



CHEMISTRY

BOOKS - VK JAISWAL CHEMISTRY (HINGLISH)

PERIODIC PROPERTIES

Level 1

1. Which is not similar characteristics(s) about the electronic configuration of Be, Mg, Ca?

A. All the atoms have a pair of s-electrons in their outermost energy level

B. all the atoms contain a pair of p-electrons in their outermost energy level

C. All are alkaline earth metals

D. All are of second group of the periodic table

Answer: B



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2. The elements $Z = 117$ and 120 have not yet been discovered, In which family/group would you place these elements and also give the electronic configuration in each case.

A. 17, 2

B. 17, 4

C. 15, 3

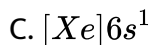
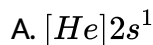
D. 18, 2

Answer: A



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3. Which one of the following represents the electronic configuration of the most electropositive element?



Answer: C



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4. Which one of the following elements shows both positive and negative oxidation states?

A. Cesium

B. Fluorine

C. Iodine

D. Xenon

Answer: C



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5. The number of element present in the fifth period is

A. 18

B. 32

C. 8

D. 24

Answer: A



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6. Which of the following arrangements shows the correct order of decreasing paramagnetism?

A. $\text{Ng} > \text{Al} > \text{O} > \text{Ca}$

B. $\text{Ng} > \text{O} > \text{Al} > \text{Ca}$

C. $\text{O} > \text{Ng} > \text{Al} > \text{Ca}$

D. $\text{O} > \text{Ng} > \text{Ca} > \text{Al}$

Answer: B



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7. The outer electronic configuration of lawrencium is

A. $Rn5f^{13}7s^27p^2$

B. $Rn f^{13}6d^17s^17p^2$

C. $Rn5f^{14}7s^17p^1$

D. $Rn5f^{14}6d^17s^2$

Answer: D



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8. The element having the lowest atomic number and a ground state electronic configuration of $(n - 1)d^6ns^2$ is placed in:

- A. fifth period
- B. sixth period
- C. fourth period
- D. third period

Answer: C



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9. Which of the following sets of atomic numbers corresponds to elements of group 16?

A. 8,16,32,54

B. 16,34,54,86

C. 8,16,34,52

D. 10,16,32,50

Answer: C



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10. The atomic numbers of the metallic and non-metallic elements which are liquid at room temperature respectively are:

A. 55,87

B. 33,87

C. 35,80

D. 80,35

Answer: D

11. In the periodic table, the metallic character of elements

- A. Decreases downn the group and increases across the period
- B. Increases down the group and decreases across the period
- C. Increases across the period and also down the group
- D. Decreases across the period and also down the group

Answer: B

12. Nucleus of an element contains 9 protons Its valency would be :

- A. 1
- B. 2
- C. 3

D. 5

Answer: A



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13. Transition metals are characterised by which of the following properties ?

- A. Fixed valency
- B. coloured compound
- C. high melting and boiling points
- D. tendency to form coomplexes

Answer: A



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14. Sodium ordinarily does not show an oxidation state of $+2$, because of its

- A. High first ionisation potential
- B. High second ionization potential
- C. large ionic radius
- D. high electronegativity

Answer: B



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15. Which of the following pairs of molecules have the almost identical bond dissociation energy?

- A. F_2 and H_2
- B. N_2 and CO
- C. F_2 and I_2

D. HF and O_2

Answer: C



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16. According to modern periodic law the elements with similar chemical and physical properties repeat at regular intervals when the elements are arranged in order of :

A. decreasing atomic number

B. increasing atomic weight

C. increasing atomic number

D. decreasing atomic weights

Answer: C



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17. Give the symbol of the elements of lowest atomic number that has three 2p electrons:

A. Mg

B. P

C. N

D. Si

Answer: C



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18. In the fourth period of the periodic table, how many elements have one or more 4d electrons:

A. 2

B. 18

C. 0

D. 6

Answer: C



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19. Assuming that elements are formed to complete the seventh period, what would be the atomic number of the alkaline earth metal of the eighth period?

A. 113

B. 120

C. 119

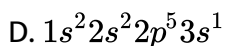
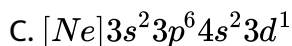
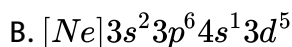
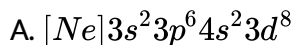
D. 106

Answer: B



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20. Which of the following represents an excited state of an atom?



Answer: D



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21. Choose the correct statement regarding transition elements?

A. Transition elements has low melting points

B. transition elements do not have catalytic activity

C. Transition elements exhibit variable states

D. Transition elements exhibit inert pair effect

Answer: C



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22. Which one of the following is a different pair?

A. Li, Na

B. Be, Ba

C. O, At

D. N, As

Answer: C



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23. The element having electronic configuration

$[Kr]4d^{10}4f^{14}5s^25p^65d^26s^2$ belongs to

A. s-block

B. p-block

C. d-block

D. f-block

Answer: D



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24. The elements which are radioactive and have been named after the name of planet are

A. Hg

B. Po

C. Pu

D. Ra

Answer: C



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25. Zn and Cd metals do not show variable valency because:

- A. They have only two electrons in the outermost subshells
- B. Their d-subshells are completely filled
- C. Their d-subshells are partially filled
- D. they are relatively soft metals

Answer: B



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26. An element whose IUPAC name is ununtrium (UUT) belong to

- A. s-block element
- B. p-block element
- C. d-block element

D. transition element

Answer: B



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27. Which of the following is not representative element?

A. Tellurium

B. Tantalum

C. Thallium

D. Astatine

Answer: B



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28. The period number and group number of "Tantalum" ($Z=73$) are respectively:

A. 5,7

B. 6,13

C. 6,5

D. none of these

Answer: C



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29. Which of the following pair of elements belongs period of the periodic table ?

A. Mg and Sb

B. Ca and Zn

C. Na and Ca

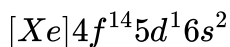
D. Ca and Cl

Answer: B



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30. Consider the following electronic configuration of an element(P):



Then correct statement about element 'P' is

- A. It belongs to 6th period and 1st group
- B. It belongs to 6th period an 2nd group
- C. it belongs to 6th period and 3rd group
- D. none of these

Answer: C



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31. Which of the following metal is highest electropositive (metallic) in nature?

A. Be

B. Rb

C. Mn

D. Tl

Answer: B



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32. Which of the following species must have maximum number of electrons in ' d_{xy} ' orbital?

A. Cr

B. Fe^{3+}

C. Cu^{+}

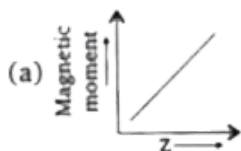
D. Both (a) and (b)

Answer: C

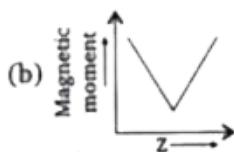


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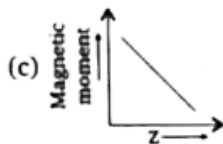
33. which of the following graph is correct representation between atomic number (Z) and magnetic moment of d-block elements? [outer electronic configuration: $(n - 1)d^x ns^{1 \text{ or } 2}$]



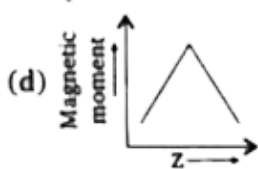
A.



B.



C.



D.

Answer: D



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34. If IUPAC name of an element is "unununium" then correct statement regarding element is:

- A. it is inner transition element
- B. it belongs to 8th period in periodic table
- C. it is a non-transition element
- D. it is transition element

Answer: D



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35. Which property decreases from left to right across the periodic table and increases from top to bottom?

- A. (i) only
- B. (i) , (ii) and (iii)
- C. (i), (iii) and (iv)
- D. (i) and (iv)

Answer: D



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36. Consider the following information about element P and Q:

	Period number	Group number
<i>P</i>	2	15
<i>Q</i>	3	2

the formula of the compound formed by P and Q element is:

- A. PQ

B. P_3Q_2

C. P_2Q_3

D. PQ_2

Answer: C



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37. which must represent an atom in an excited state?

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

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

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

D. $1s^2, 2s^2 2p^5$

Answer: C



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38. Which of the following anion has the smallest radius?



Answer: B



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39. The ionic radii of Li^{+} , Be^{2+} and B^{3+} follow the order:



Answer: D



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40. Largest in size out of Na^+ , Ne and F^- is:

A. Na^+

B. Ne

C. F^-

D. all are equal

Answer: B



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41. Which of the following atom or ions has the smallest size?

A. F

B. F^{-}

C. O

D. N

Answer: A



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42. The single covalent radius of P is 0.11 nm. The single covalent radius of Cl will be:

A. smaller than P

B. greater than P

C. same as P

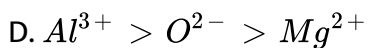
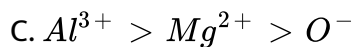
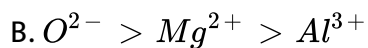
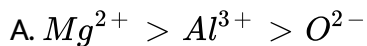
D. none of these

Answer: A



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43. Which of the following is arranged in decreasing order of size?

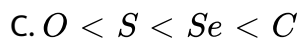
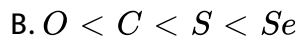
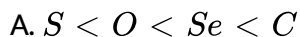


Answer: B



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44. The correct order of increasing atomic radius of the following elements as:



D. $C < O < S < Se$

Answer: B



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45. The correct order of increasing radii of the elements Si , Al , Na and P is

A. $Si < Al < P < Na$

B. $P < Si < Al < Na$

C. $Al < Si < P < Na$

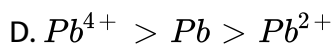
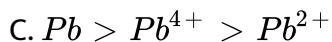
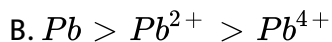
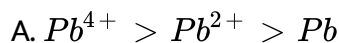
D. $Al < P < Si < Na$

Answer: B



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46. The size of the species, Pb , Pb^{2+} , Pb^{4+} decreases as -

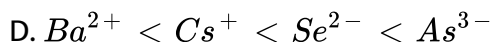
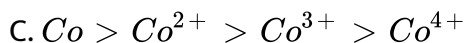
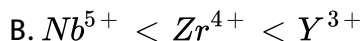
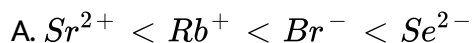


Answer: B



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47. Incorrect order of radius is:

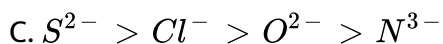
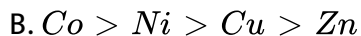
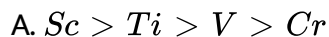


Answer: D



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48. The correct order of atomic/ionic radii is:



D. none of these

Answer: A



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49. The radius of which is closest to that of the Li^{+} ions?





Answer: C



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50. The first, second and third ionization energies (E_1, E_2 & E_3) for an element are 7eV, 12.5 eV and 42.5 eV respectively. The most stable oxidation state of the element will be:



Answer: D

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51. Element having highest I.P. value is:

A. Ne

B. He

C. Be

D. N

Answer: B

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52. The order of ionisation potential between He^+ io and H-atom (both species are in gaseous) is:

A. $I.P. (He^+) = I.P. (H)$

B. $I.P. (He^+) < I.P. (H)$

C. $I. P. (He^+) > I. P. (H)$

D. cannot be compared

Answer: C



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53. Which of the following metal is expected to have the highest third ionisation enthalpy?

A. Cr (Z=24)

B. V (Z=23)

C. Mn (Z=25)

D. Fe (Z=26)

Answer: C



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54. Second ionisation potential of Li , Be , B is in the order:

A. $Li > Be > B$

B. $Li > B > Be$

C. $Be > Li > B$

D. $B > Be > Li$

Answer: B



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55. The ionization energy of boron is less than that of beryllium because:

A. Beryllium has a higher nuclear charge than boron

B. beryllium has a lower nuclear charge than boron

C. the outermost electron in boron occupies a 2p-orbital

D. the 2s and 2p-orbitals of boron are degenerate

Answer: C



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56. The first four I.E. values of an element are 284, 412, 656 and 3210 kJ mol^{-1} . The number of valence electrons in the element are:

- A. one
- B. two
- C. three
- D. four

Answer: C



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57. The first ionisation potential of *Na*, *Mg*, *Al* and *Si* are in the order

A. $Na < Mg < Al < Si$

B. $Na < Al < Mg < Si$

C. $Na < Al < Si < Mg$

D. $Na > Mg > Al > Si$

Answer: B



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58. The ionisation energy will be higher when the electron is removed from:

A. s-orbital

B. p-orbital

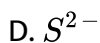
C. d-orbital

D. f-orbital

Answer: A

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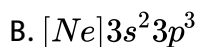
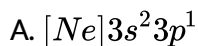
59. Which of the following isoelectronic ions has the lowest ionization energy?

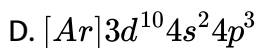
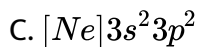


Answer: D

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60. In the following, the element with the highest ionization energy is





Answer: B



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61. The ionisation potentials of Li and K are 5.4 and 4.3 eV respectively.

The ionization potential of Na will be:

A. 9.7 eV

B. 1.1 eV

C. 4.9 eV

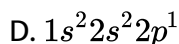
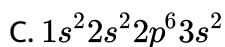
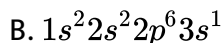
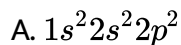
D. cannot be calculated

Answer: C



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62. Which of the following configuration is associated with biggest jump between 2nd and 3rd IE?



Answer: C



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63. The second ionization energy is maximum for:

A. Boron

B. beryllium has a lower nuclear charge than boron

C. magnesium

D. aluminium

Answer: A



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64. A large difference between the fourth and fifth ionization energies indicates the presence of:

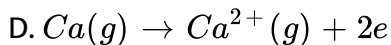
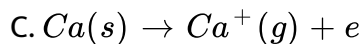
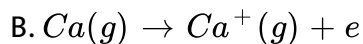
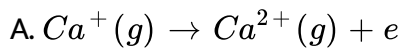
- A. 5 valence electrons in an atom
- B. 6 valence electrons in an atom
- C. 4 valence electrons in an atom
- D. 8 valence electrons in an atom

Answer: C



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65. For which of the following reaction ΔH° value is equal to the first ionization energy of Ca is?



Answer: B



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66. Ionization enthalpy of an atom is equal to

A. electron gain enthalpy of the cation

B. electronegativity of the ion

C. ionization enthalpy of the cation

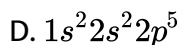
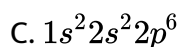
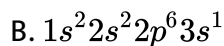
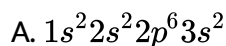
D. none of these

Answer: A



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67. From the ground state, electronic configuration of the elements given below, pick up the one with highest value of second ionization energy:



Answer: B



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68. An element has successive ionization enthalpies as 940 (first), 2080, 3090, 4140, 7030, 7870, 16000 and 19500 kJ mol^{-1} . To which group of the periodic table does this element belong?

A. 14

B. 15

C. 16

D. 17

Answer: C



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69. The second ionization potential of elements is invariably higher than first ionization potential because:

A. The size of cation is smaller than its atom

B. it is easier to remove electron from cation

C. ionization is an endothermic process

D. none of these

Answer: A



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70. The first, second and third ionization energies (E_1 , E_2 & E_3) for an element are 7eV, 12.5 eV and 42.5 eV respectively. The most stable oxidation state of the element will be:

A. +1

B. +4

C. +3

D. +2

Answer: D



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71. Which of the following electronic configuration represents a sudden large gap between the values of second and third ionisation energies of an element?

A. $1s^2, 2s^2 2p^3$

B. $1s^2, 2s^2 2p^6, 3s^2 3p^3$

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

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

Answer: D



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72. Element having highest I.P. value is:

A. Ne

B. He

C. Be

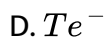
D. N

Answer: B



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73. Which of the following atomic species has maximum ionisation energy:



Answer: B



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74. The correct order of $I.E_2$ is:

A. NegtFgtOgtN

B. OgtFgtNegtN

C. NegtOgtFgtN

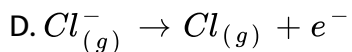
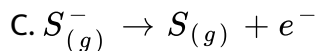
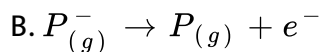
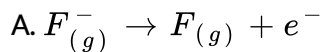
D. OgtNegtFgtN

Answer: C



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75. Which of the following transformation least energy is required?



Answer: B



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76. The amount of energy which is released due to addition of extra electron to the outermost orbit of gaseous atom is called

- A. ionization enthalpy
- B. Hydration enthalpy
- C. Electronegativity
- D. electron gain enthalpy

Answer: D



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77. To which the following atom, the attachment of electron is most difficult ?

- A. Radon
- B. Nitrogen
- C. Oxygen

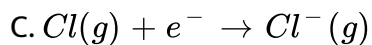
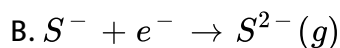
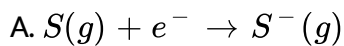
D. Radius

Answer: A



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78. Which of the following processes involves absorption of energy?



D. none of these

Answer: B



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79. Arrange N, O and S in order of decreasing electron affinity:

A. SgtOgtN

B. OgtSgtN

C. NggtOgtS

D. SgtNggtO

Answer: A



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80. Among the following configurations, the element which has the highest electron affinity is:

A. $[Ne]3s^13p^2$

B. $[Ne]3s^23p^5$

C. $[Ne]3s^23p^4$

D. $[Ne]3s^23p^63d^54s^1$

Answer: B

81. Which of the following electronic configurations has the lowest value of ionisation energy? Explain.

a. $1s^2 2s^2 2p^6$

b. $1s^2 2s^2 2p^5$

c. $1s^2 2s^2 2p^6 3s^1$

A. $II < IV < III < I$

B. $I < II < III < IV$

C. $I < III < II < IV$

D. $IV < III < II < I$

Answer: A

82. Why is the second electron gain enthalpy negative (i.e. energy is absorbed)?

- A. is always negative
- B. is always positive
- C. can be positive or negative
- D. is always zero

Answer: B



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83. The element having very high ionization enthalpy but zero electron affinity is :-

- A. H
- B. F
- C. He

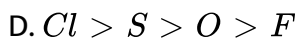
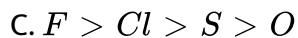
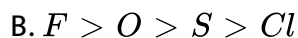
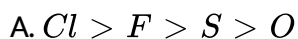
D. Be

Answer: C



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84. Which of the following represents correct order of electron affinity?

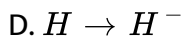
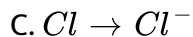
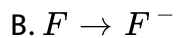
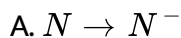


Answer: A



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85. The process requiring absorption of energy is:

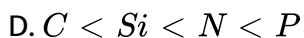
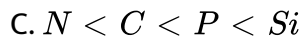
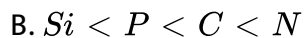
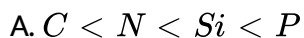


Answer: A



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86. The electronegativity of the following elements increases in the order:



Answer: B



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87. Which of the following order is incorrect?

A. Electronegativity of central atom: $CF_4 > CH_4 > SiH_4$

B. Hydration energy: $Al^{3+} > Be^{2+} > Mg^{2+} > Na^+$

C. Electrical conductance: $F_{(aq)}^- > Cl_{(aq)}^- > S_{(aq)}^{2-}$

D. Magnetic moment: $Ni^{4+} > V^{3+} > Sr^{2+}$

Answer: C



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88. Correct expression of "allred and Rochow's " scale is :

A. electronegativity $= 0.744 \frac{Z_{eff}}{r^2} + 0.359$

B. Electronegativity $= 0.359 \frac{r^2}{Z_{eff}} + 0.744$

C. Electronegativity $= 0.359 \frac{Z_{eff}}{r} + 0.744$

D. Electronegativity = $0.359 \frac{Z_{eff}}{r^2} + 0.744$

Answer: D



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89. The hydration energy of Mg^{2+} ions is lesser than that of:



D. none of these

Answer: A



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90. Among the following, which the maximum hydration energy?

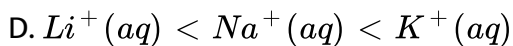
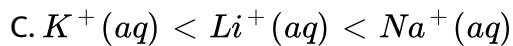
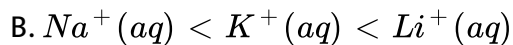
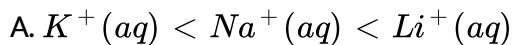


Answer: D



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91. Which of the following is arranged in order of increasing radius?



Answer: A



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92. Which of the following compounds has a negative enthalpy of solution?

A. KCl

B. KBr

C. KF

D. KI

Answer: C



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93. Amongst sodium halides $\{NaF, NaCl, NaBr \text{ and } NaI\}$, NaF has the highest melting point because of:

A. High oxidising power

B. Lowest polarity

C. maximum lattice energy

D. Minimum ionic character

Answer: C



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94. Among the following oxides, which has the maximum lattice energy?

A. MgO

B. CaO

C. SrO

D. BaO

Answer: A



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95. Which of the following compounds has a positive enthalpy of solution?

- A. LiF
- B. LiCl
- C. LiBr
- D. LiI

Answer: A



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96. Born-Haber cycle is used to determine

- A. lattice energy of ionic crystals
- B. Electron gain enthalpy
- C. Electronegativity
- D. Boht (a) and (b)

Answer: D



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97. Which of the following is different from other three oxides?

A. MgO

B. SnO

C. ZnO

D. PbO

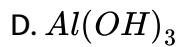
Answer: A



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98. Select the amphoteric substance in the following:

A. SO_3

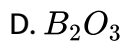
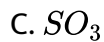
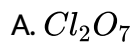


Answer: D



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99. Which of the following compound is most acidic?



Answer: A



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100. Which is not similar characteristics(s) about the electronic configuration of Be, Mg, Ca?

- A. All the atoms have a pair of s-electrons in their outermost energy level
- B. all the atoms contain a pair of p-electrons in their outermost energy level
- C. All are alkaline earth metals
- D. All are of second group of the periodic table

Answer: B



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101. The elements with atomic number 117 and 120 are yet to be discovered. In which group would you place these elements when discovered?

A. 17, 2

B. 17,4

C. 15,3

D. 18,2

Answer: A



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102. The most electropositive element possesses the electronic configuration:

A. $[He]2s^1$

B. $[Ne]3s^2$

C. $[Xe]6s^1$

D. $[Xe]6s^2$

Answer: C

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103. Which one of the following elements shows both positive and negative oxidation states?

- A. Cesium
- B. Fluorine
- C. Iodine
- D. Xenon

Answer: C

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104. Number of elements present in 5th period is

- A. 18
- B. 32

C. 8

D. 24

Answer: A



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105. Which of the following arrangements shows the correct order of decreasing paramagnetism?

