CHEMISTRY

BOOKS - MODERN PUBLICATION CHEMISTRY (KANNADA ENGLISH)

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

Multiple Choice Questions Level I

1. Lother Meyer plotted a graph showing the variation of

A. atomic mass with increase in atomic number

B. atomic volume with increase in atomic mass

C. atomic volume with increase in atomic number

D. atomic property such as atomic radii with increase in atomic mass.

Answer: A

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2. The law of triads is applicable to

A. Ca,Sr,Ba

B. Mg,Ba,Na

C. Li,Be,B

D. Na,K,Rb

Answer: A

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3. The element M in the Dobereiner traid: S,M,Te is

A. 1. Cl

B. 2. Mg

C. 3. Se

D. 4. Sr.

Answer: C

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4. According to modern periodic law, the physical and chemical properties of the elements are periodic function of their:

A. atomic number

B. atomic weight

C. atomic size

D. atomic volume.

Answer: A

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5. The most important active step in the development of periodic table was taken by,

A. Mendeleev

B. Dalton

C. Avogadro

D. Cavendish

Answer: A

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6. The law of octaves was given by

A. Luther Meyer

B. Newlands

C. Dobereiner

D. Lavoisier

Answer: B

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7. Which element was named as eka-silicon in Mendeleev classification of elements?

A. Germanium

B. Gallium

C. Thallium

D. Selenium

Answer: A

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8. Mendeleev periodic table was based on

A. atomic number

B. atomic mass

C. atomic volume

D. atomic configuration.

Answer: B

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9. All the elements belonging to second period are:

A. Normal elements

B. Transition elements

C. Stable elements

D. Halogens

Answer: A

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10. The maximum number of elements in third period is

A. 8

B. 18

C. 32

D. between 8 and18

Answer: A

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11. The elements on the right hand side of the periodic able are:

A. Metals

B. Non metals

C. Metalloids

D. Ferromagnetic

Answer: B

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12. The number of periods in the long form of the periodic table is:

A. Seven

B. Nine

C. Eighteen

D. As many as groups.

Answer: A

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13. Approximately linear relationship between the square roots of the frequencies of the X-rays emitted by a number of different elements and the atomic numbers was discovered by:

A. Newland

B. Moseley

C. Dobereiner

D. Memdeleev

Answer: C

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14. The general electronic configuration of d-block elements is

A. $ns^2np^6nd^{1-10}$

B. $(n-1)d^{1-10}ns^{0-2}$

C. $(n-1)d^{1-10}ns^2np^6$

D. $ns^2np^6(n+1)d^{1-10}$

Answer: B

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15. If f-block elements, the last electron enters the

A. nf-sublevel

B. (n-1)f-sublevel

C. (n-2)f-sublevel

D. 4f-sublevel.

Answer: C

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16. Element of atomic number 24 belongs to

A. s-block

B. p-block

C. d-block

D. both s-and d- blocks

Answer: C

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17. The fourth period of the p-block elements contains:

A. 6 elements

B. 8 elements

C. 18 elements

D. 10 elements

Answer: A

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18. Cerium (Z=58) belongs to

A. s-block

B. p-block

C. d-block

D. f-block

Answer: D

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19. The period number in the long form of the periodic table is equal to

A. magnetic quantum number of any element of the period.

B. atomic number of any element of the period.

C. maximum principal quantum number of anyelement of the period.

D. maximum azimuthal quantum number of any element of the period.

Answer: C

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20. The elements in which electrons are progressively filled in 4f orbital are called

A. actinoids

B. Transition elements

C. lanthanoids

D. Halogens

Answer: C

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21. On moving from left to right across a period in the periodic table the size of the atom generally:

A. decreases

B. increses

C. remains constant

D. decreases upto group 14 and then increases

Answer: A

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22. While moving down a group in the periodic table, the size of the atom generally:

A. decreases

B. increases

C. remains constant

D. first increaaes for first three elements and then decreases

Answer: B

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23. The size of I, I^+ and I^- follows the order:

A. $I^+ > I^- > I^-$

B. $I^- > I^+ > I$

C. $I^- > I > I^+$

D. $I^+ > I > I^-$

Answer: C

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24. Our of C,N,O and S, the smallest is size of :

A. O

B. N

C. C

D. S

Answer: A

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25. Which of the following has the largest size?

