrange the following isoelectronic species $\left(O^{2-}, F^{-}, Na^{+}, Mg^{2+}\right)$ in order of:

increasing ionic radius and

A. $Mg^{2+} < Na^{+} < F^{-} < O^{2-}$

B. $O^{2-} < F^{-} < Na^{+} < Mg^{2+}$

C. $Na^{+} < Mg^{2+} < F^{-} < O^{2-}$

D. $Mg^{2+} < O^{2-} < Na^{+} < F^{-}$

Answer: A

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24. which of the following arrangements shows schematic alignment magnetic moments of antiferromagnetic substances?

A. (1) 

B. (2) 

C. (3) 

D. (4) 

Answer: D

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J Advanced Exercise

1. The correct order of ionic size of $N^{3-}, Na^{+}, F^{-}, Mg^{2+}$ and O^{-} is:

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2. The basic character of the oxides, $MgO, SrO, K_2O, NiO, Cs_2O$ increases in the order

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3. The statement that is not correct for periodic classification of elements is

A. The properties of elements are the periodic functions of their atomic numbers.

B. Non-metallic elements are lesser in number than metallic elements.

C. The first ionixation energies of elements along a period do not vary in a regular manner with increase in atomic number.

D. For transition elements the d-subshells are filled with electrons monotonically with increase in atomic number.

Answer: D

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4. Ca^{2+} has a smaller ionic radius than K^{+} because it has ..... .

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5. The basic nature of hydroxides of group 13 (III-A) decreases progressively down the group. Comment.

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6. Moving from right to left in a periodic table, the atomic size is :

A. increased

B. decreased

C. remains constant

D. none of these

Answer: A

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7. The increasing order of electronegativity in the following elements :

A. C, N, Si, P

B. N, Si, C, P

C. Si, P, C, N

D. P, Si, N, C

Answer: C

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8. One element has atomic weight 39. Its electronic configuration is $1s^2, 2s^2 2p^6, 3s^2 3p^6 4s^1$. The true statement for that element is:

A. Hight value of IE

B. Transition element

C. Isotone with ${}_{18}Ar^{38}$

D. None

Answer: C

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9. The number of paired electrons in oxygen atom is :

A. 6

B. 16

C. 8

D. 32

Answer: A

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10. The decreasing size of $K^+, Ca^{2+}, Cl^- \& S^{2-}$ follows the order:

A. $K^{+} > Ca^{+2} > S^{-2} > Cl^{-}$

B. $K^{+} > Ca^{+2} > Cl^{-} > S^{-2}$

C. $Ca^{+2} > K^{+} > Cl^{-} > S^{-2}$

D. $S^{-2} > Cl^{-} > K^{+} > Ca^{+2}$

Answer: D

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11. The incorrect statement Among the following is A)The first ionisation potential of Al is less than the first ionisation potential of Mg. B)The first ionisation potential of Na is less than the first ionisation

potential of Mg. C)The second ionisation potential of Mg greater than the second ionisation potential of Na D)The third ionisation potential of Mg greater than the third ionisation potential of Al

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 potential of Na is less then the first ionisation potential of Mg

D. the third ionisation potential of Mg is greater then the third ionisation potential of Al

Answer: B

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12. $Li^+, Mg^{2+}, K^+, Al^{3+}$ (Arrange in increasing order of radii)

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13. Which one of the following statement (s) is (are) correct?

A. The electronic configuration of Cr is [Ar] $3d^5 4s^1$. (Atomic No. of Cr= 24)

B. The magnetic quantum number may have a negative value

C. In silver atom, 23 electrons have a spin of one type and 24 of the opposite type. (Atomic No. of Ag=47)

D. The oxidation state of nitrogen in HN_3 is -3

Answer: A::B::C

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14. The ground state electronic configuration of nitrogen atom can be represented as:

A. (A) $\uparrow\downarrow$ $\uparrow\downarrow$ $\uparrow$ $\uparrow$ $\uparrow$

B. (B) $\uparrow\downarrow$ $\uparrow\downarrow$ $\uparrow$ $\downarrow$ $\uparrow$

C. (C) $\uparrow\downarrow$ $\uparrow\downarrow$ $\uparrow$ $\downarrow$ $\downarrow$

D. (D) $\uparrow\downarrow$ $\uparrow\downarrow$ $\downarrow$ $\downarrow$ $\uparrow$

Answer: A

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15. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$. This represents its :-

A. excited state

B. ground state

C. cationic form

D. none

Answer: B

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16. Assertion: F atom has less negative electron gain enthaply than Cl atom.

Reason: Additional electrons are repelled more effectively by 3 p-electrons in Cl than by 2 p-electrons in F atom.

A. Statement- 1 is true. statement-2 is true and statement-2 is correct explanation for statement- 1.

B. Staterrent- 1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.

C. Statement-1 is true, statement-2 is false.

D. Statement-1 is false, statement-2 is true.

Answer: C

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17. The correct order of radii is

A. N $<$ Be $<$ B

B. $F^- < O^{2-} < N^{3-}$

C. Na $<$ Li $<$ K

D. $Fe^{3+} < Fe^{2+} < Fe^{4+}$.

Answer: B

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18. The IE of Be is greater than that of B.

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19. The set representing correct order of IP_1 is

A. K $>$ Na $>$ Li

B. Be $>$ Mg $>$ Ca

C. B $>$ C $>$ N

D. Fe $>$ Si $>$ C

Answer: B

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20. The least stable ion among the following is

A. Li^-

B. Be^-

C. B^-

D. C^-

Answer: B

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21. The maximum number of electrons that can have principal quantum number, n = 3 and spin quantum number, $m_s = -\frac{1}{2}$ is .....

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22. In an atom, the total number of electrons 'having quantum numbers' n = 4, $|m_l|$ = 1 is :

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23. The correct order of atomic radii in group 13 elements is

A. $Al < Ga < In < Tl$

B. $Ga < Al < In < T$

C. $Al < In < Ga < Tl$

D. $Al < Ga < Tl < In$

Answer: B

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24. The option (s) with only amphoteric oxides is (are)

A. Cr_2O_3, CrO, SnO, PbO

B. NO, B_2O_3, PbO, SnO_2

C. Cr_2O_3, BeO, SnO, SnO_2

D. ZnO, Al_2O_3, PbO, PbO_2

Answer: C::D

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