A. $\text{Ng} > \text{Al} > \text{Og} > \text{Ca}$

B. $\text{Ng} > \text{Og} > \text{Al} > \text{Ca}$

C. $\text{Og} > \text{Ng} > \text{Al} > \text{Ca}$

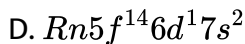
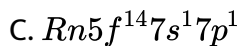
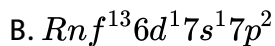
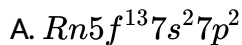
D. $\text{Og} > \text{Ng} > \text{Ca} > \text{Al}$

Answer: B



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106. The outer electronic structure of lawrencium (atomic number 103) is:



Answer: D



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107. The element having the lowest atomic number and a ground state electronic configuration of $(n - 1)d^6ns^2$ is placed in:

A. fifth period

B. sixth period

C. fourth period

D. third period

Answer: C



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108. Which of the following sets of atomic numbers corresponds to elements of group 16?

A. 8,16,32,54

B. 16,34,54,86

C. 8,16,34,52

D. 10,16,32,50

Answer: C



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109. The atomic numbers of the metallic and non-metallic elements which are liquid at room temperature respectively are:

A. 55,87

B. 33,87

C. 35,80

D. 80,35

Answer: D



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110. In the periodic table, metallic character of the elements shows one of the following trend:

A. Decreases down the group and increases across the period

B. Increases down the group and decreases across the period

C. Increases across the period and also down the group

D. Decreases across the period and also down the group

Answer: B

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111. Nucleus of an element contains 9 protons Its valency would be :

A. 1

B. 2

C. 3

D. 5

Answer: A

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112. Transition metals are not characterized by:

A. Fixed valency

B. coloured compound

C. high melting and boiling points

D. tendency to form coomplexes

Answer: A



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113. Sodium ordinarily does not show an oxidation state of $+2$, because of its

- A. High first ionisation potential
- B. High second ionization potential
- C. large ionic radius
- D. high electronegativity

Answer: B



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114. Which of the following pairs of molecules have the almost identical bond dissociation energy?

- A. F_2 and H_2
- B. N_2 and CO
- C. F_2 and I_2
- D. HF and O_2

Answer: C



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115. According to modern periodic law the elements with similar chemical and physical properties repeat at regular intervals when the elements are arranged in order of :

- A. decreasing atomic number
- B. increasing atomic weight

C. increasing atomic number

D. decreasing atomic weights

Answer: C



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116. Give the symbol of the elements of lowest atomic number that has three 2p electrons:

A. Mg

B. P

C. N

D. Si

Answer: C



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117. In the fourth period of the periodic table, how many elements have one or more 4d electrons:

- A. 2
- B. 18
- C. 0
- D. 6

Answer: C



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118. Assuming that elements are formed to complete the seventh period, what would be the atomic number of the alkaline earth metal of the eighth period?

- A. 113
- B. 120

C. 119

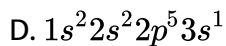
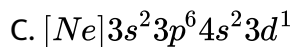
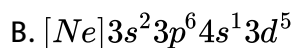
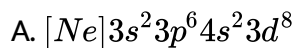
D. 106

Answer: B



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119. Which of the following represents an excited state of an atom?



Answer: D



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120. Choose the correct statement regarding transition elements?

- A. Transition elements has low melting points
- B. transition elements do not have catalytic activity
- C. Transition elements exhibit variable states
- D. Transition elements exhibit inert pair effect

Answer: C



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121. Which one of the following is a different pair?

- A. Li, Na
- B. Be, Ba
- C. N, As
- D. O, At

Answer: D



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122. The element having electronic configuration

$[Kr]4d^{10}4f^{14}5s^25p^65d^26s^2$ belongs to

A. s-block

B. p-block

C. d-block

D. f-block

Answer: D



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123. Which elements is named after the name of a planet is

A. Hg

B. Po

C. Pu

D. Ra

Answer: C



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124. Zn and Cd metals do not show variable valency because:

A. They have only two electrons in the outermost subshells

B. Their d-subshells are completely filled

C. Their d-subshells are partially filled

D. they are relatively soft metals

Answer: B



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125. An element whose IUPAC name is ununtrium (Uut) belongs to

- A. s-block element
- B. p-block element
- C. d-block element
- D. transition element

Answer: B



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126. Which of the following is not representative element?

- A. Tellurium
- B. Tantalum
- C. Thallium

D. Astatine

Answer: B



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127. The period number and group number of "Tantalum" ($Z=73$) are respectively:

A. 5,7

B. 6,13

C. 6,5

D. none of these

Answer: C



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128. Which of the following pair of elements belongs period of the periodic table ?

A. Mg and Sb

B. Ca and Zn

C. Na and Ca

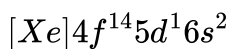
D. Ca and Cl

Answer: B



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129. Consider the following electronic configuration of an element(P):



Then correct statement about element 'P' is

A. It belongs to 6th period and 1st group

B. It belongs to 6th period an 2nd group

C. it belongs to 6th period and 3rd group

D. none of these

Answer: C



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130. Which of the following metal is highest electropositive (metallic) in nature?

A. Be

B. Rb

C. Mn

D. Tl

Answer: B



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131. Which of the following species must have maximum number of electrons in ' d_{xy} ' orbital?

A. Cr

B. Fe^{3+}

C. Cu^{+}

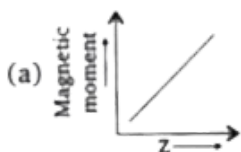
D. Both (a) and (b)

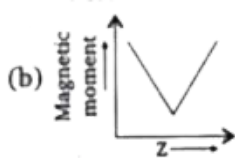
Answer: C



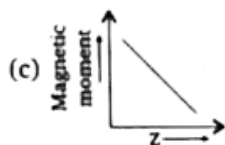
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132. which of the following graph is correct representation between atomic number (Z) and magnetic moment of d-block elements? [outer electronic configuration: $(n - 1)d^x ns^{1 \text{ or } 2}$]

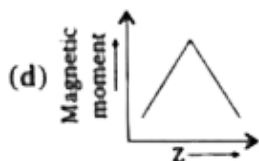




B.



C.



D.

Answer: D



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133. If IUPAC name of an element is "unununium" then correct statement regarding element is:

A. it is inner transition element

B. it belongs to 8th period in periodic table it is transition element

C. it is a non-transition element

D.

Answer: C



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134. Which property decreases from left to right across the periodic table and increases from top to bottom?

- (i) Atomic radius
- (ii) Electronegativity
- (iii) Ionisation energy
- (iv) Metallic character

A. (i) only

B. (i) , (ii) and (iii)

C. (i), (iii) and (iv)

D. (i) and (iv)

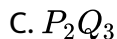
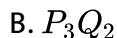
Answer: D

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135. Consider the following information about element P and Q:

	Period number	Group number
<i>P</i>	2	15
<i>Q</i>	3	2

the formula of the compound formed by P and Q element is:



Answer: C

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136. which must represent an atom in an excited state?

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

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

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

D. $1s^2, 2s^2 2p^5$

Answer: C



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137. Which of the following anion has the smallest radius?

A. H^-

B. F^-

C. Cl^-

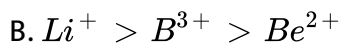
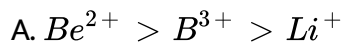
D. Br^-

Answer: B



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138. The ionic radii of Li^+ , Be^{2+} and B^{3+} follow the order:



Answer: D



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139. Largest in size out of Na^+ , Ne and F^- is:



D. all are equal

Answer: B



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140. Which of the following atom or ions has the smallest size?

A. F

B. F^-

C. O

D. N

Answer: A



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141. The single covalent radius of P is 0.11 nm. The single covalent radius of Cl will be:

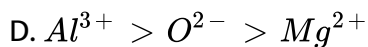
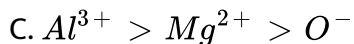
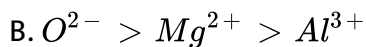
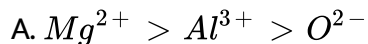
- A. smaller than P
- B. greater than P
- C. same as P
- D. of P

Answer: A



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142. Which of the following is arranged in decreasing order of size?

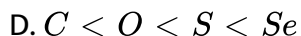
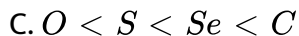
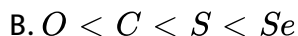
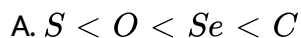


Answer: B



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143. The correct order of increasing atomic radius of the following elements as:

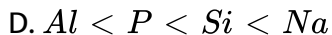
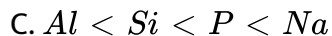
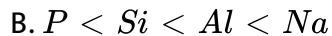
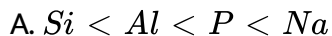


Answer: B



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144. The correct order of increasing radii of the elements Si , Al , Na and P is

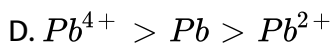
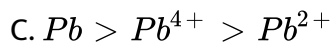
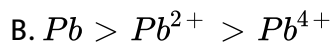
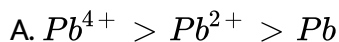


Answer: B



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145. The size of the species, Pb , Pb^{2+} , Pb^{4+} decreases as -

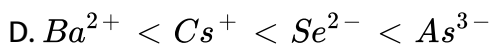
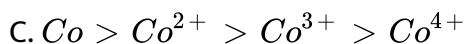
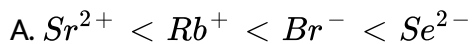


Answer: B



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146. Incorrect order of radius is:

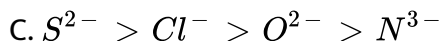
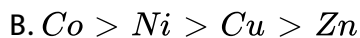
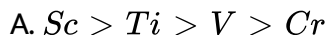


Answer: D



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147. The correct order of atomic/ionic radii is:



D. none of these

Answer: A



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148. The radius of which is closest to that of the Li^+ ions?

A. Na^+

B. Be^{2+}

C. Mg^{2+}

D. Al^{3+}

Answer: C



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149. The first, second and third ionization energies (E_1 , E_2 & E_3) for an element are 7 eV, 12.5 eV and 42.5 eV respectively. The most stable oxidation state of the element will be:

A. +1

B. +4

C. +3

D. +2

Answer: D



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150. Element having highest I.P. value is:

A. Ne

B. He

C. Be

D. N

Answer: B



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151. The order of ionisation potential between He^+ io and H-atom (both species are in gaseous) is:

A. $I.P. (He^+) = I.P. (H)$

B. $I.P. (He^+) < I.P. (H)$

C. $I.P. (He^+) > I.P. (H)$

D. cannot be compared

Answer: C



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152. Which of the following metal is expected to have the highest third ionisation enthalpy?

A. Cr (Z=24)

B. V (Z=23)

C. Mn (Z=25)

D. Fe(Z=26)

Answer: C



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153. Second ionisation potential of Li , Be , B is in the order:

A. $Li > Be > B$

B. $Li > B > Be$

C. $Be > Li > B$

D. $B > Be > Li$

Answer: B



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154. The ionization energy of boron is less than that of beryllium because:

- A. Beryllium has a higher nuclear charge than boron
- B. beryllium has a lower nuclear charge than boron
- C. the outermost electron in boron occupies a 2p-orbital
- D. the 2s and 2p-orbitals of boron are degenerate

Answer: C



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155. The first four I.E. values of an element are 284, 412, 656 and 3210 kJ mol^{-1} . The number of valence electrons in the element are:

- A. one
- B. two
- C. three
- D. four

Answer: C



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156. The first ionisation potential of Na , Mg , Al and Si are in the order

- A. $Na < Mg < Al < Si$
- B. $Na < Al < Mg < Si$
- C. $Na < Al < Si < Mg$
- D. $Na > Mg > Al > Si$

Answer: B



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157. The ionisation energy will be higher when the electron is removed from:

A. s-orbital

B. p-orbital

C. d-orbital

D. f-orbital

Answer: A

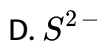


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158. Which of the following isoelectronic ions has the lowest ionization energy?

A. K^{+}

B. Cl^{-}

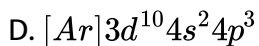
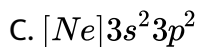
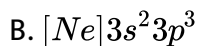
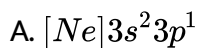


Answer: D



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159. Amongst the following elements, the highest ionization energy is



Answer: B



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160. The ionisation potentials of Li and K are 5.4 and 4.3 eV respectively.

The ionization potential of Na will be:

A. 9.7 eV

B. 1.1 eV

C. 4.9 eV

D. cannot be calculated

Answer: C



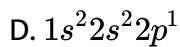
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161. Which of the following electronic configuration is associated with the biggest jump between the second and third ionization energies?

A. $1s^2 2s^2 2p^2$

B. $1s^2 2s^2 2p^6 3s^1$

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



Answer: C



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162. The second ionization energy is maximum for:

A. Boron

B. beryllium has a lower nuclear charge than boron

C. magnesium

D. aluminium

Answer: A



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163. A large difference between the fourth and fifth ionization energies indicates the presence of:

- A. 5 valence electrons in an atom
- B. 6 valence electrons in an atom
- C. 4 valence electrons in an atom
- D. 8 valence electrons in an atom

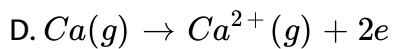
Answer: C



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164. For which of the following reaction ΔH° value is equal to the first ionization energy of Ca is?

- A. $\text{Ca}^+(g) \rightarrow \text{Ca}^{2+}(g) + e$
- B. $\text{Ca}(g) \rightarrow \text{Ca}^+(g) + e$
- C. $\text{Ca}(s) \rightarrow \text{Ca}^+(g) + e$



Answer: B



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165. Ionization enthalpy of an atom is equal to

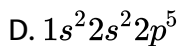
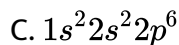
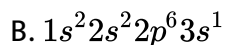
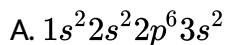
- A. electron gain enthalpy of the cation
- B. electronegativity of the ion
- C. ionization enthalpy of the cation
- D. none of these

Answer: A



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166. From the ground state, electronic configuration of the elements given below, pick up the one with highest value of second ionization energy:



Answer: B



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167. An element has successive ionization enthalpies as 940 (first), 2080, 3090, 4140, 7030, 7870, 16000 and 19500 kJ mol^{-1} . To which group of the periodic table does this element belong?

A. 14

B. 15

C. 16

D. 17

Answer: C



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168. The second ionization potential of elements is invariably higher than first ionization potential because:

A. The size of cation is smaller than its atom

B. it is easier to remove electron from cation

C. ionization is an endothermic process

D. none of these

Answer: A



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169. The first, second and third ionization energies (E_1 , E_2 & E_3) for an element are 7eV, 12.5 eV and 42.5 eV respectively. The most stable oxidation state of the element will be:

A. +1

B. +4

C. +3

D. +2

Answer: D



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170. Which of the following electronic configuration represents a sudden large gap between the values of second and third ionisation energies of an element?

A. $1s^2, 2s^2 2p^3$

B. $1s^2, 2s^2 2p^6, 3s^2 3p^3$

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

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

Answer: D



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171. Element having highest I.P. value is:

A. Ne

B. He

C. Be

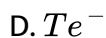
D. N

Answer: B



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172. Which of the following atomic species has maximum ionisation energy:



Answer: B



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173. The correct order of $I.E_2$ is:

A. $NAgtFgtOgtN$

B. $OgtFgtNegtN$

C. $NegtOgtFgtN$

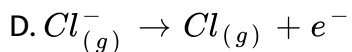
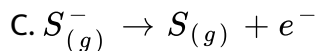
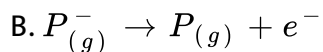
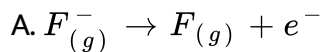
D. OgtNegtFgtN

Answer: C



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174. Which of the following transformation least energy is required?



Answer: B



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175. The amount of energy which is released due to addition of extra electron to the outermost orbit of gaseous atom is called

- A. ionization enthalpy
- B. Hydration enthalpy
- C. Electronegativity
- D. electron gain enthalpy

Answer: D



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176. To which the following atom, the attachment of electron is most difficult ?

- A. Radon
- B. Nitrogen
- C. Oxygen

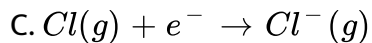
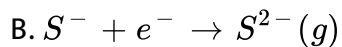
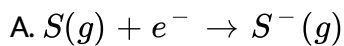
D. Radius

Answer: A



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177. Which of the following processes involves absorption of energy?



D. none of these

Answer: B



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178. Arrange N, O and S in order of decreasing electron affinity:

A. SgtOgtN

B. OgtSgtN

C. NggtOgtS

D. SgtNggtO

Answer: A



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179. Among the following configurations, the element which has the highest electron affinity is:

A. $[Ne]3s^13p^2$

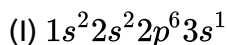
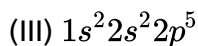
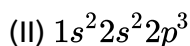
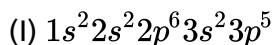
B. $[Ne]3s^23p^5$

C. $[Ne]3s^23p^4$

D. $[Ne]3s^23p^63d^54s^1$

Answer: B

180. The increasing order of electron affinity of the electronic configuration of element is :



A. $II < IV < III < I$

B. $I < II < III < IV$

C. $I < III < II < IV$

D. $IV < III < II < I$

Answer: A

181. Second electron gain enthalpy:

- A. is always negative
- B. is always positive
- C. can be positive or negative
- D. is always zero

Answer: B



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182. The element having very high ionization enthalpy but zero electron affinity is:

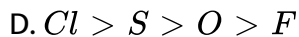
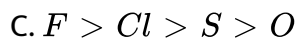
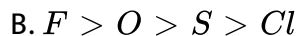
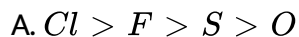
- A. H
- B. F
- C. He
- D. Be

Answer: C



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183. Which of the following represents correct order of electron affinity?

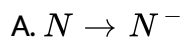


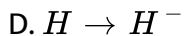
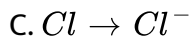
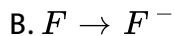
Answer: A



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184. The process requiring absorption of energy is:



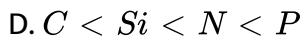
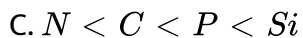
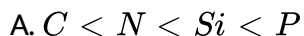


Answer: A



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185. The electronegativity of the following elements increases in the order:



Answer: B



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186. Which of the following order is incorrect?

A. Electronegativity of central atom: $CF_4 > CH_4 > SiH_4$

B. Hydration energy: $Al^{3+} > Be^{2+} > Mg^{2+} > Na^+$

C. Electrical conductance: $F_{(aq)}^- > Cl_{(aq)}^- > S_{(aq)}^{2-}$

D. Magnetic moment: $Ni^{4+} > V^{3+} > Sr^{2+}$

Answer: C



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187. Correct expression of "allred and Rochow's " scale is :

A. electronegativity $= 0.744 \frac{Z_{eff}}{r^2} + 0.359$

B. Electronegativity $= 0.359 \frac{r^2}{Z_{eff}} + 0.744$

C. Electronegativity $= 0.359 \frac{Z_{eff}}{r} + 0.744$

D. Electronegativity $= 0.359 \frac{Z_{eff}}{r^2} + 0.744$

Answer: D



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188. The hydration energy of Mg^{2+} ions is lesser than that of:



D. none of these

Answer: A



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189. Among the following, which the maximum hydration energy?



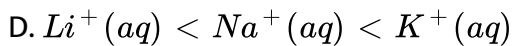
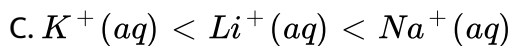
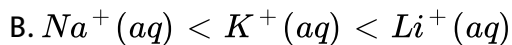
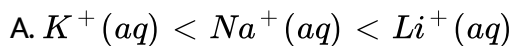


Answer: D



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190. Which of the following is arranged in order of increasing radius?



Answer: A



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191. Which of the following compounds has a negative enthalpy of solution?

A. KCl

B. KBr

C. KF

D. KI

Answer: C



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192. Amongst sodium halides $\{NaF, NaCl, NaBr \text{ and } NaI\}$, NaF has the highest melting point because of:

A. High oxidising power

B. Lowest polarity

C. maximum lattice energy

D. Minimum ionic character

Answer: C



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193. Among the following oxides, which has the maximum lattice energy?

A. MgO

B. CaO

C. SrO

D. BaO

Answer: A



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194. Which of the following compounds has a positive enthalpy of solution?

- A. LiF
- B. LiCl
- C. LiBr
- D. LiI

Answer: A



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195. Born-Haber cycle can be used to estimate:

- A. lattice energy of ionic crystals
- B. Electron gain enthalpy
- C. Electronegativity
- D. Boht (a) and (b)

Answer: D



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196. Which of the following is different from other three oxides?

A. MgO

B. SnO

C. ZnO

D. PbO

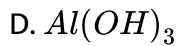
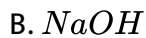
Answer: A



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197. Select the amphoteric substance in the following:

A. SO_3

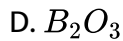
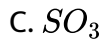
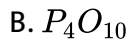
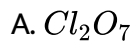


Answer: D



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198. Which of the following compound is most acidic?

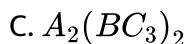
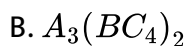
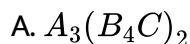


Answer: A



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1. A compound contains three elements A , B and C , if the oxidation number of $A = +2$, $B = +5$ and $C = -2$ then possible formula of the compound is

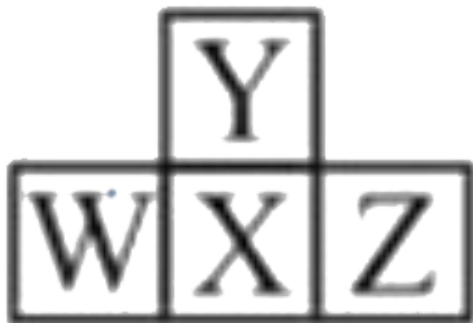


Answer: B



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2. Consider the following four elements, which are represented according to long form of periodic table



Here W, Y and Z left, up and right elements with respect to the element 'X' and 'X' belongs to 16th group and 3rd period. Then according to given information the incorrect to given information the incorrect statement regarding given elements is

- A. Maximum electronegativity: Y
- B. Maximum catenation property: X
- C. Maximum electron affinity: Z
- D. Y exhibits variable covalency

Answer: D



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3. Which of the following sequence represents atomic number of only representative elements?

A. 55,12,48,53

B. 13,33,54,83

C. 3,33,53,87

D. 22,33,55,66

Answer: C



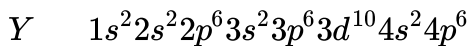
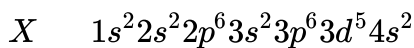
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4. The ground state electronic configuration of the elements, U, V, W, X, and Y (these symbols do not have any chemical significance) are as follows:

$U \quad 1s^2 2s^2 2p^3$

$V \quad 1s^2 2s^2 2p^6 3s^1$

$W \quad 1s^2 2s^2 2p^6 3s^2 3p^2$



Determine which sequence of elements satisfy the following statement:

- (i) element forms a carbonate which is not decomposed by heating
- (ii) Element is most likely to form coloured ionic compound
- (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

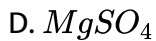
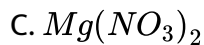
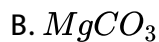
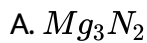
D. V X W U

Answer: B



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5. When magnesium burns in air, compounds of magnesium formed are magnesium oxide and:



Answer: A



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6. Which of the following ions is most unlikely to exist?