A. Be^{2+}

B. Ba^{2+}

C. Mg^{2+}

D. Ca^{2+}

Answer: B

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26. The ionisation enthalpy of sodium is 495 kJ mol^{-1}. How much energy is needed to convert atoms present in 2.3 mg of sodium to sodium ions?

A. 24.75 J

B. 49.5 J

C. 99 J

D. 23 J

Answer: B

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27. Which of the following configurations would you expect to have the highest second ionisation enthalpy?

A. $1s^2 2S^2$

B. $1s^2 2s^2 2p^4$

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

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

Answer: C

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28. Ionisation enthalpy is lowest for:

A. Inert gases

B. Alkali metals

C. Halogens

D. Alkaline earth metals.

Answer: B

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29. Which of the following elements has the highest ionisation enthalpy?

A. Na

B. Mg

C. C

D. F

Answer: D

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30. Out of N, O,Pand S, the highest ionisation enthalpy is of:

A. N

B. O

C. P

D. S

Answer: A

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31. Out of K,Na, Be and Kr, the highest ionisation enthalpy is of:

A. Kr

B. Be

C. Na

D. K

Answer: A

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32. In the periodic table, the highest ionisation enthalpies are for:

A. Halogen

B. alkaline earth metals

C. Alkali metals

D. Chalcogens.

Answer: B

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33. Out of Be,B, C, N, O, F and Ne the lowest negative electron gain enthalpy is of:

A. N

B. F

C. Ne

D. between 8 and18

Answer: C

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34. The negative electron gain enthalpy values of halogens follows the order:

A. 1.F,Cl,Br, I

B. 2 .F,Br,Cl,I

C. 3. Cl,Br,I,F

D. 4. Cl,F,Br,I

Answer: D

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35. The second electron gain enthalpy of oxygen is

A. $-140.9 kJ \text{mol}^{-1}$

B. $-200.7 kJ \text{mol}^{-1}$

C. $+780 kJ \text{mol}^{-1}$

D. 0

Answer: C

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36. Which of the following families have largest negative electron gain enthalpy values?

A. Alkali metals

B. Noble gases

C. Halogens

D. Alkaline earth metals.

Answer: C

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37. The elements with highest ionisation enthalpy is:

A. Boron

B. Carbon

C. Nitrogen

D. Oxygen.

Answer: C

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38. The element having maximum second ionisation enthalpy is

A. Boron

B. Sodium

C. Magnesium

D. Nitrogen

Answer: B

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39. Pauling electronegativity scale is based on experimental values of:

A. Bond lengths

B. Bond energies

C. Ionisation energies

D. Electron affinities.

Answer: B

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40. The electronegativity values of Na, Al,P and K follows the order

A. K>Na>Al>P

B. .P>Al>Na>K

C. Na>Al>P>K

D. K>P>Al>Na

Answer: B

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41. The highest electronegativity in the periodic table is of:

A. Hydrogen

B. Fluorine

C. Noble gases

D. Inner transition elements.

Answer: B

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42. The electronegativity of elements varies with increase in atomic number in groups and periods as

A. Decreases in groups and increases in periods.

B. Increases in groups and decreases in periods

C. Increases in groups as well as in periods

D. Decreases in groups as well as in periods.

Answer: A

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43. Out of C,N,O,F and Si, the lowest electronegativity is of:

A. C

B. F

C. N

D. Si

Answer: D

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44. In the process $A(go) \rightarrow A^{+}(g) + e^{-}$

A. Energy is gained by the system and the atom becomes larger.

B. Energy is evolved by the system and the atom becomes larger.

C. Energy is gained by the system and the atom becomes smaller.

D. Energy is evolved by the system and the atom becomes smaller.

Answer: C

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45. Which of the following is most electropositive?

A. I

B. Mg

C. Cs

D. Li

Answer: C

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46. Which of the following statements is not correct?

A. Ionic radius decreases along the period

B. Ionisation enthalpy increases along the period and decreases down the group

C. Electronegativity of fluorine is less than that of chlorine

D. Noble gases have zero electron gain enthalpy values.

Answer: C

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47. Which of the following properties displays progressive increase down the group in the periodic table?

A. Electronegativity

B. Ionisation enthalpy

C. Electron gain enthalpy

D. Size of the atom.

Answer: D

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48. In the periodic table going down in fluorine group:

A. Ionic radius increases

B. Eelctronegativity increases

C. reactivity increases

D. Ionisation potential increases.

Answer: D

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49. Ionisation enthalpy of litium is $520kJmol^{-1}$ How much energy in joules must be needed to convert all atoms of lithium to ions present in 7 mg of lithium vapours?

A. 74.3 J

B. 260J

C. 520J

D. 780J

Answer: C

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50. Which of the following statements is not correct?

A. Ionisation enthalpy of Mg is less than that of Na and Al.

B. The atomic radius of F is more than that of O.

C. Negative electron gain enthalpy of F is more than that of Cl.

D. Among Be,Band C, B has lowest ionisation enthalpy.

Answer: D

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51. The first ionisation enthalpies of Na,Mg, Al and Si order

A. Na < Mg < Al < Si

B. Na < Mg >Al < Si

C. Na < Mg < Al < Si

D. Na < Mg < Al < Si

Answer: A

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52. Which of the following has highest ionisation enthalpy in the second period from Li to Ne?

A. N

B. Li

C. Ne

D. F

Answer: C

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53. The high ionisation enthalpies of noble gases is due to:

A. their large sizes

B. their stable valence shell configuration

C. high nuclear charge

D. their inertness towards reactions.

Answer: B

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54. Which of the following has the largest size?

A. Br^-

B. I

C. I^-

D. I^+

Answer: C

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55. Which of the following has least electronegativity value?

A. C

B. Al

C. Si

D. P

Answer: B

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56. From fluorine to iodine, the electronegativity,

A. decreases

B. increases

C. first decreases then increases

D. changes randomly.

Answer: D

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57. Which of the following has the largest ionic radius?

A. Be^{2+}

B. Mg^{2+}

C. Ca^{2+}

D. Sr^{2+}

Answer: D

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58. Which of the following ions is the smallest in size?

A. Cl^{-}

B. Na^+

C. Mg^{2+}

D. S^{2-}

Answer: C

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59. Which of the following will have lowest ionisation enthalpy?

A. Ar

B. Xe

C. Kr

D. He

Answer: B

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60. The familyof elements having highest ionisation enthalpy in the periodic table is

A. Alkali metals

B. Noble gases

C. Halogens

D. Alkaline earth metals.

Answer: B

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61. Which of the following has lowest first ionisation enthalpy?

A. 1. Mg

B. 2. Rb

C. 3. Li

D. 4. Ca

Answer: B

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62. Which of the following ions has the smallest radius?

A. Be^{2+}

B. Li^+

C. O^{2-}

D. F^-

Answer: A

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63. Which of the following has largest size?