Answer: B



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7. A, B and C are oxides of elements X, Y and Z respectively. X, Y and Z are in the same period of the periodic table. A gives an aqueous solution which turns blue litmus red. B reacts with both strong acids and strong alkalies. C gives an aqueous solution which is strongly alkaline. Which of the following statement is/are true ?

(P) All the three elements are metals.

(Q) The electronegativities decreases from X to Y to Z.

(R) The atomic radius increases in the order $X < Y < Z$.

(S) X, Y and Z could be phosphorus, aluminium and sodium respectively.

A. I, II, III only correct

B. I, III only correct

C. II, IV only correct

D. II, III, IV only correct

Answer: C



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8. Lanthanum is

- A. s-block elements
- B. p-block elements
- C. d-block elements
- D. f-block elements

Answer: C



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9. If the aufbau principle had not been followed, Ca ($Z=20$) would have been placed in the:

- A. s-block
- B. p-block
- C. d-block

D. f-block

Answer: C



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10. What is the atomic number of the element with the maximum number of unpaired 4p electron.

A. 33

B. 26

C. 23

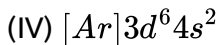
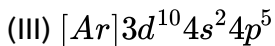
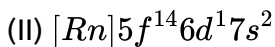
D. 15

Answer: A



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11. The electronic configuration of four elements are:



Consider the following statements:

(i) I shows variable oxidation state

(ii) II is a d-block element

(iii) The compound formed between I and III is covalent

(iv) IV shows single oxidation state

which statement is true (T) or false (F)?

A. FTFF

B. FTFT

C. FFTF

D. FFFF

Answer: D

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12. If period number and group number of any representative element(s) are same then which of the following statement is incorrect regarding such type element(s) in their ground state? (period number and group number are according to modern form of periodic table)

- A. The possible value of principal quantum number is 2
- B. The possible value of azimuthal quantum number is zero
- C. The possible value of magnetic quantum number is 1
- D. the species could be paramagnetic

Answer: C

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13. How do the energy gaps between successive electron energy levels in an atom vary from low to high n values ?

- A. All energy gaps are the same
- B. The energy gap decreases as n increases
- C. The energy gap increases as n increases
- D. the energy gap changes unpredictable as n increases

Answer: B



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14. Properties of the alkaline earth metals that increase from Be to Ba include which of the following?

(P) Atomic radius (Q) Ionization energy

(R) Nuclear charge

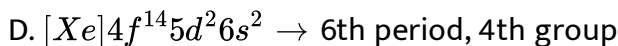
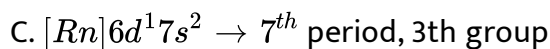
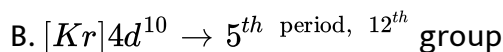
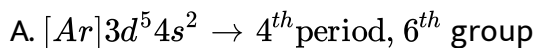
- A. (i) and (ii)
- B. (i) and (iii)
- C. (ii) and (iii)
- D. (i), (ii) and (iii)

Answer: B



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15. which of the following is the incorrect match for atom of element?

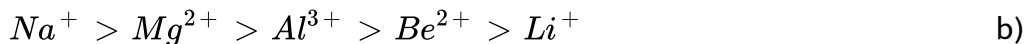


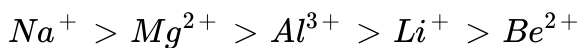
Answer: A::B



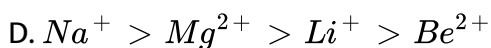
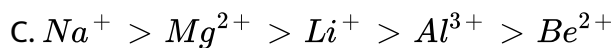
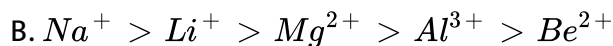
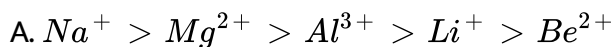
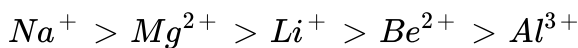
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16. The set representing the correct order of ionic radius is : a)





d)

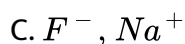
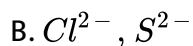
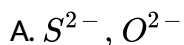


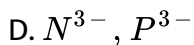
Answer: B



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17. In which of the following pair, both the species are isoelectronic but the first one is large in size than the second?



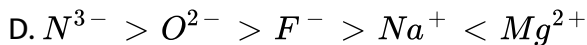
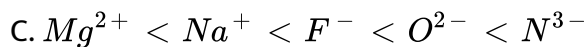
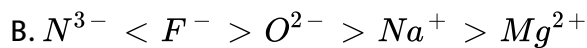
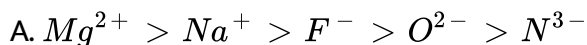
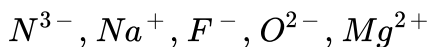


Answer: C



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18. Increasing order of ionic size :

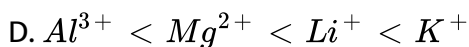
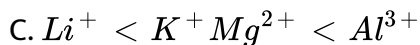
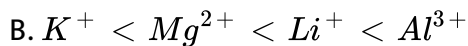
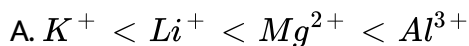


Answer: C



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19. The order of increasing ionic radius of the following is:

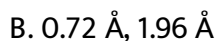


Answer: D



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20. If the ionic radii of each K^+ and F^- are 1.34\AA , then the atomic radii of K and F will be respectively:

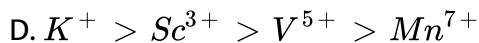
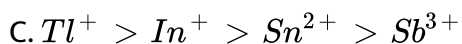
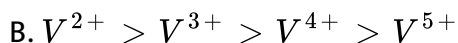
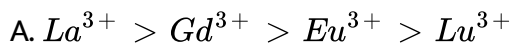


Answer: C



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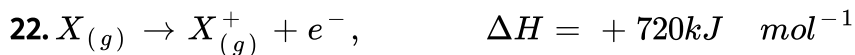
21. Incorrect order of ionic size is:



Answer: A



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Calculate the amount of energy required to convert 110 mg 'X' atom in gaseous state into X^{+} ion. (Atomic wt. for X=7 g/mol)

A. 10.4 kJ

B. 12.3 kJ

C. 11.3 kJ

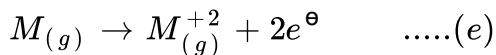
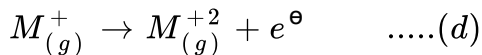
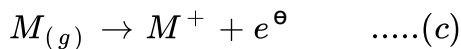
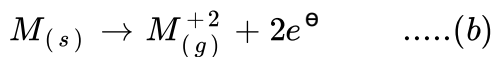
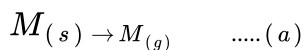
D. 14.5 kJ

Answer: C



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23. Consider the following changes : —



The second ionisation energy of $M_{(g)}$ could be calculated from which of the above given reactions :

A. 1+3+4

B. $2-1+3$

C. $1+5$

D. $5 - 3$

Answer: D



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

A. FgtOgtNgtC

B. CgtNgtOgtF

C. OgtNgtFgtC

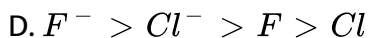
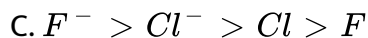
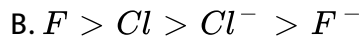
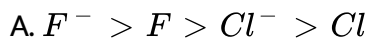
D. OgtFgtNgtC

Answer: D



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25. Which is the correct order of ionisation energies ?



Answer: B



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26. Which of the following statements is incorrect?

A. The second ionization energy of sulphur is greater than that of chlorine

B. The third ionization energy of phosphorus is greater than that of aluminium

- C. The first ionization energy of aluminium is approximately the same as that of gallium
- D. The second ionization energy of boron is greater than that of carbon

Answer: B



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27. First ionization energy is the lowest with:

- A. Lead
- B. Carbon
- C. Silicon
- D. Tin

Answer: D



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28. The incorrect among the following is:

- A. The first ionization potential of Al is less than the first ionization potential of Mg
- B. The second ionization potential of Mg is greater than the second ionization potential of Na
- C. The first ionization potential of Na is less than the first ionization potential of Mg
- D. The third ionization potential of Mg is greater than the third ionization potential of Al

Answer: B



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29. The correct values of ionization enthalpies (in KJ mol^{-1}) of Si, P, Cl, and S respectively are: a) 786, 1012, 999, 1256 b) 1012, 786, 999, 1256 c) 786, 1012, 1256, 999 d) 786, 999, 1012, 1256

A. 786, 1012, 999, 1256

B. 1012, 786, 999, 1256

C. 786, 1012, 1256, 999

D. 786, 999, 1012, 1256

Answer: C



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30. The third ionisation energy will be maximum for:

A. nitrogen

B. phosphorus

C. aluminium

D. boron

Answer: D



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31. Consider the following ionisation reaction :

$$IE(KJmol^{-1}) \quad IE(KJmol^{-1})$$



If monovalent positive ion of A , divalent positive ion of B and trivalent positive ion of C have zero electron. Then incorrect order of corresponding I.P. is :

A. $C_3 > B_2 > A_1$

B. $B_1 > A_1 > C_1$

C. $C_3 > C_2 > B_2$

D. $B_2 > C_3 > A_1$

Answer: D



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32. The incorrect statement is:

- A. The second ionisation energy of Se is greater than that of second ionisation energy of As
- B. The first ionisation energy of C^{2+} ion is greater than that of first ionisation energy of N^{2+} ion
- C. The third ionisation energy of, F is greater than that of third ionisation energy of O
- D. Halogens have highest I.E. in respectively period.

Answer: D



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33. First three ionisation energies (in kJ/mol) of three representative elements are given below:

(Element, IE_1 , IE_2 , IE_3), (P , 495.8, 4582, 6910), (Q , 737.7, 1451, 7733), (R ,

then incorrect option is:

- A. Q: alkaline earth metal
- B. P: alkali metals
- C. R: s-block element
- D. They belong to same period

Answer: C



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34. Which of the following statement is correct regarding following process ?



A. $|\text{I.E. of process (ii)}| = |\text{E.A. of process (i)}|$

B. $|\text{I.E. of process (iii)}| = |\text{I.E. of process (ii)}|$

C. $|\text{I.E. of process (iv)}| = |\text{E.A. of process (i)}|$

D. $|\text{I.E. of process (iv)}| = |\text{I.E. of process (iii)}|$

Answer: A



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35. The correct order of increasing electron affinity of the following elements is:

A. $O < S < F < Cl$

B. $O < S < Cl < F$

C. $S < O < F < Cl$

D. $S < O < Cl < F$

Answer: A

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36. The second electron gain enthalpies (in kJ mol^{-1}) of oxygen and sulphur respectively are:

A. $-780, +590$

B. $-590, +780$

C. $+590, +780$

D. $+780, +590$

Answer: D

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37. Which of the following statement is correct?

A. The magnitude of the second electron affinity of sulphur is greater than that of oxygen

- B. The magnitude of the second electron affinity of sulphur is less than that of oxygen
- C. the first electron affinities of bromine and iodine are approximately the same
- D. The first electron affinity of fluorine is greater than that of chlorine

Answer: B



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38. Which of the following statements is incorrect?

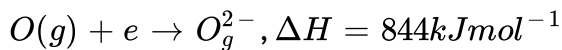
- A. Greater is the nuclear charge, greater is the electron gain enthalpy
- B. Nitrogen has almost zero electron gain enthalpy
- C. electron gain enthalpy decreases from fluorine to iodine in the group
- D. Chlorine has highest electron gain enthalpy

Answer: C



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39. The formation of the oxide ion O_g^{2-} requires first an exothermic and then an endothermic step as shown below:



This is because:

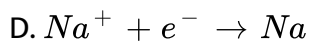
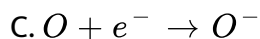
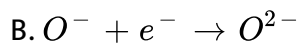
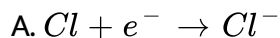
- A. O^- ion has comparatively larger size than oxygen atom
- B. oxygen has high electron affinity
- C. O^- ion will tend to resist the addition of another electron
- D. oxygen is more electronegative

Answer: C



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40. In which of the following energy is absorbed?

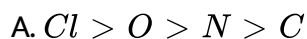


Answer: B



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41. The electron affinity of the following elements can be arranged:



Answer: B



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42. In which of the following arrangements , the order is not correct according to the property indicated against it:

A. Increasing size: $Al^{3+} < Mg^{2+} < Na^{+} < F^{-}$

B. Increasing $I.E_1$: $B < C < N < O$

C. Increasing $E. A_1$: $I < Br < F < Cl$

D. Increasing metallic radius : $Li < Na < K < Rb$

Answer: B



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43. Which of the following statements is/are wrong?

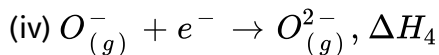
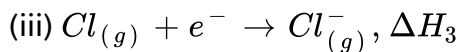
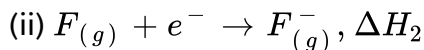
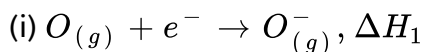
- A. Van der waals' radius of iodine is more than its covalent radius
- B. all isoelectronic ions belong to same period of the periodic table
- C. $I. E_1$ of N is higher than that of O while $I. E_2$ of O is higher than that of N
- D. The electron affinity N is almost zero while that of P is 74.3 kJ mol^{-1}

Answer: B



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44. Consider the following conversions:



the according to given information the incorrect statement is :

A. ΔH_3 is more negative than ΔH_1 and ΔH_2

B. ΔH_1 is less negative than ΔH_2

C. ΔH_1 , ΔH_2 and ΔH_3 are negative whereas ΔH_4 is positive

D. ΔH_1 and ΔH_3 are negative whereas ΔH_2 and ΔH_4 positive

Answer: D



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	Element	Electronegative value
	W	2.7
45.	X	2.1
	Y	0.8
	Z	3.4

Incorrect statement regarding given information is:

A. WZ does not conduct electricity in solid and fused state

B. YZ conducts electricity in solid and fused state

C. XZ conducts electricity only in solution state

D. WX conducts electricity only in fused state

Answer: D



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46. In the compound M-O-H, the M-O bond will be broken if:

A. $\Delta(E.N.)$ of M and O $<$ $\Delta(E.N.)$ of O and H

B. $\Delta(E.N.)$ of M and O $=$ $\Delta(E.N.)$ of O and H

C. $\Delta(E.N.)$ of M and O $>$ $\Delta(E.N.)$ of O and H

D. Cannot be predicted according $\Delta(E.N.)$ data

Answer: C



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47. Aqueous solution of two compounds

$M_1 - O - H$ and $M_2 - O - H$ are prepared in two different beakers .

If electronegativity of $M_1 = 3.4$, $M_2 = 1.2$, $O = 3.5$ and $H = 2.1$, then the nature of two solution will be respectively

- A. acidic, basic
- B. acidic, acidic
- C. basic, acidic
- D. basic, basic

Answer: A



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48. The ionisation potential and electron affinity of an element "X" are 275 and 86 kcal/mole. Then the electronegativity of "X" according to Mulliken scale is

- A. 2.8
- B. 0
- C. 4

Answer: A



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49. Consider the following statements :

- (I) The radius of an anion is larger than that of the parent atom
- (II) The ionization energy generally increases with increasing atomic number in a period.
- (III) The electronegativity of an element is the tendency of an isolated atom to attract an electron.

Which of the above statements is/are correct?

- A. I alone
- B. II alone
- C. I and II
- D. II and III

Answer: C



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50. Which of the following order is correct for the property mentioned in brackets?

A. $S^{2-} > Cl^{-} > K^{+} > Ca^{2+}$ (Ionization energy)

B. $C < N < F < O$ (2nd ionisation energy)

C. $B > Al > Ga > In > Tl$ (Electronegativity)

D. $Na^{+} > Li^{+} > Mg^{2+} > Be^{2+} > Al^{3+}$ (Ionic radius)

Answer: B



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51. Which among the following factors is the most important in making fluorine oxidizing halogen?

A. Bond dissociation energy

B. Ionisation enthalpy

C. Hydration enthalpy

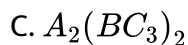
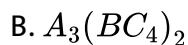
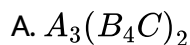
D. Electron affinity

Answer: C



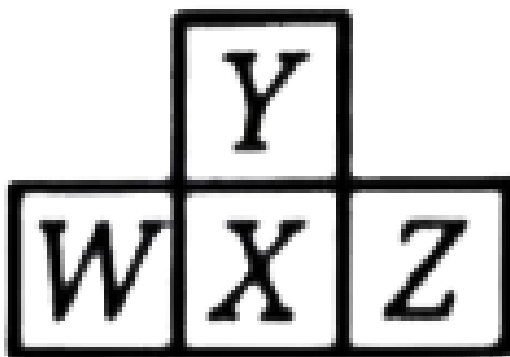
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52. A compound contains three elements A, B and C, if the oxidation number of A is +2, B is +5 and C is -2, the possible formula of the compound is



Answer: B

53. Consider the following four elements, which are represented according to long form of periodic table.



Here W, Y and Z are left, up and right elements with respect to the element 'X' and 'X' belongs to 16th group and 3rd period. then according to given information the incorrect statement regarding given elements is:

A. Maximum electronegativity: Y

B. Maximum catenation property: X

C. Maximum electron affinity: Z

D. Y exhibits variable covalency

Answer: D



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54. Which of the following sequence represents atomic number of only representative elements?

A. 55,12,48,53

B. 13,33,54,83

C. 3,33,53,87

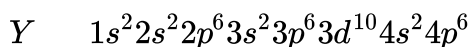
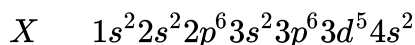
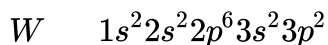
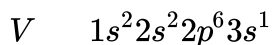
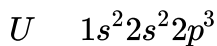
D. 22,33,55,66

Answer: C



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



Determine which sequence of elements satisfy the following statement:

- (i) element forms a carbonate which is not decomposed by heating
- (ii) Element is most likely to form coloured ionic compound
- (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

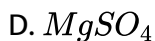
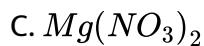
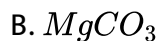
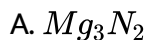
D. V X W U

Answer: B



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56. When magnesium burns in air, compounds of magnesium formed are magnesium oxide and:



Answer: A



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57. Which of the following ions is most unlikely to exist?

A. Li^-

B. Be^-

C. B^-

D. F^-

Answer: B



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58. A, B and C are hydroxy-compounds of the elements X, Y and Z respectively. X, Y and Z are in the same period of the periodic table. A Gives an aqueous solution of pH less than seven. B reacts with both strong acid and strong alkalis. C gives an aqueous solution which is strongly alkaline.

which of the following statements is/are true?

I: The three elements are metals.

II: The electronegativities decreases from X to Y to Z.

III: The atomic radius decreases in the order X, Y and Z.

IV: X, Y and Z could be phosphorus, aluminium and sodium respectively.

A. I, II, III only correct

B. I, III only correct

C. II, IV only correct

D. II, III, IV only correct

Answer: C



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59. La (lanthanum) having atomic number 57 is a member of :

A. s-block elements

B. p-block elements

C. d-block elements

D. f-block elements

Answer: C



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60. If the aufbau principle had not been followed, Ca ($Z=20$) would have been placed in the:

A. s-block

B. p-block

C. d-block

D. f-block

Answer: C



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61. What is the atomic number of the element with the maximum number of unpaired 4p electrons?

A. 33

B. 26

C. 23

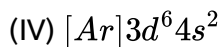
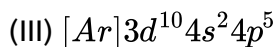
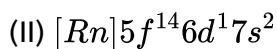
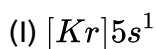
D. 15

Answer: A



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62. The electronic configuration of four elements are:



Consider the following statements:

(i) I shows variable oxidation state

(ii) II is a d-block element

(iii) The compound formed between I and III is covalent

(iv) IV shows single oxidation state

which statement is true (T) or false (F)?

A. FTFF

B. FTFT

C. FFTF

D. FFFF

Answer: D



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63. If period number and group number of any representative element(s) are same then which of the following statement is incorrect regarding such type element(s) in their ground state? (period number and group number are according to modern form of periodic table)

A. The possible value of principal quantum number is 2

B. The possible value of azimuthal quantum number is zero

C. The possible value of magnetic quantum number is 1

D. the species could be paramagnetic

Answer: C



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64. How does the energy gap between successive energy levels in an atom vary from low to high n values?

A. All energy gaps are the same

B. The energy gap decreases as n increases

C. The energy gap increases as n increases

D. the energy gap changes unpredictable as n increases

Answer: B



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65. Which of the following properties of the alkaline earth metals increase from Be to Ba?

- (i) Atomic radius
- (ii) Ionisation energy
- (iii) Nuclear energy

- A. (i) and (ii)
- B. (i) and (iii)
- C. (ii) and (iii)
- D. (i), (ii) and (iii)

Answer: B



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66. which of the following is the incorrect match for atom of element?

- A. $[Ar]3d^5 4s^2 \rightarrow 4^{th}$ period, 6^{th} group

B. $[Kr]4d^{10} \rightarrow 5^{th}$ period, 12^{th} group

C. $[Rn]6d^1 7s^2 \rightarrow 7^{th}$ period, 3th group

D. $[Xe]4f^{14} 5d^2 6s^2 \rightarrow 6th$ period, 4th group

Answer: D



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67. The set representing the correct order of ionic radius is

A. $Na^+ > Mg^{2+} > Al^{3+} > Li^+ > Be^{2+}$

B. $Na^+ > Li^+ > Mg^{2+} > Al^{3+} > Be^{2+}$

C. $Na^+ > Mg^{2+} > Li^+ > Al^{3+} > Be^{2+}$

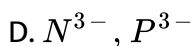
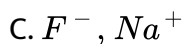
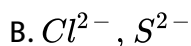
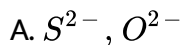
D. $Na^+ > Mg^{2+} > Li^+ > Be^{2+}$

Answer: B



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68. In which of the following pair, both the species are isoelectronic but the first one is large in size than the second?