A. Al

B. Al^+

C. Al^{2+}

D. Al^{3+}

Answer: A

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64. The negative electron gain enthalpy values of N, O, S and Cl are in the order:

A. O < Cl < N < S

B. O < S < Cl < N

C. $N < O < S < Cl$

D. $O < N < Cl < S$

Answer: C

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65. Arrange in the increasing order of atomic radii of the following elements O,C,F,Cl, Br:

A. F,O,C,Cl,Br

B. F,C,O,Cl,Br

C. F,Cl,Br,O,C

D. C,O,F,Cl,Br

Answer: A

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66. Arrange the following in increasing order of their atomic radius : Na,K, Mg, Rb

A. M lt K lt Na lt Rb

B. Mg,Na lt K lt Rb

C. Mg lt Na lt Rb ltK

D. Na lt K lt Rb lt Mg

Answer: B

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67. The first ionisation enthalpy of Mg, Al,P and S follows the order

A. MgltAlltPltS

B. AlltMgltPltS

C. MgltAlltS,P

D. AlltMgltSltP

Answer: D

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68. The first ionisation enthalpy of Mg is higher than the first ionisation enthalpy of:

A. Be

B. Al

C. K

D. Rb

Answer: B

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69. Among the halogens, the lowest electronegativity is for:

A. F

B. Cl

C. I

D. Br

Answer: C

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70. Which of the following has most negative electron gain enthalpy?

A. Oxygen

B. Chlorine

C. Nitrogen

D. Fluorine

Answer: B

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71. Ionic radii are

A. 1. inversely proportional to square of effective nuclear charge

B. 2. directly proportional to effective nuclear charge

C. 3. directly proportional to square of effective nuclear charge

D. 4. inversely proportional to effective nuclear charge.

Answer: D

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72. Aluminium is diagonally related to:

A. Li

B. Be

C. Mg

D. B

Answer: B

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73. Which of the following is least stable?

A. $1BeCO_3$

B. 2 $MgCO_3$

C. 3 $BaCO_3$

D. 4 $CaCO_3$

Answer: A

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74. Which of the following has highest melting point?

A. 1. NaCl

B. 2. NaBr

C. 3. NaI

D. 4. NaF

Answer: D

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75. The element which has a tendency to show positive and negative oxidation states is

A. Lithium

B. Galium

C. Iodine

D. Cerium

Answer: C

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76. Alkali metals are powerful reducing agents because:

A. these are metals

B. their ionic radii are large

C. these are monovalent

D. their ionisation potentials are low

Answer: D

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77. Variable valency is exhibited by:

A. Ar

B. Ca

C. B

D. Fe

Answer: D

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78. Which of the following elements forms oxide easily in air?

A. 1. Fe

B. 2. Cr

C. 3. Al

D. 4. Ni

Answer: C

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79. Which of the following is least soluble in water?

A. $BeCO_3$

B. $MgCO_3$

C. $BrCO_3$

D. $CaCO_3$

Answer: A

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80. Which of the following is completely soluble in water?

A. $SrSO_4$

B. $MgSO_4$

C. $CaSO_4$

D. $BaSO_4$

Answer: B

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81. Which of the following has highest melting and boiling points?

A. Cs

B. Be

C. Li

D. Ba

Answer: B

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82. Among the following:

$NaOH, Ca(OH)_2, KOH$ and $Zn(OH)_2$, the weakest base is:

A. NaOH

B. $Ca(OH)_2$

C. KOH

D. $Zn(OH)_2$

Answer: D

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83. Metal halide which is insoluble in water is

A. AgI

B. $CaCl_2$

C. AgF

D. KBr

Answer: A

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84. In which of the following compounds does the ratio of the anion size to the catton size have the lowest value?

A. 1. NaCl

B. 2. KCl

C. 3. $MgCl_2$

D. 4. $NaBr$

Answer: B

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85. For a given period, the most non metallic p-block element belongs to group:

A. 1. 13

B. 2. 17

C. 3. 15

D. 4. 14

Answer: B

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86. In both 1st and VII group of the periodic table, the following property increases with increase in atomic number:

A. 1. Oxidising property

B. 2. Atomic size

C. 3. Ionisation energies

D. 4. Reactivity with water.

Answer: B

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87. If x denotes the number of valence electrons of the element, then its valency is equal to:

A. x-8

B. Xe

C. 8-x

D. B and C

Answer: D

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88. Propertyof alkaline earthmetals that increases with their atomic number is

A. Ionisation enthalpy

B. Solubility of their hydroxides

C. Solubility of their sulphates

D. Electronegativity.

Answer: B

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89. The non metal which exists in liquid state at room temperature is:

A. Na

B. Br

C. Mg

D. Ga

Answer: B

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90. The most powerful oxidising agent among the following is:

A. I_2

B. F_2

C. Cl_2

D. Br_2

Answer: B

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Multiple Choice Questions Level Ii

1. First, fourth and fifth periods of the long form the periodic table consist of elements respectively:

A. 1. 2,8,8

B. 2. 8,8,18

C. 3. 2,18,18

D. 4. 2,8,18

Answer: C

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2. The size of Pb, Pb^{2+} and Pb^{4+} decreases in the order:

A. $Pb^{4+} > Pb^{2+} > Pb$

B. $Pb > Pb^{4+} > Pb^{2+}$

C. $Pb^{4+} > Pb > Pb^{2+}$

D. $Pb > Pb^{2+} > Pb^{4+}$

Answer: B

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3. The isoelectronic species K^+, Cl^-, S^{2-} and Ca^{2+} can be arranged in the following decreasing order of size:

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

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

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

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

Answer: D

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4. Out of Cs^+, Li^+, Mg^{2+} and Na^+,the largest size of :

A. Cs^+

B. Li^+

C. Mg^{2+}

D. Na^+

Answer: A

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5. The element having electronic configuration $[Kr]4d^{10}4f^{7}5s^{2}5p^{6}5d^{1}6s^{2}$ belongs to

A. s-block

B. p-block

C. d-block

D. f-block

Answer: D

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6. In which of the following pairs, the size of the first species is not more than the second?

A. Li,F

B. Fe^{2+}, Fe^{3+}

C. Na^{+}, F^{-}

D. S, O

Answer: C

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7. In second period of the periodic table, ionisation energy follows the order:

A.

$$Ne > F > O > N > C > B > Be > Li$$

B.

$$Ne > F > N > C > O > Be > B > Li$$

C.

$$Li > B > Be > C > O > N > F > Ne$$

D.

$$Ne > F > N > O > C > Be > B > Li$$

Answer: D

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8. The minimum ionisation enthalpy from the isoelectric species Ca^{2+}, K^{+}, Ar and Cl^{-} is of

A. Cl^{-}

B. Ar

C. Ca^{2+}

D. K^{+}

Answer: A

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9. Which of the following electronic configurations corresponds to elements with largest negative electron gain enthalpy?

A. $1s^2 2S^2 2p^5$

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

C. $1s^2 2s^2 2p^6 3s^2 3p^5$

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

Answer: C

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10. In a given period, the alkali metals have:

A. smallest atomic size

B. lowest ionisationenthalpy

C. lowest density

D. highest negative elecrton gain enthalpy.

Answer: B

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11. The electronic configuration of an atom X is $1s^2 2s^2 2p^6 3p^6 3d^{10} 4s^2 4p^4$.

The chemistry of X is, therefore likely to be similar to that of:

A. Boron

B. Oxygen

C. Nitrogen

D. Chlorine

Answer: B

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12. In any group of the periodic table, atomic size and ionisation energy vary with the increase in atomic number. Which of the following trends is correct?

A.

Atomic size	Ionisation enthalpy
Decreases	Increases

B.

Atomic size	Ionisation enthalpy
Decreases	Decreases

C.

Atomic size	Ionisation enthalpy
Increases	Decreases

D.