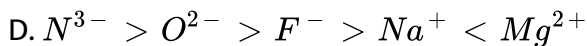
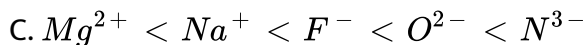
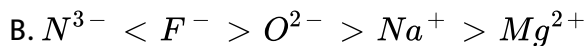
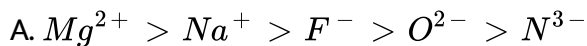


Answer: C



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

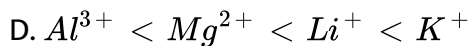
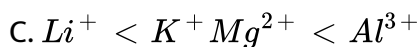
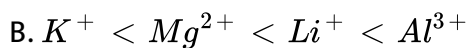
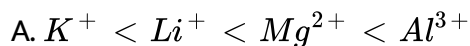


Answer: C



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70. The order of increasing ionic radius of the following is:



Answer: D



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71. If the ionic radii of K^+ and F^- are nearly the same (i.e., 1.34 Å), then the atomic radii of K and F respectively are:

A. 1.34 Å, 1.34 Å

B. 0.72 Å, 1.96 Å

C. 1.96 Å, 0.72 Å

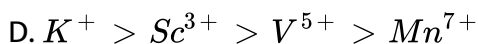
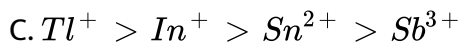
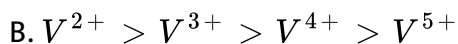
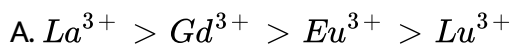
D. 1.96 Å, 1.34 Å

Answer: C



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72. Incorrect order of ionic size is:



Answer: A



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Calculate the amount of energy required to convert 110 mg 'X' atom in gaseous state into X^{+} ion. (Atomic wt. for X=7 g/mol)

A. 10.4 kJ

B. 12.3 kJ

C. 11.3 kJ

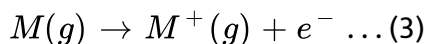
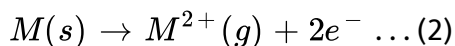
D. 14.5 kJ

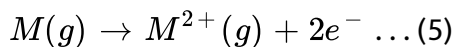
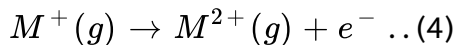
Answer: C



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74. Consider the following changes:





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. $5 - 3$

Answer: D



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75. The correct order of second I.E. of C, N, O and F are in the order:

A. FgtOgtNgtC

B. CgtNgtOgtF

C. OgtNgtFgtC

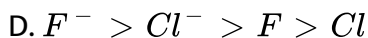
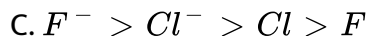
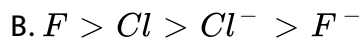
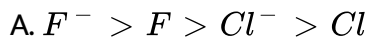
D. OgtFgtNgtC

Answer: D



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76. Which is the correct order of ionization energies?



Answer: B



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77. Which of the following statements is incorrect?

- A. The second ionization energy of sulphur is greater than that of chlorine
- B. The third ionization energy of phosphorus is greater than that of aluminium
- C. The first ionization energy of aluminium is approximately the same as that of gallium
- D. The second ionization energy of boron is greater than that of carbon

Answer: B



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78. First ionization energy is the lowest with:

- A. Lead
- B. Carbon

C. Silicon

D. Tin

Answer: D



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79. The incorrect among the following is:

A. The first ionization potential of Al is less than the first ionization potential of Mg

B. The second ionization potential of Mg is greater than the second ionization potential of Na

C. The first ionization potential of Na is less than the first ionization potential of Mg

D. The third ionization potential of Mg is greater than the third ionization potential of Al

Answer: B



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80. The correct values of ionization enthalpies(in KJ mol^{-1}) of Si, P, Cl, and S respectively are: a)786, 1012, 999, 1256 b)1012, 786, 999, 1256 c) 786, 1012, 1256, 999 d)786, 999, 1012, 1256

A. 786, 1012, 999, 1256

B. 1012, 786, 999, 1256

C. 786, 1012, 1256, 999

D. 786, 999, 1012, 1256

Answer: C



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81. The third ionization enthalpy is maximum for

A. nitrogen

B. phosphorus

C. aluminium

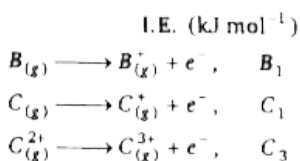
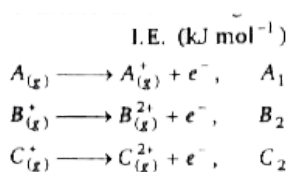
D. boron

Answer: D



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82. Consider the following ionisation reactions:



If monovalent positive ion of A, divalent positive ion of B and trivalent positive ion of C have zero electron. Then incorrect order of corresponding I.E. is:

A. $C_3 > B_2 > A_1$

B. $B_1 > A_1 > C_1$

C. $C_3 > C_2 > B_2$

D. $B_2 > C_3 > A_1$

Answer: D



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83. The incorrect statement is:

A. The second ionisation energy of Se is greater than that of second ionisation energy of As

B. The first ionisation energy of C^{2+} ion is greater than that of first ionisation energy of N^{2+} ion

C. The third ionisation energy of, F is greater than that of third ionisation energy of O

D. Helogens have highest I.E. in respectively period.

Answer: D

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84. First three ionisation energies (in kJ/mol) of three representative elements are given below:

(Element, IE_1 , IE_2 , IE_3), (P , 495.8, 4582, 6910), (Q , 737.7, 1451, 7733), (R ,

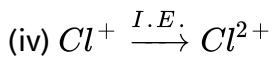
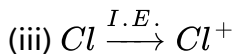
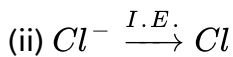
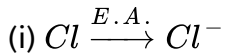
then incorrect option is:

- A. Q: alkaline earth metal
- B. P: alkali metals
- C. R: s-block element
- D. They belong to same period

Answer: C

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85. Which of the following statement is correct regarding following species?



A. $|I.E. \text{ of process (ii)}| = |E.A. \text{ of process (i)}|$

B. $|I.E. \text{ of process (iii)}| = |I.E. \text{ of process (ii)}|$

C. $|I.E. \text{ of process (iv)}| = |E.A. \text{ of process (i)}|$

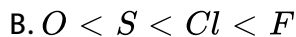
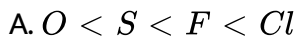
D. $|I.E. \text{ of process (iv)}| = |I.E. \text{ of process (iii)}|$

Answer: A



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86. The correct order of increasing electron affinity of the following elements is:



C. $S < O < F < Cl$

D. $S < O < Cl < F$

Answer: A



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87. The second electron gain enthalpies (in kJ mol^{-1}) of oxygen and sulphur respectively are:

A. $-780, +590$

B. $-590, +780$

C. $+590, +780$

D. $+780, +590$

Answer: D



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88. Which of the following statement is correct?

- A. The magnitude of the second electron affinity of sulphur is greater than that of oxygen
- B. The magnitude of the second electron affinity of sulphur is less than that of oxygen
- C. the first electron affinities of bromine and iodine are approximately the same
- D. The first electron affinity of fluorine is greater than that of chlorine

Answer: B



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89. Which of the following statements is incorrect?

- A. Greater is the nuclear charge, greater is the electron gain enthalpy
- B. Nitrogen has almost zero electron gain enthalpy

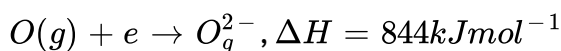
- C. electron gain enthalpy decreases from fluorine to iodine in the group
- D. Chlorine has highest electron gain enthalpy

Answer: C



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90. The formation of the oxide ion O_g^{2-} requires first an exothermic and then an endothermic step as shown below:



This is because:

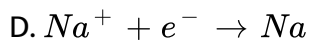
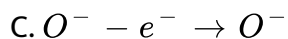
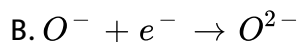
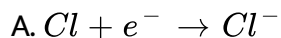
- A. O^- ion has comparatively larger size than oxygen atom
- B. oxygen has high electron affinity
- C. O^- ion will tend to resist the addition of another electron
- D. oxygen is more electronegative

Answer: C



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91. In which of the following energy is absorbed?

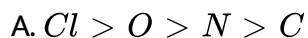


Answer: B



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92. The electron affinity of the following elements can be arranged:



B. ClgtOgtCgtN

C. ClgtNgtCgtO

D. ClgtCgtOgtN

Answer: B



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93. In which of the following arrangements, the order is not correct according to the property indicated against it?

A. Increasing size: $Al^{3+} < Mg^{2+} < Na^+ < F^-$

B. Increasing I.E₁: $B < C < N < O$

C. Increasing $E. A_1$: $I < Br < F < Cl$

D. Increasing metallic radius : $Li < Na < K < Rb$

Answer: B



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94. Which of the following statements is/are wrong?

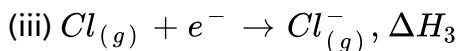
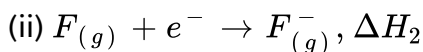
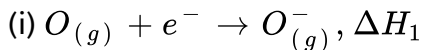
- A. Van der waals' radius of iodine is more than its covalent radius
- B. all isoelectronic ions belong to same period of the periodic table
- C. $I. E_1$ of N is higher than that of O while $I. E_2$ of O is higher than that of N
- D. The electron affinity N is almost zero while that of P is 74.3 kJ mol^{-1}

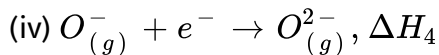
Answer: B



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95. Consider the following conversions:





the according to given information the incorrect statement is :

A. ΔH_3 is more negative than ΔH_1 and ΔH_2

B. ΔH_1 is less negative than ΔH_2

C. $\Delta H_1, \Delta H_2$ and ΔH_3 are negative whereas ΔH_4 is positive

D. ΔH_1 and ΔH_3 are negative whereas ΔH_2 and ΔH_4 positive

Answer: D



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Element	Electronegative value
W	2.7
96. X	2.1
Y	0.8
Z	3.4

Incorrect statement regarding given information is:

A. WZ does not conduct electricity in solid and fused state

B. YZ conducts electricity in solid and fused state

C. XZ conducts electricity only in solution state

D. WX conducts electricity only in fused state

Answer: D



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97. In the compound M-O-H, the M-O bond will be broken if:

A. $\Delta(E.N.)$ of M and O $<$ $\Delta(E.N.)$ of O and H

B. $\Delta(E.N.)$ of M and O $=$ $\Delta(E.N.)$ of O and H

C. $\Delta(E.N.)$ of M and O $>$ $\Delta(E.N.)$ of O and H

D. Cannot be predicted according $\Delta(E.N.)$ data

Answer: C



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98. Aqueous solutions of two compounds $M_1 - O - H$ and $M_2 - O - H$ are prepared in two different beakers. If, the electronegativity of $M_1 = 3.4$, $M_2 = 1.2$, $O = 3.5$ and $H = 2.1$, then the nature of two solutions will be respectively:

- A. acidic, basic
- B. acidic, acidic
- C. basic, acidic
- D. basic, basic

Answer: A



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99. If the ionisation enthalpy and electron gain enthalpy of an element are 275 and 86 kcal mol^{-1} respectively, then the electronegativity of the element on the pauling scale is:

A. 2.8

B. 0

C. 4

D. 2.6

Answer: A



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100. Consider the following statement:

- (I) The radius of an anion is larger than that of the parent atom.
- (II) the ionization energy generally increases with increasing atomic number in a period.
- (III) The electronegativity of an element is the tendency of an isolated atom to attract an electron.

Which of the above statement is/are correct?

A. I alone

B. II alone

C. I and II

D. II and III

Answer: C



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101. Which of the following order is correct for the property mentioned in brackets?

A. $S^{2-} > Cl^{-} > K^{+} > Ca^{2+}$ (Ionization energy)

B. $C < N < F < O$ (2nd ionisation energy)

C. $B > Al > Ga > In > Tl$ (Electronegativity)

D. $Na^{+} > Li^{+} > Mg^{2+} > Be^{2+} > Al^{3+}$ (Ionic radius)

Answer: B



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102. Which among the following factors is the most important in making fluorine, the strongest oxidation halogen?

- A. Bond dissociation energy
- B. Ionisation enthalpy
- C. Hydration enthalpy
- D. Electron affinity

Answer: C



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Level 3 (Passage Type)

1. The energy required to pull the most loosely bound electrons from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors :(i) the charge

on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Ionization potential of Na would be numerically the same as

- A. electron affinity of Na^+
- B. electronegativity of Na^+
- C. electron affinity of Na
- D. ionization potential of Mg

Answer: A



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2. The energy required to pull the most loosely bound electron from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors: (i) the charge on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Q. Which of the following elements has the least ionization potential?

A. Lithium

B. Cesium

C. Magnesium

D. Calcium

Answer: B



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3. The energy required to pull the most loosely bound electron from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors: (i) the charge on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Q. Incorrect order of ionization energy is:

A. $Pb(I.E.) > Sn(I.E.)$

B. $Na^+(I.E.) > Mg^+(I.E.)$

C. $Li^+(I.E.) < O^+(I.E.)$

D. $Be^+(I.E.) < C^+(I.E.)$

Answer: C



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4. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. On moving from Li to F in the second period, there would be a decrease in :

A. non-metallic property

B. atomic radius

C. ionization potential

D. electronegativity

Answer: B



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5. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. Which of the following element has the maximum value of electronegativity?

A. Aluminium

B. Silicon

C. Phosphorus

D. Sulphur

Answer: D



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6. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. Which of the following element has the maximum electron affinity?

A. Nitrogen

B. Oxygen

C. Fluorine

D. Chlorine

Answer: D



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7. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact that after the removal of the first electrons, the atom changes into a monovalent positive ion. In the ion, the number of electrons decreases but the nuclear charge remains the same. As a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. Therefore, the value of second ionisation energy (IE_2), is greater than that of the first ionisation energy (IE_1). Similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Successive ionisation energy of an atom is greater than previous one, because

- A. $\frac{p}{e}$ ratio increases
- B. $\frac{p}{e}$ ratio decreases
- C. $\frac{p}{e}$ ratio remains constant
- D. none of these

Answer: A



8. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact that after the removal of the first electrons, the atom changes into a monovalent positive ion. In the ion, the number of electrons decreases but the nuclear charge remains the same. As a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. Therefore, the value of second ionisation energy (IE_2), is greater than that of the first ionisation energy (IE_1). Similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Correct order of ionisation potential of coinage metals is :

A. $Au > Ag > Cu$

B. $Cu > Ag > Au$

C. $Au > Cu > Ag$

D. $Ag > Cu > Au$

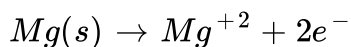
Answer: C



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9. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact that after the removal of the first electron, the atom changes into monovalent positive ion. In the ion, the number of electrons decreases but the nuclear charge remains the same. as a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. therefore, the value of second ionisation energy (IE_2), is greater than that of the first ionisation energy (IE_1). similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Q. IE_1 and IE_2 of Mg metal are 178 and 348 kcal/mol respectively. the energy required for the given reaction is:



A. +170 kcal/mol

B. +526 kcal/mol

C. -170 kcal/mol

D. -526 kcal/mol

Answer: B



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10. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear charge Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate the electron clouds of other orbitals is

$$s > p > d > f \text{ (for the same value of } n \text{)}$$

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby reducing nuclear charge is known as shielding effect. the penultimate shell electrons repel the valence shell electron to keep them loosely held with nucleus. it is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Q. Which of the following valence electron experience maximum effective nuclear charge?

A. $4s^1$

B. $4p^1$

C. $3d^1$

D. $2p^3$

Answer: D



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11. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate is $s > p > d > f$ (for the same value of n)

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby

reducing nuclear charge is known as shielding effect. The penultimate shell electrons repel the valence shell electron to keep them loosely held with nucleus. It is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Which of the following is not concerned to effective nuclear charge?

- A. Higher ionization potential of carbon than boron
- B. Higher ionization potential of magnesium than aluminium
- C. Higher values of successive ionization energy
- D. Higher electronegativity of higher oxidation state

Answer: B



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12. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear charge Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate the

electron clouds of other orbitals is

$s > p > d > f$ (for the same value of n)

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby reducing nuclear charge is known as shielding effect. the penultimate shell electrons repel the valence shell electron to keep them loosely held with nucleus. it is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Q. Ionization energy is not influenced by:

- A. Size of atom
- B. Effective nuclear charge
- C. Electrons present in inner shell
- D. Change in entropy

Answer: D



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13. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which element is a noble gas?

A. P

B. T

C. R

D. S

Answer: B



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14. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which element form stable unipositve ion?

A. P

B. Q

C. R

D. T

Answer: B



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15. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. The element having most stable oxidation state +2 is?

A. Q

B. R

C. S

D. T

Answer: C



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16. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which is a non-metal (excluding noble gas)?

A. P

B. Q

C. R

D. S

Answer: A

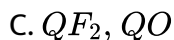
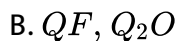
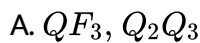


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17. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. If Q reacts with fluorine and oxygen, the molecular formula of fluoride and oxide will be respectively:



D. none of these

Answer: B



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18. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which of the following pair represents elements of same group?

A. Q,R

B. P,Q

C. P,S

D. Q,S

Answer: A



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19. The $I.E_1$. And the $I.E_2$ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	I.E. ₁	I.E. ₂
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which of the element is likely to be reactive metal?

A. P

B. Q

C. R

D. S

Answer: B



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20. The I.E₁. And the I. E₂ in kJ mol^{-1} of a few elements designated by

P,Q,R,S are shown below:

Atom	I.E. ₁	I.E. ₂
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which of the element is likely to be reactive metal?

A. P

B. Q

C. R

D. S

Answer: D



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21. The I.E.₁. And the I. E₂ in kJ mol^{-1} of a few elements designated by

P,Q,R,S are shown below:

Atom	$I.E._1$	$I.E._2$
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which represents a noble gas?

A. P

B. Q

C. R

D. S

Answer: A



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22. The $I.E._1$. And the $I.E._2$ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	I.E. ₁	I.E. ₂
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which represents a noble gas?

A. P

B. Q

C. R

D. S

Answer: C



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23. Elements with their electronic configuration are given below:

Answer the following questions: Itbr. I: $1s^2 2s^2$

II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The elements with highest I.E. is:

A. I

B. III

C. II

D. V

Answer: C



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24. Elements with their electronic configuration are given below:

Answer the following questions: Itbr. I: $1s^2 2s^2$

II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The element with lowest electron gain enthalpy is:

A. I

B. II

C. III

D. IV

Answer: B



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25. Elements with their electronic configuration are given below:

Answer the following questions: Itbr. I: $1s^2 2s^2$

II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The most ionic compound will be formed between :

A. I and IV

B. I and V

C. III and IV

D. III and V

Answer: D



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26. Elements with their electronic configuration are given below:

Answer the following questions: Itbr. I: $1s^2 2s^2$

II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. Which of the following is the correct order of increasing size?

A. $I < III < IV < V$

B. $V < IV < III < I$

C. $I < IV < V < III$

D. $V < IV < I < III$

Answer: D



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27. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the actual number of protons in the atom. the parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a small effective nuclear charge Z^* .

The value of σ for any one electron in a given electron configuration (i.e., in the presence of the other electrons of the atom in question) is calculated using a set of empirical rules developed by Slater. according to these rules, the value of σ for the electron in question is the cumulative total provided by the various other electrons of the atom.

Q. The effective nuclear charge at the periphery of chromium atom [$Z=24$]:

A. 4.25

B. 2.6

C. 3.6

D. 1.21

Answer: B



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28. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's

screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the actual number of protons in the atom. the parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a small effective nuclear charge Z^* .

The value of σ for any one electron in a given electron configuration (i.e., in the presence of the other electrons of the atom in question) is calculated using a set of empirical rules developed by Slater. according to these rules, the value of σ for the electron in question is the cumulative total provided by the various other electrons of the atom.

Q. Which of the following statement is correct?

A. A 4s-orbital is filled earlier than a 3d-orbital because, Z^* for

$3d > Z^*$ for 4s.

B. A 4s-orbital is filled earlier than a 3d-orbital because, Z^* for

$4s > Z^*$ for 3d

C. The effective nuclear charge for 3d and 4s-orbitals are same, but energy of 3d-orbital becomes higher.

D. The effective nuclear charge for 3d and 4s-orbitals are same but, energy of 4s-orbital becomes higher.

Answer: B



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29. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the actual number of protons in the atom. The parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a

small effective nuclear charge Z^* .

The value of σ for any one electron in a given electron configuration (i.e., in the presence of the other electrons of the atom in question) is calculated using a set of empirical rules developed by Slater. According to these rules, the value of σ for the electron in question is the cumulative total provided by the various other electrons of the atom.

Q. According to Slater's rule, order of effective nuclear charge (Z^*) for last electron in case of Li, Na and K.

A. $Li > Na > K$

B. $K > Na > Li$

C. $Na > Li > K$

D. $K = Na > Li$

Answer: D



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30. Metals have few electrons in their valence shell while non-metals generally have more electrons in their valence shell. Metallic character is closely related to atomic radius and ionisation enthalpy. Metallic character increases from top to bottom in a group and decreases from left to right in a period of periodic table. metallic character is inversely related to electronegativity of element.

Q. The electronegativity of the following elements increase in the order:

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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31. Considering the elements B , Al , Mg and K , the correct order of their metallic character is

A. $B > Al > Mg > K$

B. $Al > K > B > Mg$

C. $Mg > Al > K > B$

D. $K > Mg > Al > B$

Answer: D



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32. Metals have few electrons in their valence shell while non-metals generally have more electrons in their valence shell. Metallic character is closely related to atomic radius and ionisation enthalpy. Metallic character increases from top to bottom in a group and decreases from left to right in a period of periodic table. metallic character is inversely related to electronegativity of element.

Q. $3 N_0 / 2$ atoms of $X_{(g)}^-$ by energy E_2 . hence, ionisation potential and electron affinity of $X_{(g)}$ are: (N_0 =Avogadro's number)

A. $\frac{2E_1}{3N_0}, \frac{2E_2}{3N_0}$

B. $\frac{2E_1}{3N_0}, \frac{3E_2}{2N_0}$

C. $\frac{3E_1}{2N_0}, \frac{3E_2}{2N_0}$

D. $\frac{3E_1}{2N_0}, \frac{2E_2}{3N_0}$

Answer: B



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33. The value of four quantum number for the last electron of atom of element 'X' are $n=7, l=1, m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I) ${}^A_Z X$ and (II) ${}^B_Z X$.

Q. The incorrect statement regarding element 'X' is:

A. Element 'X' belongs to 18th group

B. Number of unpaired electrons in element 'X' is zero

C. Atomic number of element 'X' is 118

D. X' is representative element

Answer: D



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34. The value of four quantum number for the last electron of atom of element 'X' are $n=7$, $l=1$, $m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I) A_ZX and (II) B_ZX .

Q. The value of A and B respectively are:

A. 118 and 136

B. 218 and 236

C. 236 and 254

D. 226 and 244

Answer: C



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35. The value of four quantum number for the last electron of atom of element 'X' are $n=7$, $l=1$, $m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I) A_ZX and (II) B_ZX .

Q. The possible value of all four quantum numbers for 90th electron of atom of element 'X' is:

A. $\begin{matrix} n & l & m & s \\ 6 & 2 & 0 & -1/2 \end{matrix}$

B. $\begin{matrix} n & l & m & s \\ 5 & 2 & -1 & +1/2 \end{matrix}$

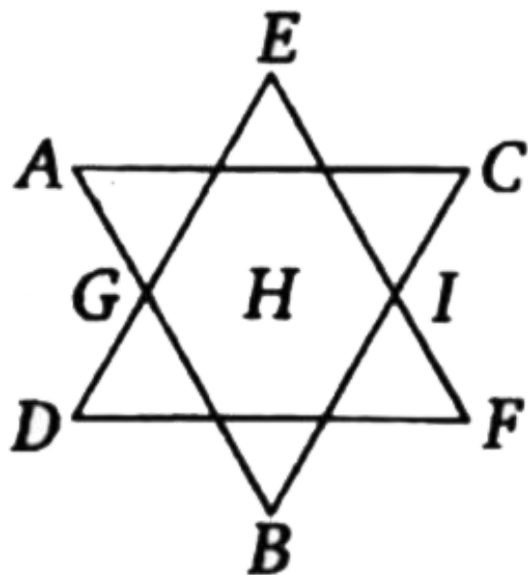
C. $\begin{matrix} n & l & m & s \\ 6 & 0 & 0 & +1/2 \end{matrix}$

D. $\begin{matrix} n & l & m & s \\ 5 & 3 & -2 & -1/2 \end{matrix}$

Answer: D



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36.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

Q. The incorrect order is:

A. $F > E$: Second ionisation energy

B. $B > C$: Z_{eff} on valence shell

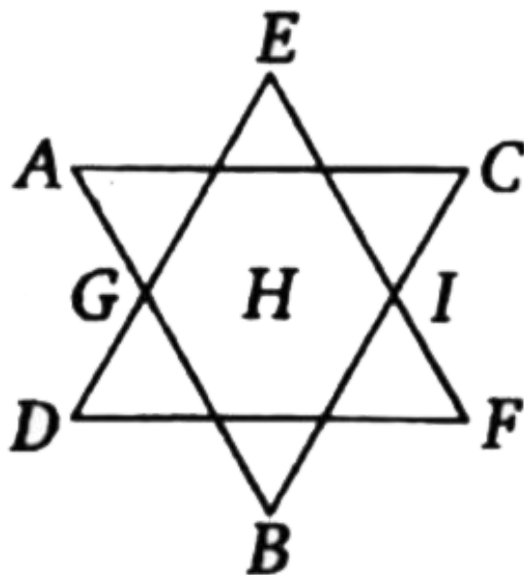
C. $I > H$: First ionisation energy

D. $C > F > E$, Electronegativity

Answer: C



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37.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F

and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

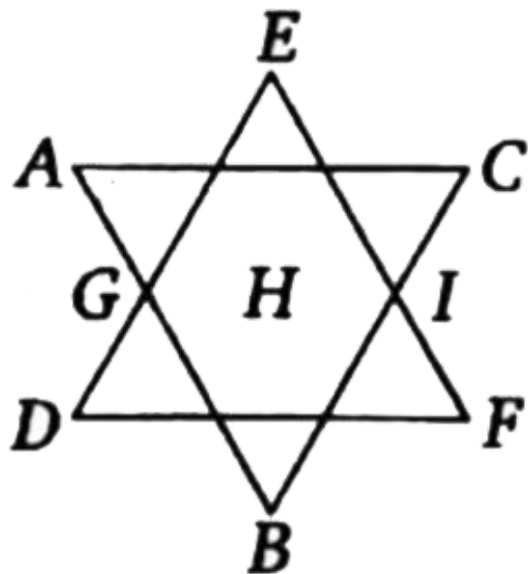
Q. The correct statement is:

- A. +5 oxidation state of H is more stable than its +3 oxidation state.
- B. G^{2+} is better oxidising agent than G^{4+}
- C. +3 oxidation state of E is more stable than its +5 oxidation state
- D. Ionisation energy of G is greater than that of "Tin".

Answer: D



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38.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

Q. Which of the following statement is incorrect?

A. B_2C_5 is acidic in nature

B. AC_2 is acidic in nature

C. FC_3 is basic in nature

D. GC_2 is amphoteric in nature

Answer: C



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39. If P, Q, R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

In which of the following linkage release of H^+ is relatively more easier?

A. P-O-H

B. S-O-H

C. Q-O-H

D. R-O-H

Answer: B

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40. If P, Q, R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

Which element is expected to form amphoteric oxide?

A. P

B. Q

C. R

D. S

Answer: A

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41. If P, Q, R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

Q. Chloride compound of which element is hypovalent?

A. S

B. Q

C. R

D. P

Answer: D



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42. Consider the following elements with their electronegativity value:

Element	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Electronegativity (Pauling scale)	3.77	1.12	2.25	3.10

Q. Incorrect statements is:

A. AOH is more acidic than DOH

B. BOH is more basic than COH

C. AB' molecule is predominantly ionic

D. D-OH' bond is more weaker than 'B-OH' bond in polar solvent

Answer: D



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43. Consider the following elements with their electronegativity value:

Element	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Electronegativity (Pauling scale)	3.77	1.12	2.25	3.10

Q. Select correct statement:

A. Oxide of element D is more acidic than that of A

B. Oxides of elements C and D are basic in nature

C. Oxide of element B is acidic in nature

D. BOH is more basic than H_2O

Answer: D



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44. In the modern period table, elements are arranged in order of increasing atomic number which is related to the electric configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks viz s,p,d and f. The modern periodic table consists of 7 periods and 18 groups. Each period begins with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

Which of the elements whose atomic numbers are given below, cannot be accommodated in the present set up of the long form of the periodic table?

A. 107

B. 118

C. 126

D. 102

Answer: C



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45. In the modern period table, elements are arranged in order of increasing atomic number which is related to the electric configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks viz s,p,d and f. The modern periodic table consists of 7 periods and 18 groups. Each period being with the filling of a new energy shell. In accordance with the Aufbau principle, the seven periods (1 to 7) have 2, 8, 8, 18, 18, 32 and 32 elements respectively. The seventh period is still incomplete. To avoid the periodic table being too long, the two series of f-block elements,

called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

The element with atomic number 57 belongs to:

A. s-block

B. p-block

C. d-block

D. f-block

Answer: C



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46. The energy required to pull the most loosely bound electron from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors: (i) the charge on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Q. Ionization potential of Na would be numerically the same as:

A. electron affinity of Na^+

B. electronegativity of Na^+

C. electron affinity of Na

D. ionization potential of Mg

Answer: A



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47. The energy required to pull the most loosely bound electron from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors: (i) the charge on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Q. Which of the following elements has the least ionization potential?

A. Lithium

B. Cesium

C. Magnesium

D. Calcium

Answer: B



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48. The energy required to pull the most loosely bound electron from an atom is known as ionization potential. It is expressed in electron volts. The value of ionization potential depends on three factors: (i) the charge on the nucleus (ii) the atomic radius and (iii) the screening effect of inner electron shells.

Q. Incorrect order of ionisation energy is:

A. $Pb(I.E.) > Sn(I.E.)$

B. $Na^+(I.E.) > Mg^+(I.E.)$

C. $Li^+(I.E.) < O^+(I.E.)$

D. $Be^+(I.E.) < C^+(I.E.)$

Answer: C



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49. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. On moving from Li to F in the second period, there would be a decrease in :

- A. non-metallic property
- B. atomic radius
- C. ionization potential
- D. electronegativity

Answer: B





50. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. Which of the following element has the maximum value of electronegativity?

- A. Aluminium
- B. Silicon
- C. Phosphorus
- D. Sulphur

Answer: D



51. All the elements, on the basis of long form of periodic table, can be divided into four blocks, s,p, d and f. the ionization energies, electron affinities, electronegativities, atomic and ionic radii and other physical properties usually shown a regular pattern of change within a group or along period with some irregularities.

Q. Which of the following element has the maximum electron affinity?

A. Nitrogen

B. Oxygen

C. Fluorine

D. Chlorine

Answer: D



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52. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact the after the removal of the first electron, the atom changes into monovalent positive ion. In the ion, the

number of electrons decreases but the nuclear charge remains the same. as a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. therefore, the value of second ionisation energy. (IE_2), is greater than that of the first ionisation energy (IE_1). similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Q. Successive ionisation energy of an atom is greater than previous one, because:

- A. $\frac{p}{e}$ ratio increases
- B. $\frac{p}{e}$ ratio decreases
- C. $\frac{p}{e}$ ratio remains constant
- D. none of these

Answer: A



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53. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact that after the removal of the first electron, the atom changes into monovalent positive ion. In the ion, the number of electrons decreases but the nuclear charge remains the same. as a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. therefore, the value of second ionisation energy. (IE_2), is greater than that of the first ionisation energy (IE_1). similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Q. Correct order of ionisation potential of coinage metals is:

A. $Au > Ag > Cu$

B. $Cu > Ag > Au$

C. $Au > Cu > Ag$

D. $Ag > Cu > Au$

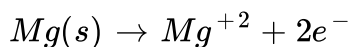
Answer: C



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54. The second ionisation energies are higher than the first ionisation energies. This is mainly due to the fact that after the removal of the first electron, the atom changes into monovalent positive ion. In the ion, the number of electrons decreases but the nuclear charge remains the same. as a result of this, the remaining electrons are held more tightly by the nucleus and it becomes difficult to remove the second electron. therefore, the value of second ionisation energy (IE_2), is greater than that of the first ionisation energy (IE_1). similarly third ionisation energy (IE_3) is greater than that of second IE_2 .

Q. IE_1 and IE_2 of Mg metal are 178 and 348 kcal/mol respectively. the energy required for the given reaction is:



A. +170 kcal/mol

B. +526 kcal/mol

C. -170 kcal/mol

D. -526 kcal/mol

Answer: B



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55. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear charge Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate the electron clouds of other orbitals is

$$s > p > d > f \text{ (for the same value of } n\text{)}$$

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby reducing nuclear charge is known as shielding effect. the penultimate shell electrons repel the valence shell electron to keep them loosely held with nucleus. it is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Q. Which of the following valence electron experience maximum effective nuclear charge?

A. $4s^1$

B. $4p^1$

C. $3d^1$

D. $2p^3$

Answer: D



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56. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear charge Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate the electron clouds of other orbitals is

$s > p > d > f$ (for the same value of n)

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby reducing nuclear charge is known as shielding effect. the penultimate

shell electrons repel the valence shell electron to keep them loosely held with nucleus. it is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Q. Which of the following is not concerned to effective nuclear charge?

- A. Higher ionization potential of carbon than boron
- B. Higher ionization potential of magnesium than aluminium
- C. Higher values of successive ionization energy
- D. Higher electronegativity of higher oxidation state

Answer: B



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57. Nuclear charge actually experienced by an electron is termed as effective nuclear charge. The effective nuclear charge Z^* actually depends on type of shell and orbital in which electron is actually present. The relative extent to which the various orbitals penetrate the electron clouds of other orbitals is

$s > p > d > f$ (for the same value of n)

The phenomenon in which penultimate shell electrons act as screen or shield in between nucleus and valence shell electrons and thereby reducing nuclear charge is known as shielding effect. the penultimate shell electrons repel the valence shell electron to keep them loosely held with nucleus. it is thus evident that more is the shielding effect, lesser is the effective nuclear charge and lesser is the ionization energy.

Q. Ionization energy is not influenced by:

- A. Size of atom
- B. Effective nuclear charge
- C. Electrons present in inner shell
- D. Change in entropy

Answer: D



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58. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which element is a noble gas?

A. P

B. T

C. R

D. S

Answer: B



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59. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which element form stable unipositve ion?

A. P

B. Q

C. R

D. T

Answer: B



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60. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. The element having most stable oxidation state +2 is?

A. Q

B. R

C. S

D. T

Answer: C



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61. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which is a non-metal (excluding noble gas)?

A. P

B. Q

C. R

D. S

Answer: A

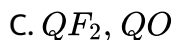
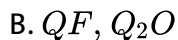
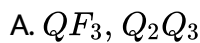


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62. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. If Q reacts with fluorine and oxygen, the molecular formula of fluoride and oxide will be respectively:



D. none of these

Answer: B



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63. Ionization energies of five elements in kcal/mol are given below:

Atom	I	II	III
P	300	549	920
Q	99	734	1100
R	118	1091	1652
S	176	347	1848
T	497	947	1500

Q. Which of the following pair represents elements of same group?

A. Q,R

B. P,Q

C. P,S

D. Q,S

Answer: A



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64. The $I.E_1$. And the $I.E_2$ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	I.E. ₁	I.E. ₂
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which of the element is likely to be reactive metal?

A. P

B. Q

C. R

D. S

Answer: B



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65. The I.E.₁. And the I. E₂ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	$I.E._1$	$I.E._2$
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which of the elements is likely to be reactive non-metal?

A. P

B. Q

C. R

D. S

Answer: D



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66. The $I.E._1$. And the $I.E._2$ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	$I.E._1$	$I.E._2$
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which represents a noble gas?

A. P

B. Q

C. R

D. S

Answer: A



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67. The $I.E._1$. And the $I.E._2$ in kJ mol^{-1} of a few elements designated by P,Q,R,S are shown below:

Atom	I.E. ₁	I.E. ₂
P	2372	5251
Q	520	7300
R	900	1760
S	1680	3380

Based on the above information, answer the following questions.

Q. Which of the above elements forms a stable binary halide of the formula MX_2 ?

A. P

B. Q

C. R

D. S

Answer: C



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68. Elements with their electronic configuration are given below:

Answer the following questions: II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The elements with highest I.E. is:

A. I

B. III

C. II

D. V

Answer: C



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69. Elements with their electronic configuration are given below:

Answer the following questions: II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The element with lowest electron gain enthalpy is:

A. I

B. II

C. III

D. IV

Answer: B



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70. Elements with their electronic configuration are given below:

Answer the following questions: II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. The most ionic compound will be formed between :

A. I and IV

B. I and V

C. III and IV

D. III and V

Answer: D



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71. Elements with their electronic configuration are given below:

Answer the following questions: II: $1s^2 2s^2 2p^6$

III: $1s^2 2s^2 2p^6 3s^2$

IV $1s^2 2s^2 2p^3$

V: $1s^2 2s^2 2p^5$

Q. Which of the following is the correct order of increasing size?

A. $I < III < IV < V$

B. $V < IV < III < I$

C. $I < IV < V < III$

D. $V < IV < I < III$

Answer: D



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72. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the actual number of protons in the atom. the parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a small effective nuclear charge Z^* .

The value of σ for any one electron in a given electron configuration (i.e., in the presence of the other electrons of the atom in question) is

calculated using a set of empirical rules developed by Slater. according to these rules, the value of σ for the electron in question is the cumulative total provided by the various other electrons of the atom.

Q. The effective nuclear charge at the periphery of chromium atom [$Z=24$]:

A. 4.25

B. 2.6

C. 3.6

D. 1.21

Answer: B



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73. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the

actual number of protons in the atom. the parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a small effective nuclear charge Z^* .

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Q. Which of the following statement is correct?

A. A 4s-orbital is filled earlier than a 3d-orbital because, Z^* for

$$3d > Z^* \text{ for } 4s.$$

B. A 4s-orbital is filled earlier than a 3d-orbital because, Z^* for

$$4s > Z^* \text{ for } 3d$$

C. The effective nuclear charge for 3d-and 4s-orbitals are same, but energy of 3d-orbital becomes higher.

D. The effective nuclear charge for 3d and 4s-orbitals are same but, energy of 4s-orbital becomes higher.

Answer: B



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74. J.C. Slater proposed an empirical constant that represents the cumulative extent to which the other electrons of an atom shield (or screen) any particular electron from the nuclear charge. Thus, Slater's screening constant σ is as : $Z^* = Z - \sigma$

Here, Z is the atomic number of the atom, and hence is equal to the actual number of protons in the atom. the parameter Z^* is the effective nuclear charge, which according to is smaller than Z , since the electron in question is screened (shielded) from Z by an amount σ . Conversely, an electron that is well shielded from the nuclear charge Z experiences a small effective nuclear charge Z^* .

The value of σ for any one electron in a given electron configuration (i.e., in the presence of the other electrons of the atom in question) is

calculated using a set of empirical rules developed by Slater. according to these rules, the value of σ for the electron in question is the cumulative total provided by the various other electrons of the atom.

Q. According to Slater's rule, order of effective nuclear charge (Z^*) for last electron in case of Li, Na and K.

A. $Li > Na > K$

B. $K > Na > Li$

C. $Na > Li > K$

D. $K = Na > Li$

Answer: D



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75. Metals have few electrons in their valence shell while non-metals generally have more electrons in their valence shell. Metallic character is closely related to atomic radius and ionisation enthalpy. Metallic character increases from top to bottom in a group and decreases from

let to right in a period of periodic table. metallic character is inversely related to electronegativity of element.

Q. The electronegativity of the following elements increase in the order:

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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76. Considering the elements B , Al , Mg and K , the correct order of their metallic character is

A. $B > Al > Mg > K$

B. $Al > K > B > Mg$

C. $Mg > Al > K > B$

$$D. K > Mg > Al > B$$

Answer: D



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77. Metals have few electrons in their valence shell while non-metals generally have more electrons in their valence shell. Metallic character is closely related to atomic radius and ionisation enthalpy. Metallic character increases from top to bottom in a group and decreases from left to right in a period of periodic table. metallic character is inversely related to electronegativity of element.

Q. 3 $N_0/2$ atoms of $X_{(g)}^-$ by energy E_2 . hence, ionisation potential and electron affinity of $X_{(g)}$ are: (N_0 =Avogadro's number)

A. $\frac{2E_1}{3N_0}, \frac{2E_2}{3N_0}$

B. $\frac{2E_1}{3N_0}, \frac{3E_2}{2N_0}$

C. $\frac{3E_1}{2N_0}, \frac{3E_2}{2N_0}$

D. $\frac{3E_1}{2N_0}, \frac{2E_2}{3N_0}$

Answer: B



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78. The value of four quantum number for the last electron of atom of element 'X' are $n=7$, $l=1$, $m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I) A_ZX and (II) B_ZX .

Q. The incorrect statement regarding element 'X' is:

- A. Element 'X' belongs to 18th group
- B. Number of unpaired electrons in element 'X' is zero
- C. Atomic number of element 'X' is 118
- D. X' is representative element

Answer: D



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79. The value of four quantum number for the last electron of atom of element 'X' are $n=7$, $l=1$, $m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I) A_ZX and (II) B_ZX .

Q. The value of A and B respectively are:

- A. 118 and 136
- B. 218 and 236
- C. 236 and 254
- D. 226 and 244

Answer: C



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80. The value of four quantum number for the last electron of atom of element 'X' are $n=7$, $l=1$, $m=+1$ and $s=+1/2$ or $-1/2$ and value of spin magnetic momentum for element 'X' is zero element 'X' has two isotopes (I)

A_ZX and (II) B_ZX .

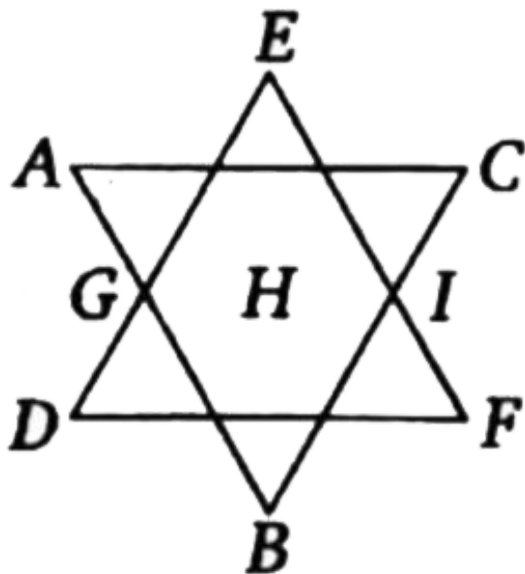
Q. The possible value of all four quantum numbers for 90th electron of atom of element 'X' is:

- A. $\begin{matrix} n & l & m & s \\ 6 & 2 & 0 & -1/2 \end{matrix}$
- B. $\begin{matrix} n & l & m & s \\ 5 & 2 & -1 & +1/2 \end{matrix}$
- C. $\begin{matrix} n & l & m & s \\ 6 & 0 & 0 & +1/2 \end{matrix}$
- D. $\begin{matrix} n & l & m & s \\ 5 & 3 & -2 & -1/2 \end{matrix}$

Answer: D



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81.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

Q. The incorrect order is:

A. $F > E$: Second ionisation energy

B. $B > C$: Z_{eff} on valence shell

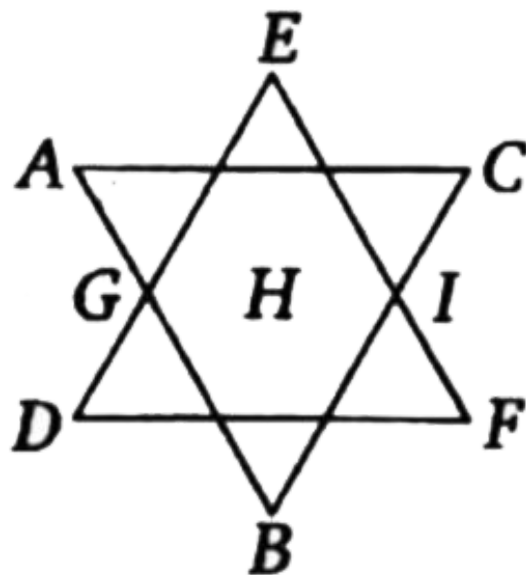
C. $I > H$: First ionisation energy

D. $C > F > E$, Electronegativity

Answer: C



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82.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F

and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

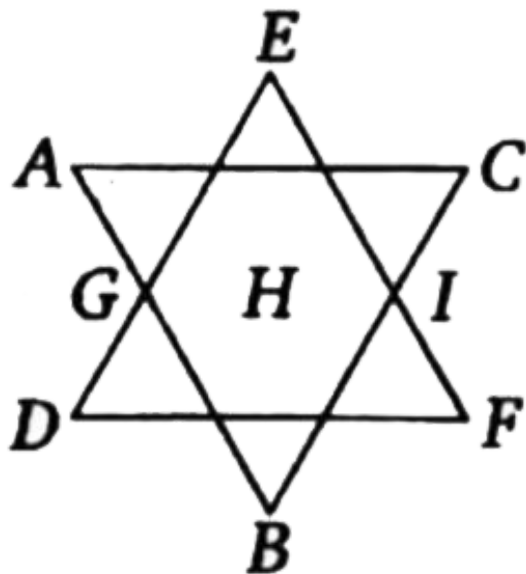
Q. The correct statement is:

- A. +5 oxidation state of H is more stable than its +3 oxidation state.
- B. G^{2+} is better oxidising agent than G^{4+}
- C. +3 oxidation state of E is more stable than its +5 oxidation state
- D. Ionisation energy of G is greater than that of "Tin".

Answer: D



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83.

There are nine elements A to I. these are belongs to p-block element other than halogen. If atomic number of B is average of atomic number of A and C and atomic number of E is average of atomic number of D and F and atomic number of H is average of atomic number of G and I. atomic numbers of B, E and H are 7, 15 and 83 respectively and atomic numbers of C, I and F are greater than A, G and D respectively.