Atomic size	Ionisation enthalpy
Decreases	Increases

Answer: C

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13. The ionisation enthalpy of nitrogen is larger than that of oxygen because of:

A. Larger size of N -atom

B. Greater attraction of electrons by the nucleus

C. Stability of half filled p- subshell configuration of N-atom

D. Greater penetration effect.

Answer: C

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14. The correct order of first ionisation enthalpy of carbon,nitrogen,oxygen and fluorine is:

A. $C > N > O > F$

B. $O > F > N > C$

C. $F > N > O > C$

D. $F > O > N > C$

Answer: C

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15. The electronegativity of the following elements increases 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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16. The atom having the outer electronic configuration $4s^2 4p^2$ would be in:

A. Group 4 and period 4

B. Group 2 and period 4

C. Group 6 and period 3

D. Group 8 and period 5.

Answer: A

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

A. 1. The properties of elements are periodic functions of their atomic numbers

B. 2. Non-metallic elements are leser in number than metallic elements

C. 3. The first ionisation energies of elements along a period do not vary in

regular manner with increase in atomic number.

D. 4. For transition elements, the d-subshells are filled with elements monotonically with increase in atomic number.

Answer: C

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18. Amongst the following elements (whose electronic configurations are given below) the one having the highest ionisation energy is:

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

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

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

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

Answer: B

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19. The element of 4th period of the periodic table having maximum magnetic moment in its ground state is:

A. As(Z=33)

B. Zn(Z=30)

C. Cr(Z=24)

D. Ca(Z=20)

Answer: C

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20. The outermost electronic configuration of the most electronegative element is

A. $3s^2 3p^5$

B. $6s^1$

C. $2s^2 2p^5$

D. $2s^2 2p^4$

Answer: C

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21. The maximum tendency to form the uni positive ion is for the element with configuration.

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

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

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

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

Answer: B

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22. The first ionisation enthalpy (in kJ/mol) of Be, B and C atoms are respectively.

A. 900, 800, 1086

B. 1086, 800,900

C. 800, 900, 1086

D. 800, 1086, 900

Answer: A

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23. Which of the following configurations is associated with biggest jump between second and third I.E.?

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

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

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

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

Answer: C

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24. Which of the following metals requires radiation of highest frequency to cause emission of electrons?

A. Na

B. Mg

C. K

D. Ca

Answer: B

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25. The element with electronic configuration $1s^2 2s^2 2p^6 3s^2 3d^{10} 4s^2 4p^6 4d^{10} 5s^2 5p^3$ belongs to which group of the periodic table?

A. 13

B. 12

C. 15

D. 17

Answer: C

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26. Which of the following values in electron volt per atom represent the first ionisation enthalpy of oxygen and nitrogen respectively?

A. 14.6,13.6

B. 13.6, 14.6

C. 13.6, 13.6

D. 14.6, 14.6

Answer: B

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27. Transition metals lie in the periodic table between groups

A. 3 rd and 4th

B. 2nd and 13th

C. 1st and 2nd

D. 2nd and 12th

Answer: B

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28. Which pairs of atomic numbers represent elements which belong to s block elements.

A. 3,15

B. 6,12

C. 9,17

D. 3,12

Answer: D

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29. Which of the following sets of elements have the strongest tendency to form anions?

A. N,O,F

B. P,S,cl

C. As,Se,Br

D. Sb,Te,i

Answer: A

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30. Which of the following represents elements in order of increasing size?

A. I,Br,Cl

B. Na,Mg,C

C. C,N,O

D. Li,Na,K

Answer: D

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31. The number of elements in the fifth period of periodic table is

A. 8

B. 10

C. 18

D. 32

Answer: C

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32. The element with atomic number 35 lies in group

A. 1. 13

B. 2. 14

C. 3. 17

D. 4. 16

Answer: C

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33. The electronic configuration of four elements are given below. Which of these does not belong to the same family?

A. $[Xe]4f^{14}5d^{10}6s^2$

B. $[Kr]4d^{10}5s^2$

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

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

Answer: C

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34. The element with atomic number 55 belongs to which block of the periodic table?

A. s-block

B. p-block

C. d-block

D. f-block

Answer: A

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35. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^3$

What is the atomic number of the element which is just below this element in the periodic table?