Q. Which of the following statement is incorrect?

A. B_2C_5 is acidic in nature

B. AC_2 is acidic in nature

C. FC_3 is basic in nature

D. GC_2 is amphoteric in nature

Answer: C



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84. If P, Q, R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

Q.



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85. If P, Q, R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

Which element is expected to form amphoteric oxide?

A. P

B. Q

C. R

D. S

Answer: A



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86. If P , Q , R and S are elements of 3rd period of p-block in modern periodic table, among these one element is metal and rest are non-metals and their order of electronegativity is given as:

$$P < Q < R < S$$

Q. Chloride compound of which element is hypovalent?

A. S

B. Q

C. R

D. P

Answer: D



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87. Consider the following representation based on long form of periodic table.

A		U	V	W
B		T		
C	D	X	S	R
		E		Q
H	G	F		P

Value of all four quantum number for last electron of element 'X' in their ground state is

$n = 4, l = 1, m = 1$ and $s = -\frac{1}{2}$ and spin multiplicity of element 'X'

in their ground state is 4.

Q. Which of the following order is incorrect?

A. Magnetic moment $U > V > A$

B. Atomic radius: $E > X > T$

C. Ionisation energy : $R > X > B$

D. Stability: $F^{3+} < E^{3+} < X^{3+}$

Answer: D



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88. Consider the following representation based on long form of periodic table.

A		U	V	W
B		T		
C	D	X	S	R
		E		Q
H	G	F		P

Value of all four quantum number for last electron of element 'X' in their

ground state is

$n = 4, l = 1, m = 1$ and $s = -\frac{1}{2}$ and spin multiplicity of element 'X'

in their ground state is 4.

Q. The correct order is:

A. Ionisation energy of V gt ionisation energy of U

B. Electron affinity of X gt electron affinity of S

C. Electron affinity of X gt ionisation energy of D

D. $|\Delta H_{EG}|$ of $T > |\Delta H_{EG}|$ of U

Answer: D



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89. Consider the following representation based on long form of periodic table.

A		U	V	W
B		T		
C	D	X	S	R
		E		Q
H	G	F		P

Value of all four quantum number for last electron of element 'X' in their ground state is

$$n = 4, l = 1, m = 1 \text{ and } s = -\frac{1}{2} \text{ and spin multiplicity of element 'X'}$$

in their ground state is 4.

Q. Which of the following statement is incorrect?

- A. Element P is radioactive
- B. Elements B and C have their almost similar size
- C. Element G is more stable in +4 oxidation state

D. Element G has electron with $n=4$, $l=3$, $m=0$ and $s = +\frac{1}{2}$ quantum numbers.

Answer: C



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90. Consider the following elements with their electronegativity value:

Element	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Electronegativity (Pauling scale)	3.77	1.12	2.25	3.10

Q. Incorrect statements is:

A. AOH is more acidic than DOH

B. BOH is more basic than COH

C. AB' molecule is predominantly ionic

D. D-OH' bond is more weaker than 'B-OH' bond in polar solvent

Answer: D



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91. Consider the following elements with their electronegativity value:

Element	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Electronegativity (Pauling scale)	3.77	1.12	2.25	3.10

Q. Select correct statement:

A. Oxide of element D is more acidic than that of A

B. Oxides of elements C and D are basic in nature

C. Oxide of element B is acidic in nature

D. BOH is more basic than H_2O

Answer: D



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92. In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four

blocks, viz, s,p,d, and f. the modern periodic table consists of 7 periods and 18 groups. each period begins with the filling of a new energy shell. in accordance with the aufbau principle, the seven periods (1 to 7) have 2,8,8,18,18,32 and 32 elements respectively. the seventh period is still incomplete. to avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

Q. Which of the elements whose atomic numbers are given are given below, cannot be accommodated in the present set up of the long form of the periodic table?

A. 107

B. 118

C. 126

D. 102

Answer: C



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93. In the modern periodic table, elements are arranged in order of increasing atomic numbers which is related to the electronic configuration. Depending upon the type of orbitals receiving the last electron, the elements in the periodic table have been divided into four blocks, viz, s,p,d, and f. the modern periodic table consists of 7 periods and 18 groups. each period begins with the filling of a new energy shell. in accordance with the aufbau principle, the seven periods (1 to 7) have 2,8,8,18,18,32 and 32 elements respectively. the seventh period is still incomplete. to avoid the periodic table being too long, the two series of f-block elements, called lanthanoids and actinoids are placed at the bottom of the main body of the periodic table.

Q. The element with atomic number 57 belongs to:

- A. s-block
- B. p-block
- C. d-block
- D. f-block

Answer: C



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ONE OR MORE ANSWERS IN/ARE CORRECT

1. Assign the position of the element having outer electronic configuration,

(A) ns^2np^2 ($n=6$)

(B) $(n-1)d^2ns^2$ ($n=4$)

(C) $(n-2)f^7(n-1)d^{-1}ns^2$ ($n=6$)

Which of the following statement(s) is/are correct?

A. The element 'A' belong to 3rd period and 16th group.

B. The element 'B' belong to 4th period and 4th group

C. The element 'C' belong to 6th period and 3rd group and is lanthanide element.

D. All A, B, C elements are metals

Answer: B::C::D



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2. Which of the following statement(s) regarding periodic properties is/are incorrect?

- A. Alkali metals have highest I.E. in respective period.
- B. Noble gas have highest I.E. in respective period
- C. First electron affinity of nitrogen is less than oxygen
- D. F atom has smallest radius in periodic table

Answer: A::D



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3. Which of the following properties among halogens decreases from fluorine to iodine ?

A. Electronegativity

B. Bond energy

C. Ionisation energy

D. Electron affinity

Answer: A::C



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4. In halogens, which of the following decreases from fluorine to iodine?

A. Bond length

B. Electronegativity

C. The ionization energy of the element

D. Oxidizing power

Answer: B::C::D



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5. Mark the correct statements out of the following:

- A. He and the highest $I. E_1$ in the periodic table
- B. Cl has the highest E.A. out of all the elements in the periodic table
- C. Hg and Br are liquid at room temperature
- D. In any period, the atomic radius of the noble gas is lowest

Answer: A::B::C



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6. S, T and U are the aqueous chlorides of the elements X, Y and Z respectively. X, Y and Z are in the same period of the periodic table. U gives a white precipitate with NaOH but this white precipitate dissolves as more NaOH is added. When NaOH is added to T, a white precipitate forms which does not dissolve when more base is added. S does not give

precipitate with NaOH.

Which of the following statements are correct?

- A. The three elements are metals
- B. The electronegativity decreases from X to Y to Z.
- C. X, Y and Z could be sodium, magnesium and aluminium respectively
- D. The first ionization increases from X to Y to Z.

Answer: A::C



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7. Which of the following statements concerning elements with atomic number 10 is true?

- A. it forms a covalent network solid
- B. Element is monoatomic
- C. It has a almost zero value of electron affinity

D. It has extremely high value of ionization energy

Answer: B::C::D



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8. Which of the following pairs of elements have same number of electrons in their outermost shell?

A. Mn, Fe

B. Na, Sr

C. As, Bi

D. Se, Te

Answer: A::C::D



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9. A change of Zn to Zn^{2+} is accompanied by a decrease in:

A. Number of valence electrons

B. atomic mass

C. number of shells

D. none of these

Answer: C



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10. The elements which are radioactive and have been named after the name of planet are

A. Hg

B. Np

C. Pu

D. Ra

Answer: B::C



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11. The properties which are common to both groups 1 and 17 elements in the periodic table are:

- A. electropositive character increases down the groups
- B. Reactivity decreases from top to bottom in these groups
- C. atomic radii increases as the atomic number increases
- D. Electronegativity decreases on moving down a group

Answer: A::C::D



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12. There are three elements A, B and C. their atomic number are Z_1 , Z_2 and Z_3 respectively. If $Z_1 - Z_2 = 2$ and $\frac{Z_1 + Z_2}{2} = Z_3 - 2$ and the

electronic configuration of element A is $[Ar]3d^64s^2$, then correct order of magnetic momentum is/are:

A. $B^+ > A^{2+} > C^{2+}$

B. $A^{3+} > B^{2+} > C$

C. $B > A > C^{2+}$

D. $B = A^{3+} > C^{3+}$

Answer: A::B::C



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13. Which of the following match is/are correct regarding B, Al, C and Si elements?

A. The highest first ionisation enthalpy : C

B. The largest atomic size: Al

C. The most negative electron gain enthalpy : C

D. The most metallic character: Al

Answer: A::B::C::D



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14. Consider the value of all four quantum number for last electron and spin multiplicity ($2s+1$) for given two element 'X' and 'Y' in their ground state:

$(n, l, m, s, |2s + 1|)$, ($X: , 2, 0, 0, +1/2, 1$), ($Y: , 2, 1, -1, -1/2, 4$)

The according to given information the correct statement is:

A. The bond angle ($H - Y - H$) of possible hydride of element Y is

less than $19028'$

B. The possible halide of 'X' has two vacant p-orbitals on its central atom.

C. Magnetic moment of Y is greater than X

D. X and Y element exhibits only single oxidation are

Answer: A::B::C



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15. An element 'X' present in its ground state, the value of principal and azimuthal quantum number for last electron of element 'X' is $n=3$ and $l=1$ and spin multiplicity for given element is 4. then according to given information correct statement(s) regarding given element 'X' is/are:

- A. Element 'X' is 3rd period and 15th group element
- B. In valence shell of element 'X' electron density is symmetrically distributed
- C. Element 'X' has full filled valence shell.
- D. none of these

Answer: A::B



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16. Which of the following pairs have approximately the same atomic radii?

- A. Zr and Hf
- B. Al and Mg
- C. Al and Ga
- D. Na and Ne

Answer: A::C



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17. The correct order of radii is/are:

- A. $Pb > Pb^{2+} > Pb^{4+}$
- B. $In^+ > Sn^{2+} > Sb^{3+} > Te^{4+}$
- C. $Co > Ni > Cu > Zn$
- D. $K^+ > Li^+ > Mg^{2+} > Al^{3+}$

Answer: A::B::D



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18. The first ionisation energy of first atom is greater than that of second atom, whereas reverse order is true for their second ionisation energy.

Which set of elements is in accordance to above statement?

A. CgtB

B. PgtS

C. BegtB

D. MggtNa

Answer: A::B::C::D



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19. Ionization energy of an element is:

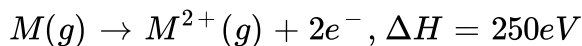
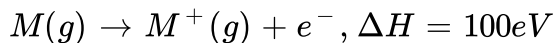
- A. Equal in magnitude but opposite in sign to the electron gain enthalpy of the cation of the element
- B. Same as electron affinity of the element
- C. Energy required to remove one valence electron from an isolated gaseous atom in its ground state
- D. Equal in magnitude but opposite in sign to the ionization enthalpy of the anion of the element

Answer: A::C



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20. Consider the following ionization steps :



Select the correct statement(s) a) $I.E_{.1}$ of $M(g)$ is 100eV b)

$M^+(g) \rightarrow M^{2+}(g) + e^-$, $\Delta H = 150 \text{ eV}$ c) $I. E_{.2}$ of $M(g)$ is 250 eV d)

$I. E_{.2}$ of $M(g)$ is 14=150 eV

A. $I. E_1$ of $M(g)$ is 100 eV

B. $I. E_1$ of $Mg^+(g)$ is 150 eV

C. $I. E_2$ of $M(g)$ is 250 eV

D. $I. E_2$ of $M(g)$ is 150 eV

Answer: A::B::D



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21. Select the correct order of periodic properties of species :

A. $Fe^{2+} < Fe^{3+}$: Ionic radii

B. $N < O$: Second ionisation energy

C. $Cu < Zn$: Atomic radius

D. $In < Tl$: First ionisation energy

Answer: B::C::D



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22. Select the incorrect statement(s)/order (s):

A. d-orbital can accommodate 10 electrons

B. $\underset{2s^2 2p^6 3s^1}{Na} \xrightarrow{I.E_1} \underset{2s^2 2p^6}{Na^+} \xrightarrow{I.E_2} \underset{2s^2 2p^5}{Na^{2+}} \xrightarrow{I.E_3} \underset{2s^2 2p^4}{Na^{3+}}$, order of successive I.E. is

$$I.E_1 < I.E_2 < I.E_3$$

C. Number of unpaired electrons in Co^{2+} cationgt Number of unpaired electrons in Co^{3+} cation

D. First ionisation energy of Pt is greater than that of Pd

Answer: C

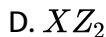
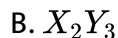


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23. Consider the following values of I.E.(eV) for elements W and X:

Element	$I. E_1$	$I. E_2$	$I. E_3$	$I. E_4$
W	10.5	15.5	24.9	79.8
X	8	14.8	78.9	105.8

Other two element Y and Z hav outer electronic configuration ns^2np^4 and ns^2np^5 respectively. then according to given information which of the following compound(s) is/are not possible?



Answer: B::C



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24. The sum of IE_1 and IE_2 , IE_3 and IE_4 for element P and Q are given below:

$$IE_1 + IE_2 \quad IE_2 + IE_4$$

$$(P) \quad 2.45 \quad 8.82$$

$$(Q) \quad 2.85 \quad 6.11$$

Then according to the given information the correct statement (s) is/are

A. P^{2+} is more stable than Q^{2+}

B. P^{2+} is less stable than Q^{2+}

C. P^{4+} is more stable than Q^{4+}

D. P^{4+} is less stable than Q^{4+}

Answer: A::D



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25. Consider the successive ionisation energy for an element 'A' .

$IE_1, IE_2, IE_3, IE_4, IE_5$ are 100 eV , 150 eV , 181eV , 2000 eV , 2200 eV .

Select correct statement (s) for element 'A' : a)Element 'A' may be metal

b)Element 'A' may form trivalent cation c)Oxide of element 'A' may be

amphoteric d)Element 'A' may be non-metal

- A. Element 'A' may be metal
- B. Element 'a' may form trivalent cation
- C. Oxide of element 'A' may be amphoteric
- D. Element 'A' may be non-metal

Answer: A::B::C::D



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26. According to Slater's rule , correct order of Z_{eff} on valence shell electron is :

- A. $Fe > Fe^{2+} > Fe^{3+}$
- B. $N^{3-} < O^{2-} < F^{-}$
- C. $Na^{+} < Mg^{2+} < Al^{3+}$
- D. $Tl^{2+} < V^{3+} < Mn^{5+}$

Answer: B::C::D

27. Which of the following order is/are correct?

A. $Mg^{2+}(\text{size}) > Li^+(\text{size})$

B. $S(E. A) > O(E. A)$

C. $Hg(I. E.) > Cd(I. E.)$

D. $P(I. E) > S(I. E)$

Answer: B::C::D

28. Correct order of electron affinity is/are:

A. $S > O$

B. $Al > B$

C. $Mg > Na$

D. $P > N$

Answer: A::B::D



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29. Which of the following statement(s) is/are correct?

- A. van der waals' radius of iodine is more than its covalent radius
- B. All isoelectronic ions of corresponding elements belong to the same period of the periodic table.
- C. IE. Of N-atom is higher than that of O-atom, while IE_2 of O-atom is higher than that of N-atom.
- D. The electron affinity of fluorine is greater than that of chlorine.

Answer: A::C



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30. Order of Electron affinity of the elements or ions shown correctly?

A. $S > O^-$

B. $P > N^-$

C. $O^- > S^-$

D. $N^- > P$

Answer: A::B



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31. Which of the following statement regarding halogens is/are correct?

A. Ionization energy decreases with increase in atomic number

B. electronegativity decreases with increase in atomic number

C. Electron affinity decreases with increase in atomic number

D. Enthalpy of fusion increses with increase in atomic number

Answer: A::B::D



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32. Which of the following statements are correct?

- A. F is the most electronegative and Cs is the most electropositive element
- B. The ionization energy 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
- D. The electron affinity of noble gases is almost zero

Answer: A::B::C::D



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33. Consider the order $O^{2-} < F^{+} < Na^{+} < Mg^{3+}$. Then correct statement(s) is/are :

A. Increasing order of Z_{eff} .

B. Increasing order of size

C. Increasing order of I.E

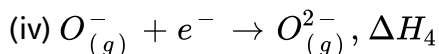
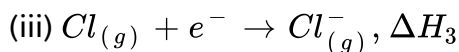
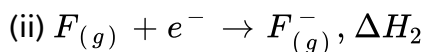
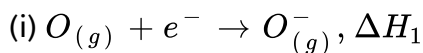
D. Increasing order of E.A

Answer: A::C::D



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34. Consider the following reaction:



then according to given information the correct statement is/are:

A. ΔH_3 is more negative than ΔH_1 and ΔH_2

B. ΔH_1 is less negative than ΔH_2

C. ΔH_1 , ΔH_2 and ΔH_3 are negative whereas ΔH_4 is positive

D. ΔH_1 and ΔH_3 are negative whereas ΔH_2 and ΔH_4 positive

Answer: A::B::C



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35. Which of the following is incorrect order of property as indicated ?

A. $Na^+ < F^- < O^{2-} < Ne < Ar$: Atomic size

B. $Br < Se < As < Ge$:Metallic character

C. $Na < Al < Si < Mg$:Ionisation energy

D. $I < Br < Cl < F$:Electron affinity

Answer: B::C::D



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36. Which of the following is/are correct order?

A. Atomic radius $F < O < F^- < O^{2-}$

B. 2nd ionisation energy $C < N < F < O$

C. Electron affinity: $I < Br < F < Cl$

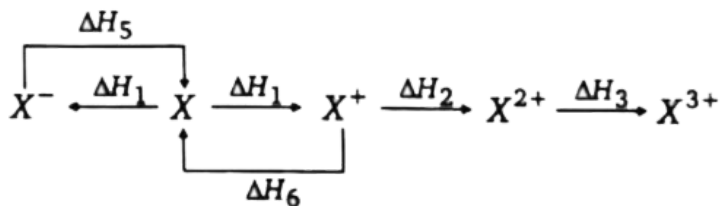
D. Z_{eff} (effective nuclear charge): $Al < Al^+ < Al^{3+} < Al^{2+}$

Answer: A::B::C



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37. Consider the following sequence of reaction:



If electronic configuration of element X is $[Ne]3s^1$, then which of the following order is correct regarding given enthalpies?

A. $|\Delta H_4| = |\Delta H_5|$

B. $|\Delta H_2| > |\Delta H_1|$

C. $|\Delta H_2| > |\Delta H_3|$

D. $|\Delta H_1| = |\Delta H_6|$

Answer: A::B::D



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38. The correct statement is/are:

A. Zirconium (Zr) and hafnium (Hf) have almost same size

B. Correct order of ionisation energy of coinage metals is $\text{Cu} > \text{Ag} < \text{Au}$

C. Carbon atom in CCl_4 is more electronegative than carbon atom in CF_4

D. Pb^{2+} is more stable than Pb^{4+}

Answer: A::B::D



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39. Which of the following statements is true about electronegativity?

- A. Electronegativity of an element depends upon its effective nuclear charge
- B. Electronegativity of a cation is proportional to charge on the cation
- C. Electronegativity increases as the s-character in hybrid orbital increases
- D. Electronegativity of a anion is proportiona to charge on the anion

Answer: A::B::C



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40. Which of the following element have the similar value of electronegativity?

A. H

B. S

C. Te

D. P

Answer: A::C::D



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41. Which of the following properties can be determined by using Born-Haber cycle ?

A. Hydration energy of ion

B. Electron gain enthalpy

C. lattice enegy

D. Electronegativity

Answer: A::D



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42. Select correct order(s) of electronegativity of element is/are:

A. Paulling scale (E.N. of F-atom) > Mulliken scale (E.N. of F-atom)

B. Cl_2O_7 (E.N. of Cl-atom) > Cl_2O_5 (E.N. of Cl-atom)

C. CH_4 (E.N. of C-atom) > CO_2 (E.N. of C-atom)

D. Cu^{2+} (E.N.) > Cu^+ (E.N.)

Answer: A::B::D



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43. Choose the correct statement(s):

A. H^+ is the smallest size cation in the periodic table.

B. van der Waals' radius of chlorine is more than covalent radius

C. ionic mobility of hydrated Li^+ is greater than that of hydrated Na^+ .

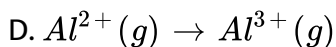
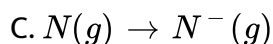
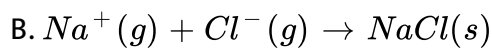
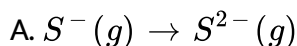
D. He atom is having highest I.E. in the periodic state

Answer: A::B::D



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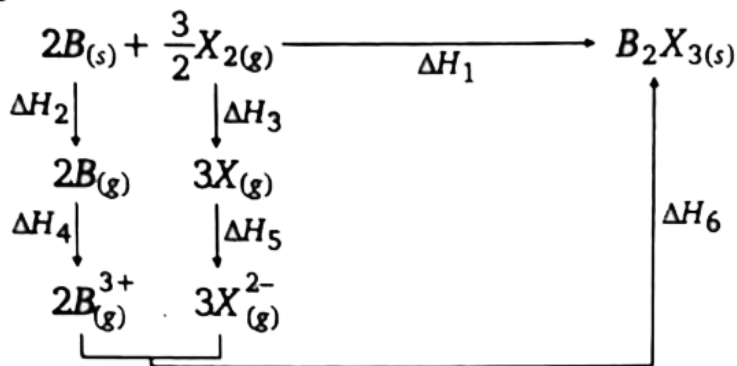
44. Select equation having endothermic step:



Answer: A::C::D

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45. Consider the following Born-Haber's cycle:



(Where ΔH_1 , ΔH_2 , ΔH_3 , ΔH_4 , ΔH_5 and ΔH_6 are in kJ/mol)

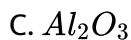
Then according to given information the correct statement is/are:

- A. ΔH_2 and ΔH_3 are always positive
- B. $\Delta H_1 = 2\Delta H_2 + \frac{3}{2}\Delta H_3 + 2\Delta H_4 + 3\Delta H_5 + \Delta H_6$
- C. Second electron gain enthalpy of X is negative
- D. ΔH_1 must be negative for formation of $B_2X_3(s)$

Answer: A::B::D

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46. Which of the following oxides is/are amphoteric ?

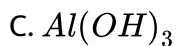
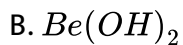
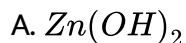


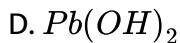
Answer: C::D



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47. Which of the following show amphoteric behaviour?





Answer: A::B::C::D



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48. Assign the position of the element having outer electronic configuration,

(A) ns^2np^2 ($n=6$)

(B) $(n-1)d^2ns^2$ ($n=4$)

(C) $(n-2)f^7(n-1)d^{-1}ns^2$ ($n=6$)

Which of the following statement(s) is/are correct?

A. The element 'A' belong to 3rd period and 16th group.

B. The element 'B' belong to 4th period and 4th group

C. The element 'C' belong to 6th period and 3rd group and is lanthanide element.

D. All A, B , C elements are metals

Answer: B::C::D



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49. Which of the following statement(s) regarding periodic properties is/are incorrect?

- A. Alkali metals have highest I.E. in respective period.
- B. Noble gas have highest I.E. in respective period
- C. First electron affinity of nitrogen is less than oxygen
- D. F atom has smallest radius in periodic table

Answer: A::D



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50. Which of the following properties among halogens decreases from fluorine to iodine ?

A. Electronegativity

B. Bond energy

C. Ionisation energy

D. Electron affinity

Answer: A::C



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51. In halogens, which of the following decreases from fluorine to iodine?

A. Bond length

B. Electronegativity

C. The ionization energy of the element

D. Oxidizing power

Answer: B::C::D



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52. Mark the correct statements out of the following:

A. *He* and the highest $I. E_1$ in the periodic table

B. *Cl* has the highest $E. A.$ out of all the elements in the periodic table

C. *Hg* and *Br* are liquid at room temperature

D. In any period, the atomic radius of the noble gas is lowest

Answer: A::B::C



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53. S, T and U are the aqueous chlorides of the elements X, Y and Z respectively. X, Y and Z are in the same period of the periodic table. U gives a white precipitate with NaOH but this white precipitate dissolves as more NaOH is added. When NaOH is added to T, a white precipitate forms which does not dissolve when more base is added. S does not give

precipitate with NaOH.

Which of the following statements are correct?

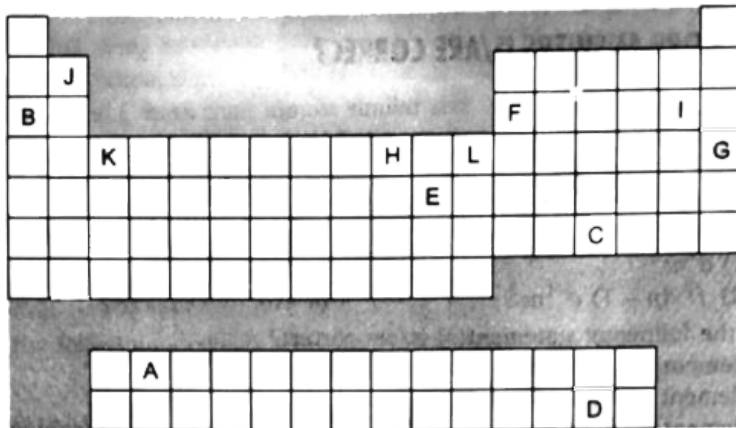
- A. The three elements are metals
- B. The electronegativity decreases from X to Y to Z.
- C. X, Y and Z could be sodium, magnesium and aluminium respectively
- D. The first ionization increases from X to Y to Z.

Answer: A::C



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54. The diagram below shows part of the skeleton of the periodic table in which elements are indicated by letters which are not their usual symbols.



Answer the following on the basis of modern periodic table:

- (I) Alkali metal(s)
- (II) an elements with the outer configuration of $d^8 s^2$
- (III) Lanthanoids
- (IV) Elements with incomplete f-subshell
- (VI) Halogen(s)
- (VII) s-block element(s)
- (VIII) transition element(s)
- (IX) Noble gas (s)
- (X) Non-transtion element(s)



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[illegible]

(I) element having greatest ionic character in its compound

(II) Metal cation which is coloured in its aqueous solution.

(III) Element(s) of which carbonate salt is/are water temperature.

(IV) which element is monoatomic gas at room temperature.

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56. Answer the following on the basis of modern periodic table.

The crossword puzzle grid is composed of white squares for letters and black squares for empty space. The numbers are as follows:

- Across:**
 - Word 3 starts at square 3.
 - Word 4 starts at square 4.
 - Word 5 starts at square 5.
 - Word 6 starts at square 6.
 - Word 7 starts at square 7.
 - Word 8 starts at square 8.
 - Word 9 starts at square 9.
 - Word 10 starts at square 10.
 - Word 11 starts at square 11.
 - Word 12 starts at square 12.
- Down:**
 - Word 1 starts at square 1.
 - Word 2 starts at square 2.
 - Word 13 starts at square 13.
 - Word 14 starts at square 14.
 - Word 15 starts at square 15.
 - Word 16 starts at square 16.
 - Word 17 starts at square 17.
 - Word 18 starts at square 18.

(I) Group no. of elements with the valence shell ground state electron configuration ns^2np^5

(II) Group no. of the elements with the valence shell ground state electron configuration ns^2np^3

(III) Group no. of the elements that have only three unpaired p electron in ground state

(V) ground 3A elements.

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57. Which of the following statements concerning elements with atomic number 10 is true?

- A. it forms a covalent network solid
- B. Element is monoatomic
- C. It has a almost zero value of electron affinity
- D. It has extremely high value of ionization energy

Answer: B::C::D



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58. Which of the following pairs of elements have same number of electrons in their outermost shell?

- A. Mn, Fe
- B. Na, Sr
- C. As, Bi

D. Se, Te

Answer: C::D



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59. A change of Zn to Zn^{2+} is accompanied by a decrease in:

- A. Number of valence electrons
- B. atomic mass
- C. Atomic number of element 'X' is 118
- D. number of shells

Answer: A::D



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60. The elements which are radioactive and have been named after the name of planet are

A. *Hg*

B. *Np*

C. *Pu*

D. *Ra*

Answer: B::C



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61. The properties which are common to both groups 1 and 17 elements in the periodic table are:

A. electropositive character increases down the groups

B. Reactivity decreases from top to bottom in these groups

C. atomic radii increases as the atomic number increases

D. Electronegativity decreases on moving down a group

Answer: A::C::D



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62. There are three elements A, B and C. their atomic number are Z_1 , Z_2 and Z_3 respectively. If $Z_1 - Z_2 = 2$ and $\frac{Z_1 + Z_2}{2} = Z_3 - 2$ and the electronic configuration of element A is $[Ar]3d^6 4s^2$, then correct order of magnetic momentum is/are:

A. $B^+ > A^{2+} > C^{2+}$

B. $A^{3+} > B^{2+} > C$

C. $B > A > C^{2+}$

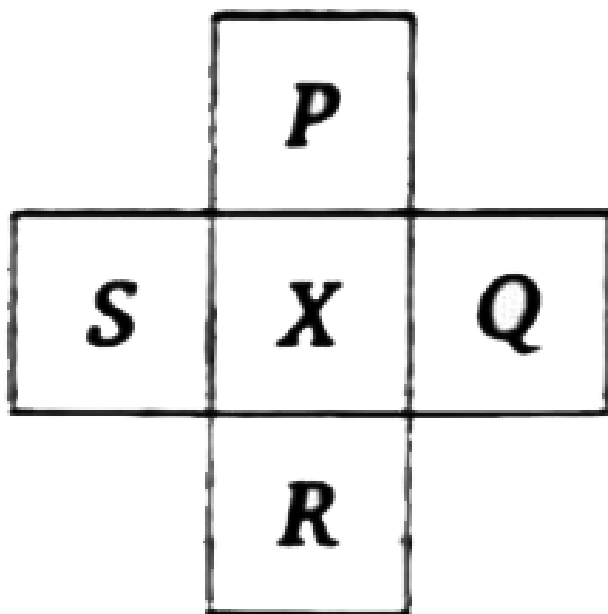
D. $B = A^{3+} > C^{3+}$

Answer: A::B::C



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63. Consider the following representation based on long form of periodic table.



Here P, Q < R and S are up, right down the left elements with respect to the central element 'X' respectively. According to above representation the correct match is/are

A. X-Ge, P-Si, Q-As, R-Sn, S-Ga

B. X-Te, P-Se, Q-I, R-Po, S-Sb

C. X-Sb, P-As, Q-Te, R-Bi, S-Sn

D. X-IN, P-Ga, Q-Sn, R-Tl, S-Cd

Answer: A::B::C::D



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64. Which of the following match is/are correct regarding B, Al, C and Si elements?

A. The highest first ionisation enthalpy : C

B. The largest atomic size: Al

C. The most negative electron gain enthalpy : C

D. The most metallic character: Al

Answer: A::B::D



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65. Consider the value of all four quantum number for last electron and spin multiplicity $(2s+1)$ for given two element 'X' and 'Y' in their ground state:

$(n, l, m, s, |2s + 1|)$, $(X: , 2, 0, 0, + 1/2, 1)$, $(Y: , 2, 1, - 1, - 1/2, 4)$

The according to given information the correct statement is:

- A. The bond angle ($H - Y - H$) of possible hydride of element Y is less than $19028'$
- B. The possible halide of 'X' has two vacant p-orbitals on its central atom.
- C. Magnetic moment of Y is greater than X
- D. X and Y element exhibits only single oxidation are

Answer: A::B::C



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66. An element 'X' present in its ground state, the value of principal and azimuthal quantum number for last electron of element 'X' is $n=3$ and $l=1$ and spin multiplicity for given element is 4. then according to given information correct statement(s) regarding given element 'X' is/are:

- A. Element 'X' is 3rd acid period and 15th group element
- B. In valence shell of element 'X' electron density is symmetrically distributed
- C. Element 'X' has full filled valence shell.
- D. none of these

Answer: A::B



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67. Which of the following pairs have approximately the same atomic radii?

A. Zr and Hf

B. Al and Mg

C. Al and Ga

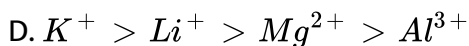
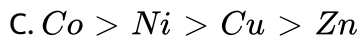
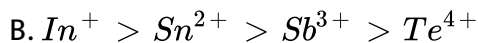
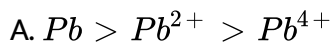
D. Na and Ne

Answer: A::C



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68. The correct order of radii is/are:



Answer: A::B::D



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69. The first ionisation energy of first atom is greater than that of second atom, whereas reverse order is true for their second ionisation energy.

Which set of elements is in accordance to above statement?

A. $C > B$

B. $P > S$

C. $Be > B$

D. $Mg > Na$

Answer: A::B::C::D



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70. Ionization energy of an element is:

A. Equal in magnitude but opposite in sig to the electron gain enthalpy of the cation of the element

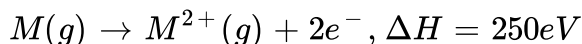
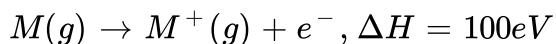
- B. Same as electron affinity of the element
- C. Energy required to remove one valence electron from an isolated gaseous atom in its ground state
- D. Equal in magnitude but opposite in sign to the ionization enthalpy of the anion of the element

Answer: A::C



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71. Consider the following ionization steps :



Select correct statement(s) a) $I. E_1$ of $M(g)$ is 100eV b)

$M^+(g) \rightarrow M^{2+}(g) + e^-, \Delta H = 150\text{eV}$ c) $I. E_2$ of $M(g)$ is 250eV d)

$I. E_2$ of $M(g)$ is 14=150eV

A. $I. E_1$ of $M(g)$ is 100 eV

B. $I. E_1$ of $Mg^+(g)$ is 150 eV

C. $I. E_2$ of $M(g)$ is 250 eV

D. $I. E_2$ of $M(g)$ is 150 eV

Answer: A::B::D



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72. Select the correct order of periodic properties of species :

A. $Fe^{2+} < Fe^{3+}$: Ionic radii

B. $N < O$: Second ionisation energy

C. $Cu < Zn$: Atomic radius

D. $In < Tl$: First ionisation energy

Answer: B::C::D



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73. Select the incorrect statement(s)/order (s):

A. d-orbital can accommodate 10 electrons

B. $\underset{2s^2 2p^6 3s^1}{Na} \xrightarrow{I.E_1} \underset{2s^2 2p^6}{Na^+} \xrightarrow{I.E_2} \underset{2s^2 2p^5}{Na^{2+}} \xrightarrow{I.E_3} \underset{2s^2 2p^4}{Na^{3+}}$, order of successive I.E. is

$$I.E_1 < I.E_2 < I.E_3$$

C. Number of unpaired electrons in Co^{2+} cationgt Number of unpaired electrons in Co^{3+} cation

D. First ionisation energy of Pt is greater than that of Pd

Answer: A::B::C



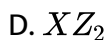
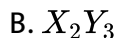
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74. Consider the following values of I.E.(eV) for elements W and X:

Element	$I.E_1$	$I.E_2$	$I.E_3$	$I.E_4$
W	10.5	15.5	24.9	79.8
X	8	14.8	78.9	105.8

Other two element Y and Z hav outer electronic configuration

ns^2np^4 and ns^2np^5 respectively. then according to given information which of the following compound(s) is/are not possible?



Answer: B::C

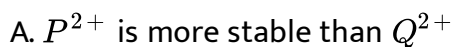


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75. The sum of IE_1 and IE_2 , IE_3 and IE_4 for element P and Q are given below:

	$IE_1 + IE_2$	$IE_3 + IE_4$
(P)	2.45	8.82
(Q)	2.85	6.11

Then according to the given information the correct statement (s) is/are



B. P^{2+} is less stable than O^{2+}

C. P^{4+} is more stable than Q^{4+}

D. P^{4+} is less stable than Q^{4+}

Answer: A::D



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76. Consider value of all four quantum number of last electrons and magnetic moment and valence electrons of elements W, X, Y and Z in their ground state:

Element	n	l	m	s	Magnetic moment (μ)	Valence electrons
W	3	0	0	$+\frac{1}{2}$	0	2
X	3	1	+1	$-\frac{1}{2}$	$\sqrt{3}$	3
Y	3	1	-1	$+\frac{1}{2}$	$\sqrt{15}$	5
Z	3	1	0	$-\frac{1}{2}$	$\sqrt{8}$	6

Then according to given information the correct statement (s) is/are:

A. $I. E_1$ of element W is greater than $I. E_1$ of element X

B. $I. E_1$ of element Y is greater than $I. E_1$ of element Z

C. $I. E_2$ of element X is greater than $I. E_2$ of element W

D. $I. E_2$ of element Z is greater than $I. E_2$ of element Y

Answer: A::B::C::D



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77. Consider the successive ionisation energy for an element 'A' .

$IE_1, IE_2, IE_3, IE_4, IE_5$ are 100 eV , 150 eV , 181eV , 2000 eV , 2200 eV .

Select correct statement (s) for element 'A' : a)Element 'A' may be metal

b)Element 'A' may form trivalent cation c)Oxide of element 'A' may be

amphoteric d)Element 'A' may be non-metal

A. Element 'A' may be metal

B. Element 'a' may form trivalent cation

C. Oxide of element 'A' may be amphoteric

D. Element 'A' may be non-metal

Answer: A::B::C::D

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78. According to Slater's rule , correct order of Z_{eff} on valence shell electron is :

A. $Fe > Fe^{2+} > Fe^{3+}$

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

C. $Na^{+} < Mg^{2+} < Al^{3+}$

D. $Tl^{2+} < V^{3+} < Mn^{5+}$

Answer: B::C::D

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79. Which of the following order is/are correct?

A. $Mg^{2+}(\text{size}) > Li^{+}(\text{size})$

B. $S(E. A) > O(E. A)$

C. $Hg(I. E.) > Cd(I. E.)$

D. $P(I. E.) > S(I. E.)$

Answer: B::C::D



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80. Correct order of electron affinity is/are:

A. $S > O$

B. $Al > B$

C. $Mg > Na$

D. $P > N$

Answer: A::B



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81. Which of the following statement(s) is/are correct?

- A. van der waals' radius of iodine is more than its covalent radius
- B. All isoelectronic ions of corresponding elements belong to the same period of the periodic table.
- C. IE. Of N-atom is higher than that of O-atom, while IE_2 of O-atom is higher than that of N-atom.
- D. The electron affinity of fluorine is greater than that of chlorine.

Answer: A::C



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82. Electron affinity of the elements or ions shown correctly?

A. $S > O^-$

B. $P > N^-$

c. $O^- > S^-$

d. $N^- > P$

Answer: A::B



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83. Which of the following statement regarding halogens is/are correct?

A. Ionization energy decreases with increase in atomic number

B. electronegativity decreases with increase in atomic number

C. Electron affinity decreases with increase in atomic number

D. Enthalpy of fusion increses with increase in atomic number

Answer: A::B::D



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84. Which of the following statements are correct?

- A. F is the most electronegative and Cs is the most electropositive element
- B. The ionization energy 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
- D. The electron affinity of noble gases is almost zero

Answer: A::B::C::D



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85. Consider the order $O^{2-} < F^{+} < Na^{+} < Mg^{3+}$. Then correct statement(s) is/are :

- A. Increasing order of Z_{eff} .
- B. Increasing order of size

C. Increasing order of I.E

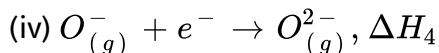
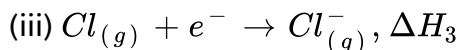
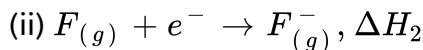
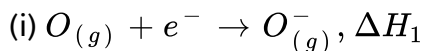
D. Increasing order of E.A

Answer: A::C::D



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86. Consider the following reaction:



then according to given information the correct statement is/are:

A. ΔH_3 is more negative than ΔH_1 and ΔH_2

B. ΔH_1 is less negative than ΔH_2

C. ΔH_1 , ΔH_2 and ΔH_3 are negative whereas ΔH_4 is positive

D. ΔH_1 and ΔH_3 are negative whereas ΔH_2 and ΔH_4 positive

Answer: A::B::C



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87. Which of the following is incorrect order of property as indicated ?

A. $Na^+ < F^- < O^{2-} < Ne < Ar$: Atomic size

B. $Br < Se < As < Ge$:Metallic character

C. $Na < Al < Si < Mg$:Ionisation energy

D. $I < Br < Cl < F$:Electron affinity

Answer: B::C::D



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88. Which of the following is/are correct order?

A. Atomic radius $F < O < F^- < O^{2-}$

B. 2nd ionisation energy $C < N < F < O$

C. Electron affinity: $I < Br < F < Cl$

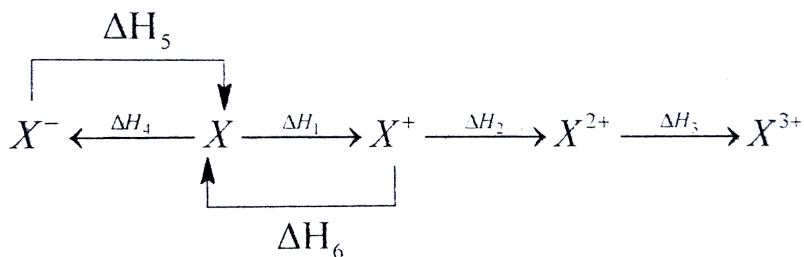
D. Z_{eff} (effective nuclear charge): $Al < Al^+ < Al^{3+} < Al^{2+}$

Answer: A::B::C



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89. Consider the following sequence of reaction:



If electronic configuration of element X is $[Ne]3s^1$, then which of the following order is incorrect regarding given enthalpies?

A. $|\Delta H_4| = |\Delta H_5|$

B. $|\Delta H_2| > |\Delta H_1|$

C. $|\Delta H_2| > |\Delta H_3|$

D. $|\Delta H_1| = |\Delta H_6|$

Answer: A::B::D



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90. The correct statement is/are:

A. Zirconium (Zr) and hafnium (Hf) have almost same size

B. Correct order of ionisation energy of coinage metals is $\text{Cu} < \text{Ag} < \text{Au}$

C. Carbon atom in CCl_4 is more electronegative than carbon atom in CF_4

D. Pb^{2+} is more stable than Pb^{4+}

Answer: A::B::D



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91. Which of the following statements is true about electronegativity?

- A. Electronegativity of an element depends upon its effective nuclear charge
- B. Electronegativity of a cation is proportional to charge on the cation
- C. Electronegativity increases as the s-character in hybrid orbital increases
- D. Electronegativity of an anion is proportional to charge on the anion

Answer: A::B::C



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92. Which of the following elements have the similar value of electronegativity?

- A. H
- B. S

C. Te

D. P

Answer: A::C::D



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93. Which of the following parameters cannot be estimated by using Born-Haber cycle?

A. Hydration energy of ion

B. Electron gain enthalpy

C. lattice energy

D. Electronegativity

Answer: A::D



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94. Select correct order(s) of electronegativity of element is/are:

A. Paulling scale (E.N. of F-atom) > Mulliken scale (E.N. of F-atom)

B. Cl_2O_7 (E.N. of Cl-atom) > Cl_2O_5 (E.N. of Cl-atom)

C. CH_4 (E.N. of C-atom) > CO_2 (E.N. of C-atom)

D. Cu^{2+} (E.N.) > Cu^+ (E.N.)

Answer: A::D



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95. Choose the correct statement(s):

A. H^+ is the smallest size cation in the periodic table.

B. van der Waals' radius of chlorine is more than covalent radius

C. ionic mobility of hydrated Li^+ is greater than that of hydrated Na^+ .

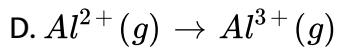
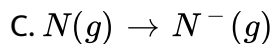
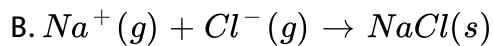
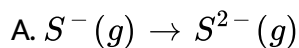
D. He atom is having highest I.E. in the periodic state

Answer: A::B::D



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96. Select equation having endothermic step:

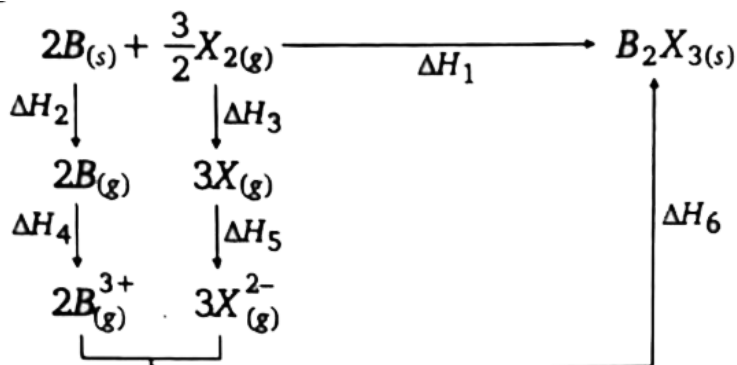


Answer: A::C::D



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97. Consider the following Born-Haber's cycle:



(Where ΔH_1 , ΔH_2 , ΔH_3 , ΔH_4 , ΔH_5 and ΔH_6 are in kJ/mol)

Then according to given information the correct statement is/are:

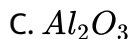
- A. ΔH_2 and ΔH_3 are always positive
- B. $\Delta H_1 = 2\Delta H_2 + \frac{3}{2}\Delta H_3 + 2\Delta H_4 + 3\Delta H_5 + \Delta H_6$
- C. Second electron gain enthalpy of X is negative
- D. ΔH_1 must be negative for formation of $B_2X_3(s)$

Answer: A::B::D



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98. Which of the following oxides is/are amphoteric ?