A. 33

B. 34

C. 31

D. 49

Answer: A

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36. A sudden jump between second and third ionisation enthalpies of an atom would be asssociated with the electronic configuration

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

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

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

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

Answer: C

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37. The electronic configuration of the element which is just above the element with atomic number 43 in the same periodic group is

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

B. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^7$

C. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^2 4p^6 5s^2 5p^2$

D. $1s^2 2s^2 2p^6 3s^2 3p^6 3d^6 4s^1$

Answer: D

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38. The correct values of ionisation energies of Si, P, Cl and S are respectivey:

A. $786, 1012, 999, 1256$

B. 1012,786,99,1256

C. $786, 1012, 1256, 999$

D. $786, 999, 1012, 1256$

Answer: C

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39. The element which has greastest difference between first and second ionisation energy is

A. Na

B. Si

C. P

D. Mg

Answer: A

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40. In a group of the periodic table, the elements possess:

A. same number of electrons

B. same number of protons

C. same number of neutrons

D. same number of electrons in the outermost shell.

Answer: D

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41. The process requiring the absorption of energy is:

A. $F \rightarrow F^-$

B. $Cl \rightarrow Cl^-$

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

D. $H \rightarrow H^-$

Answer: C

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42. In the isoelectric species the ionic radii (Å) of N^{3-} O^{2-} and F^{-} are respectively,

A. $1.36, 1.40, 1.71$

B. $1.36, 1.71, 1.40$

C. $1.71, 1.40, 1.36$

D. $1.71, 1.36, .40$

Answer: C

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43. The correct order of negative electron gain enthalpy of the elements of oxygen family in the periodic table is :

A. $O > S > Se$

B. $S > Se > O$

C. $S > O > Se$

D. $Se > O > S$

Answer: B

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44. In which of the following carbon has maximum electronegativity?

A. C_2H_4

B. C_2H_6

C. C_2H_2

D. same in all

Answer: C

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45. The recently discovered element Db (Z=105) belongs to

A. s

B. p

C. d

D. f-block of elements.

Answer: C

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46. The correct order of 1st ionisation enthalpy among the following elements

Be, B,C,N and O is

A. $B < Be < C < O < N$

B. $B < Be < C < N < O$

C. $Be < B < C < N < O$

D. $B < Be < C < O < N$

Answer: D

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47. The ions O^{2-}, F^{-}, Na^{+}, Mg^{2+} and Al^{3+} are isoelectric. Their radii show

A. an increase from O^{2-} to F^{-} and then decrease from Na^{+} to Al^{3+}

B. a decrease from O^{2-} to F^{-} and then increase from Na^{+} to Al^{3+}

C. A significant increase from O^{2-} to Al^{3+}

D. A significant decrease from O^{2-} to Al^{3+}

Answer: D

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48. Which of the following arrangement represents correct order of electron gain enthalpy (with negative sign) of the given atomic species?

A. $S < O < Cl < F$

B. $Cl < F < S < O$

C. $F < Cl < O < S$

D. $O < S < F < Cl$

Answer: D

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49. The correct order regarding the electronegativity of hybrid orbitals or carbon is:

A. $sp > sp^2 > sp^3$

B. $sp < sp^2 > sp^3$

C. $sp < sp^2 < sp^3$

D. $sp > sp^2 < sp^3$

Answer: A

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50. Which which of the following electronic configuration an atom has the lowest ionisation enthalpy?