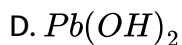
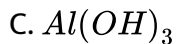
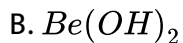
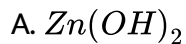


Answer: C::D



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99. Which of the following show amphoteric behaviour?



Answer: A::B::C::D



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MATCH THE COLUMN

1.

Column-I
(elements with at no.)

(A) X (at. no. = 52)

(B) Y (at. no. = 57)

(C) Z (at. no. = 48)

Column-II
(types of elements)

(P) Inner-transition element

(Q) Representative element

(R) Non-transition element

(S) d-block element



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2.

Column-I
(atomic number)

(A) 52

(B) 56

(C) 57

(D) 60

Column-II
(position in the periodic table)

(P) s-block

(Q) p-block

(R) d-block

(S) f-block



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Column-I

- (A) Fullerene
 (B) Promethium
 (C) Water
 (D) Lawrencium

Column-II

- (P) Actinoids
 (Q) Lewis base
 (R) Allotrope
 (S) Lanthanoids

3.

**Watch Video Solution****Column-I****(Electronic configuration)**

- (A) $[\text{Xe}]4f^{14}5d^{10}6s^2$
 (B) $[\text{Rn}]5f^{14}6d^17s^2$
 (C) $[\text{Xe}]4f^{14}5d^{10}6s^26p^67s^2$
 (D) $[\text{Xe}]4f^{14}5d^26s^2$

Column-II**(Corresponding elements)**

- (P) *s*-block element
 (Q) Transition element
 (R) *d*-block element
 (S) Representative element
 (T) Inner-transition element

4.

**Watch Video Solution****Column-I****Elements (Electrons in K, L, M, N...)**

- (A) W(2,8,7)
 (B) X(2,8,18,8)
 (C) Y(2,8,14,2)
 (D) Z(2,8,18,25,8,2)

Column-II**Statements**

- (P) Paramagnetic
 (Q) 3rd group element
 (R) Last electron does not enter to valence shell
 (S) Reactive non-metal
 (T) Diamagnetic

5.

**View Text Solution**

ASSERTION-REASON TYPE QUESTIONS

1. Assertion: In CsF, salt, size of Cs^+ is slightly higher than size of F^- .

Reason: Cs^+ is largest monoatomic cation and F^- is smallest anion.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: D



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2. Assertion :- First electron affinity for all elements is positive.

Reason :- Successive electron affinity of all elements is negative

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: D



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3. Assertion: Helium has the highest value of ionisation energy among all known elements.

Reason: Helium has the highest value of electron affinity among all known elements.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: C



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4. Assertion: F^- ion has highest hydrated radius among the other halide ions.

Reason: Ionic radius of F^- is smallest in the periodic table.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: A



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5. Assertion: magnitude of electron gain enthalpy of oxygen is less than that of fluorine but greater than that of nitrogen.

Reason: Ionisation enthalpy order is as follows: $N > O < E$.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: B

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6. Assertion: Formation of Cl^- ion is exothermic whereas O^{2-} ion formation is endothermic.

Reason: EA_2 of oxygen is endothermic and greater than its exothermic EA_1 value of oxygen.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A

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7. Assertion: The electron gain enthalpy of N is +ve while that of P is -ve.

Reason: Smaller atomic size of N is which there is a considerable electron-electron repulsion and hence the additional electron is not accepted easily.

A. If both assertion and reason are true and the reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but the reason is false

D. If assertion is false but the reason is true

Answer: A



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8. Assertion: The formation of $F_{(g)}^-$ from $F_{(g)}$ is exothermic, whereas that of $O_{(g)}^{2-}$ from $O_{(g)}$ is endothermic.

Reason: The addition of second electron to a monovalent anion is difficult because both have the same charge and experience more repulsion.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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9. Statement-1: Na^+ and Al^{3+} are isoelectronic but the magnitude of ionic radius of Al^{3+} is less than that of Na^+ .

Statement-2: The magnitude of effective nuclear charge of the outer most shell electrons in Al^{3+} is greater than that of Na^+ .

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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10. Assertion: The third period contains only 8 electrons and not 18 like 4th period.

Reason: In III perriod filling starts from $3s^1$ and complete at $3p^6$ whereas in IV period it starts from $4s^1$ annd complete after $3d^{10}$ and $4s^2$.

A. If both assertion and reason are true annd the reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: A



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11. Statement-I : Cs and F combines violently to form CsF .

Statement-II : Cs is most electropositive and F is most electronegative.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true



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12. Statement-1: Second electron gain enthalpy of halogens is always positive.

Statement-2: Fluorine has most negative electron gain enthalpy.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: C



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13. Assertion: F atom has less electron affinity than Cl atom.

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

- A. If both assertion and reason are true and the reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: C



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14. Assertion: Among the halogens bond energy of F_2 is minimum.

Reason: Among halogens F atom is small in size.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: D



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15. Assertion: The first ionization energy of Be is greater than that of B.

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

A. If both assertion and reason are true and the reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: C



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16. Assertion : Noble gases have highest ionisation enthalpies in their respective periods.

Reason : Noble gases have stable closed shell electronic configuration.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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17. Assertion: Helium and beryllium have similar outer electronic configuration of the type ns^2 .

Reason: Both are chemically inert.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: C



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18. Assertion: The first ionisation enthalpy of aluminium is lower than that of magnesium.

Reason : Ionic radius of aluminium is smaller than that of magnesium.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: B



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19. Assertion: In CsF, salt, size of Cs^+ is slightly higher than size of F^- .

Reason: Cs^+ is largest monoatomic cation and F^- is smallest anion.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: A



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20. Assertion: First electron affinity of all elements is positive.

Reason: Successive electron affinity of all elements is negative.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: D



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21. Assertion: helium atom has highest ionisation energy among all the element.

Reason: helium is smallest atom among all the elements.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: C



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22. Assertion: F^- ion has highest hydrated radius among the other halide ions.

Reason: Ionic radius of F^- is smallest in the periodic table.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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23. Assertion: magnitude of electron gain enthalpy of oxygen is less than that of fluorine but greater than that of nitrogen.

Reason: Ionisation enthalpy order is as follows: $N > O < F$.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: B



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24. Assertion: Formation of Cl^- ion is exothermic whereas O^{2-} ion formation is endothermic.

Reason: EA_2 of oxygen is endothermic and greater than its exothermic EA_1 value of oxygen.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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25. Assertion: The electron gain enthalpy of N is +ve while that of P is -ve.

Reason: Smaller atomic size of N is which there is a considerable electron-electron repulsion and hence the additional electron is not accepted easily.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: A



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26. Assertion: The formation of $F_{(g)}^-$ from $F_{(g)}$ is exothermic, whereas that of $O_{(g)}^{2-}$ from $O_{(g)}$ is endothermic.

Reason: The addition of second electron to a monovalent anion is difficult because both have the same charge and experience more repulsion.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: A



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27. Assertion: Na^+ and Al^{3+} are isoelectronic but ionic radius Al^{3+} is less than that of Na^+

Reason: The magnitude of effective nuclear charge on the outershell electrons in Al^{3+} is greater than that of Na^+ .

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: A



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28. Assertion: The third period contains only 8 electrons and not 18 like 4th period.

Reason: 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 $4s^2$.

A. If both assertion and reason are true and the reason is the correct explanation of assertion

B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: A



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29. Assertion: Second E.A. for halogens is almost zero.

Reason: Fluorine has maximum value of electron affinity.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: C



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30. Assertion: F atom has less electron affinity than Cl atom.

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

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: C



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31. Assertion: Among the halogens bond energy of F_2 is minimum.

Reason: Among halogens F atom is small in size.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: D



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

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

- A. If both assertion and reason are true and the reason is the correct explanation of assertion

- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: C



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33. Assertion : Noble gases have highest ionisation enthalpies in their respective periods.

Reason : Noble gases have stable closed shell electronic configuration.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false

D. if assertion is false but the reason is true

Answer: A



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34. Assertion: Helium and beryllium have similar outer electronic configuration of the type ns^2 .

Reason: Both are chemically inert.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. if assertion is false but the reason is true

Answer: C



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35. Assertion: The first ionisation enthalpy of aluminium is lower than that of magnesium.

Reason : Ionic radius of aluminium is smaller than that of magnesium.

- A. If both assertion and reason are true and the reason is the correct explanation of assertion
- B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but the reason is false
- D. If assertion is false but the reason is true

Answer: B



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1. The number of electrons for Zn^{2+} cation that have the value of azimuthal quantum number $= 0$ is:



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2. Calculate the electronegativity of silicon atom using Allred-rochow's method. If covalent radius of silicon is 1.0 Å. (rounded in nearest integer value).



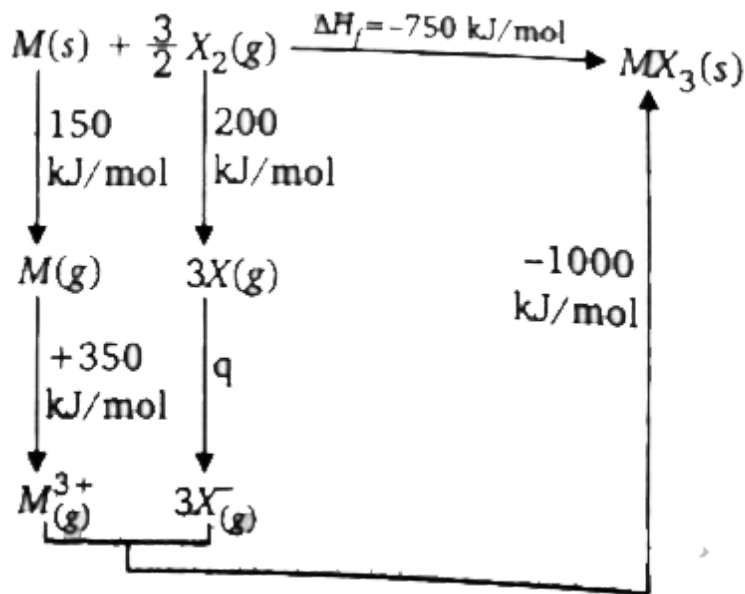
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3. If heat of solution for $AB(s)$ is -0.95×10^x kcal/mol and lattice energy for $AB(s)$ is 700 kcal/mol and hydration energy for $A^+(g)$ is -1000 kcal/mol and $B^-(g)$ is -650 kcal/mol then calculate value of x .



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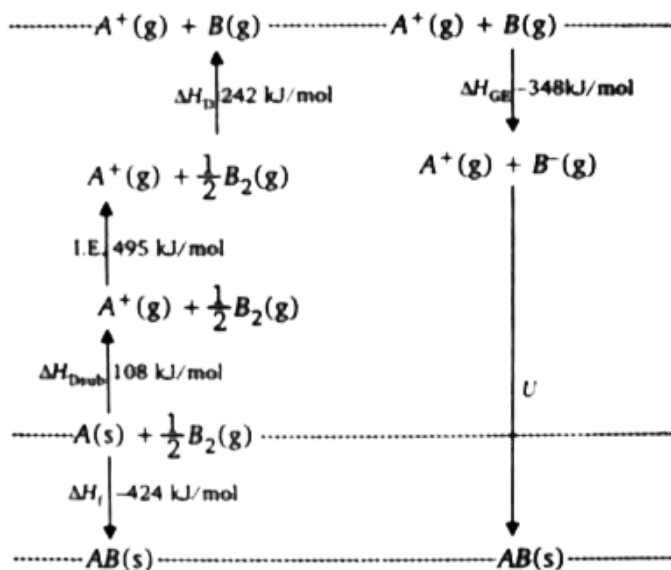
4. Consider the following Born-Haber's cycle for formation of $MX_3(s)$.



Then calculate value $\frac{q_1}{50}$, here q_1 is electron affinity of $X(g)$ in kJ/mol.

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5. Calculate value of $-U/100$, for $AB(s)$, from following data of Born-Haber's cycle. [where U is lattice energy in kJ/mol]



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6. Consider the following orders:

- (i) $HF > HCl > HBr > HI$: Lewis basic character.
- (ii) $CH_4 < CCl_4 < CF_4$: Electronegativity of central 'C'-atom.
- (iii) $Mg^{2+} < K^+ < S^{2-} < Se^{2-}$: ionic radius

then calculate value of $|x - y|^2$, where x and y are correct and incorrect order respectively.

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7. Find out total number of representative elements in the given element:

Cd, Nb, Ta, Te, Ra, Mo, Po, Pd, Tc



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8. An element 'X' has its electronic configuration of 'K' shell is $(n - 5)s^2$ and it has total number of electrons in its outermost, penultimate and antipenultimate shell are 2, 8 and 25 respectively then find out total number of unpaired electrons in element 'X' in their ground state.



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9. if value of spin quantum number(s) = $-1/2, 0, +1/2$ then calculate number of groups in the new form of periodic table if all other rules of electronic configurations are remain same.



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10. How many pairs are, in which first species has lower ionisation energy than second species:

(i) N and O

(ii) Br and K

(iii) Be and B

(iv) I and I^-

(v) Li and Li^+

(vi) O and S

(vii) Ba and Sr.



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11. Total number of element(s) which have only single oxidation state (other than zero) in their corresponding stable compounds: Cs, Ba, F, Zn, Be, Al, Sr, Ga, Pb.



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12. The number of electrons for Zn^{2+} cation that have the value of azimuthal quantum number $= 0$ is:



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13. Calculate the electronegativity of silicon atom using Allred-rochow's method. If covalent radius of silicon is 1.0 Å. (rounded in nearest integer value).



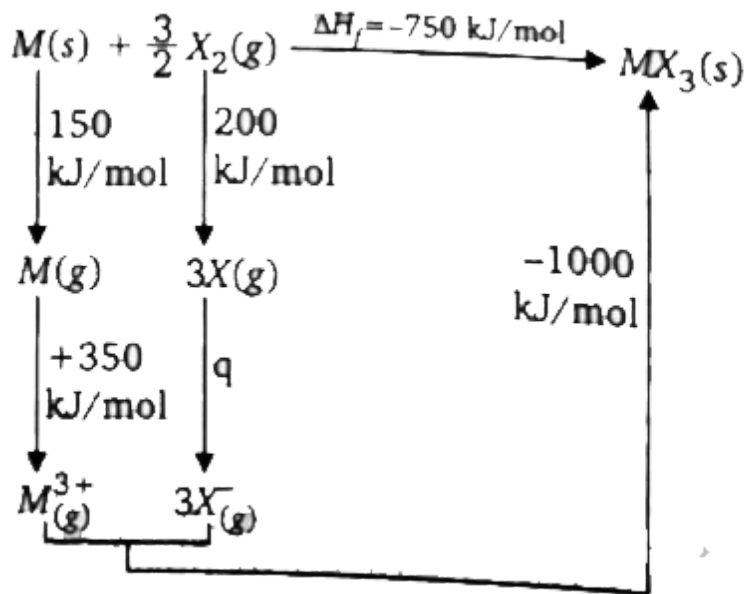
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14. If heat of solution for $AB(s)$ is -0.95×10^x kcal/mol and lattice energy for $AB(s)$ is 700 kcal/mol and hydration energy for $A^+(g)$ is -1000 kcal/mol and $B^-(g)$ is -650 kcal/mol then calculate value of x.



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15. Consider the following Borh-Habber's cycle for formation of $MX_3(s)$.

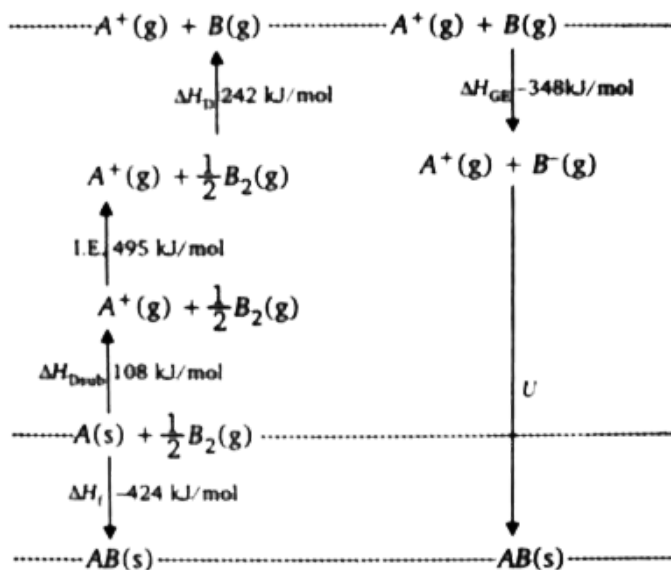


Then calculate value $\frac{q_1}{50}$, here q_1 is electron affinity of $X(g)$ in kJ/mol.



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16. Calculate value of $-U/100$, for $AB(s)$, from following data of Born-Haber's cycle. [where U is lattice energy in kJ/mol]



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17. Consider the following orders:

- (i) $HF > HCl > HBr > HI$: Lewis basic character.
- (ii) $CH_4 < CCl_4 < CF_4$: Electronegativity of central 'C'-atom.
- (iii) $Mg^{2+} < K^+ < S^{2-} < Se^{2-}$: ionic radius

then calculate value of $|x - y|^2$, where x and y are correct and incorrect order respectively.



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18. Find out total number of representative elements in the given element:

Cd, Nb, Ta, Te, Ra, Mo, Po, Pd, Tc



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19. An element 'X' has its electronic configuration of 'K' shell is $(n - 5)s^2$ and it has total number of electrons in its outermost, penultimate and antipenultimate shell are 2, 8 and 25 respectively then find out total number of unpaired electrons in element 'X' in their ground state.



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20. if value of spin quantum number(s) = $-1/2, 0, +1/2$ then calculate number of groups in the new form of periodic table if all other rules of electronic configurations are remain same.



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21. How many pairs are, in which first species has lower ionisation energy than second species:

(i) N and O

(ii) Br and K

(iii) Be and B

(iv) I and I^-

(V) Li and Li^+

(vi) O and S

(vii) Ba and Sr.



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22. Total number of element(s) which have only single oxidation state (other than zero) in their corresponding stable compounds: Cs, Ba, F, Zn, Be, Al, Sr, Ga, Pb.



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MATCH THE COLUMN

1.

Column-I (elements with at no.)

- (A) X (at. no. = 52)
- (B) Y (at. no. = 57)
- (C) Z (at. no. = 48)

Column-II (types of elements)

- (P) Inner-transition element
- (Q) Representative element
- (R) Non-transition element
- (S) *d*-block element



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2.

Column-I

- (A) Increasing order of I.E.
- (B) Increasing order of electron affinity
- (C) Increasing order of atomic size

Column-II

- (P) $F < O < S < Se$
- (Q) $O < N < F < Ne$
- (R) $Na < Mg < Al < Si$
- (S) $O^{2-} < O^- < O < O^+$



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3.

Column-I

- (A) $F > Cl > Br > I$
- (B) $Fe^{3+} > Fe^{2+} > Fe$
- (C) $I^- > I > I^+$
- (D) $O > C > B > N$

Column-II

- (P) Ionisation energy
- (Q) Size
- (R) Magnitude of ΔH_{eg}
- (S) Effective nuclear charge



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Column-I		Column-II	
	(IE) ₁	(IE) ₂	
(A)	2372	5251	(P) More reactive metal
(B)	520	7300	(Q) Reactive non-metal
(C)	900	1760	(R) Noble gas
(D)	1680	3380	(S) Metal forms a stable binary halide of the formula AX ₂
			(T) Exhibit +2 electrovalency

4.



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Column-I (atomic number of element)	Column-II (IUPAC name)
(A) 105	(P) Uun
(B) 107	(Q) Uns
(C) 109	(R) Unp
(D) 110	(S) Une

5.



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Column-I (atomic number)	Column-II (position in the periodic table)
(A) 52	(P) s-block
(B) 56	(Q) p-block
(C) 57	(R) d-block
(D) 60	(S) f-block

6.



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7.

Column-I
(type of elements)

- (A) Inert gas elements
- (B) Representative elements
- (C) Transition elements
- (D) Inner transition elements

Column-II
(outer electronic configuration)

- (P) ns^{1-2} to ns^2np^5
- (Q) $1s^2$ and ns^2np^6
- (R) $(n-2)f^{1-14}(n-1)d^{1 \text{ or } 0}ns^2$
- (S) $(n-1)d^{1-10}ns^{1 \text{ or } 2}$

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8.

Column-I
(elements)

- (A) F
- (B) Cl
- (C) Fe
- (D) He

Column-II
(periodic properties)

- (P) Maximum ionization energy
- (Q) Maximum electronegativity
- (R) Maximum electron affinity
- (S) Variable oxidation state

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9.

Column-I

- (A) Fullerene
- (B) Promethium
- (C) Water
- (D) Lawrencium

Column-II

- (P) Actinoids
- (Q) Lewis base
- (R) Allotrope
- (S) Lanthanoids

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10.

Column-I

- (A) $1s^2 2s^2 2p^6 3s^2 3p^1$
 (B) $1s^2 2s^2 2p^6 3s^2 3p^5$
 (C) $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$
 (D) $1s^2 2s^2 2p^6 3s^2 3p^6$

Column-II

- (P) Largest (I.E.)₁
 (Q) Largest (I.E.)₄
 (R) Largest (I.E.)₃
 (S) Lowest (I.E.)₁
 (T) Largest (I.E.)₂

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11.

Column-I**(Electronic configuration)**

- (A) $[\text{Xe}]4f^{14}5d^{10}6s^2$
 (B) $[\text{Rn}]5f^{14}6d^17s^2$
 (C) $[\text{Xe}]4f^{14}5d^{10}6s^26p^67s^2$
 (D) $[\text{Xe}]4f^{14}5d^26s^2$

Column-II**(Corresponding elements)**

- (P) s-block element
 (Q) Transition element
 (R) d-block element
 (S) Representative element
 (T) Inner-transition element

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12.

Column-I**Elements (Electrons in K, L, M, N...)**

- (A) W(2,8,7)
 (B) X(2,8,18,8)
 (C) Y(2,8,14,2)
 (D) Z(2,8,18,25,8,2)

Column-II**Statements**

- (P) Paramagnetic
 (Q) 3rd group element
 (R) Last electron does not enter to valence shell
 (S) Reactive non-metal
 (T) Diamagnetic

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Column-I
(Outer electronic configuration of element in ground state)

- (A) $(n-1)d^3ns^2$
- (B) $(n-1)d^1ns^2$
- (C) ns^2np^3
- (D) $(n-2)f^1(n-1)d^1ns^2$

Column-II
(Characteristics/period and group number in long form of periodic table)

- (P) Highest spin magnetic moment
- (Q) 6th period element
- (R) Period number and group number are same
- (S) Period number is double than group number
- (T) Symmetrical distribution of electron density

13.



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