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

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

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

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

Answer: D

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51. Identify the correct order of size of the following

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

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

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

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

Answer: A

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52. The correct order of ionisation enthalpy of C, N, O, F is

A. $C < O < N < F$

B. $C < N < O < F$

C. $F < N < C < O$

D. $F < O < N < C$

Answer: A

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53. Consider the isoelectric species Na^+, Mg^{2+}, F^- and O^{2-}. The correct order of increasing length of their radii is

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

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

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

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

Answer: B

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54. The first ionisation enthalpies of Na, Mg, Al and Si are in the order:

A. $Na < Mg > Al < Si$

B. $Na > Mg > Al > Si$

C. $Na < Mg < Al < Si$

D. $Na > Mg > Al < Si$

Answer: A

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55. The last element of the P - block in 6^{th} period is represented by the outer most electronic configuration :

A. $7s^2 7p^6$

B. $5f^{14} 6d^{10} 7s^2 7p^0$

C. $4f^{14} 5d^{10} 6s^2 6p^6$

D. $4f^{14} 5d^{10} 6s^2 6p^4$

Answer: C

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Multiple Choice Questions Level Iii

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

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

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

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

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

Answer: B

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2. The correct order of electron gain enthalpy with negative sign of F,Cl, Br and I, having atomic number 9,17,35 and 53 respectively is:

A. FgtClgtBrgtI

B. ClgtFgtBrgtI

C. BrgtClgtIgtF

D. IgtBrgtClgtF

Answer: B

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3. The increasing order of the ionic radii of the given isoelectronic species is

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

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

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

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

Answer: D

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4. Which of the following represents the correct order of increasing first ionisation enthalpy for Ca, Ba, S, Se and Ar ?

A. Ca S Ba Se Ar

B. S Se Ca Ba Ar

C. Ba Ca Se S Ar

D. Ca Ba S Se Ar

Answer: C

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5. The first ionisation potential of Na is 5.1 eV. The value of electron gain enthalpy of Na^+ will be:

A. $-2.55eV$

B. $-5.1eV$

C. $-10.2eV$

D. $+2.55eV$

Answer: B

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6. In the isoelectric species the ionic radii (Å) of N^{3-} O^{2-} and F^{-} are respectively,

A. 1.36, 1.40 and 1.71

B. 1.36, 1.71 and 1.40

C. `1.71, 1.40 and 1.36

D. 1.71, 1.36 and 1.40

Answer: C

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Recent Examination Questions

1. The first ionization enthalpy of oxygen is less than that of nitrogen. Which of the following is the correct reason for this observation?

A. Less effective nuclear charge of oxygen than nitrogen

B. Lesser atomic size of oxygen than nitrogen.

C. Greater inter electron repulsion between two electrons in the same p-orbital counter balances the increase in effective nuclear charge on moving from nitrogen to oxygen.

D. Greater effective nuclear charge of oxygen than nitrogen.

Answer: C

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2. The correct order of ionisation enthalpy of C, N, O, F is

A. ClOltNltF

B. ClNltOltF

C. FltNltClO

D. FlOltNltC

Answer: A

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3. Generally, the first ionization enthalpy increases along a period. But there are some exceptions. One which is NOT an expection is:

A. N and O

B. Na and Mg

C. Mg and Al

D. Be and B

Answer: B

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4. The correct order of electronegativities of N,O,F and P is

A. F>N>P>O

B. F>O>P>N

C. F>O>N>P

D. N>O>F>P

Answer: C

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5. Which of the following sets of ions represents the collection of isoelectronic species?

A. $K^+, Cl^-, Mg^{2+}, Sc^{3+}$

B. $Na^+, Ca^{2+}, SC^{3+}, F^-$

C. $K^+, Ca^{2+}, Sc^{3+}, Cl^-$

D. $Na^+, Mg^{2+}, Al^{3+}, Cl^-$

Answer: C

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6. The correct arrangement for the ions in the increasing order of their radii is

A. Na^+, Cl^-, Ca^{2+}

B. Ca^{2+}, K^+, S^{2-}

C. Na^+, Al^{3+}, Be^{2+}

D. Cl^-, F^-, S^{2-}

Answer: B

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7. For one of the element various successive ionization enthalpy (in kJ mol^{-1}) are given below:

I.E.	1st	2nd	3rd	4th	5th
	577.5	1810	2750	11,580	14,820

The element is

A. Al

B. Si

C. Mg

D. P

Answer: A

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