doubtnut
India's Number 1 Education App

CHEMISTRY

BOOKS - PATHFINDER CHEMISTRY (BENGALI ENGLISH)

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

Question Bank

1. Elements A,B,C,D and E gave the following electronic configuration:

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

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

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

E $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

Which among these will belong to the same group in the periodic table?

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2. An element X with Z =112 has been recently discovered . What is the electronic configuration of the element? To which group and period will it belong ?

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3. What is the effective nuclear charge at the periphery of nitrogen atom when a extra electron is added during the

formation of an anion. Compare the value of Z_eff when the atom is ionized to N^+.

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4. X-X bond length is $1.00\overset{o}{A}$ and C-C bond length is $1.54\overset{o}{A}$. If electronegativities of X and C are 3 and 2 respectively then C-X bond length is likely to be ?(using stevenson and schomaker formula)

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5. Atomic radius of Li is $1.23\overset{o}{A}$ and ionic radius of Li^+ is $0.76\overset{o}{A}$. Calculate the percentage of volume occupied by single valence electron in Li.

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6. Select from each group of the species which has the smallest radius stating appropriate reason.

O, O^-, O^{2-}

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7. Select from each group of the species which has the smallest radius stating appropriate reason.

P^{3+}, P^{4+}, P^{5+}

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8. Mg^{2+} is smaller than O^{2-} in size though both have same electronic configuration. Explain?

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9. What do you understand by isoelectronic species? Name a species that will be isoelectronic with this of the following atoms or ions:

(i) F^- (ii) Ar (iii) Mg^{2+} (iv) Rb^+

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10. Energy of an electron in the ground state of the hydrogen atom is -2.18×10^{-18}J The I.E. of H atom in

Kj\mole is

A. 1505 kj\mole

B. 1310 kj\mole

C. 1608 kj\mole

D. None

Answer: B

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11. Which of the following order is correct of reducing strength-

A. $Cs > Rb > K > Na > Li$

B. $Na > K > Rb > Cs$

C. $Cs > Rb > K > Na$

D. None of these

Answer:

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12. From each set choose the atom which has the largest ionization enthalpy and explain with your answer

F,O,N

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13. From each set choose the atom which has the largest ionization enthalpy and explain with your answer

Mg , P , Ar

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14. First and second ionisation energies of magnesium are 7.646 ev and 15.035 eV respectively what will be the amount of energy in Kj needed to convert all the atoms of magnesium into Mg^{2+} ions present in 12 mg of magnesium vapour?

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15. $M(g) \rightarrow M^{+}(g) + e^{-} : \Delta H = 100eV$ M(g) rarr M^(2+) (g) +e^- : DeltaH =100eV

Which is /are correct statement

A. $1E_1$ of M(g) is 100eV

B. $1E_1$ of $M^{+}(g)$ is 150 eV

C. $1E_2$ of M(g) is 250 Ev

D. $1E_2$ of M(g) is 150 Ev

Answer: D

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16. Consider the elements N, P, O, S and arrange them in order of increasing negative electron gain enthalpy

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17. Why do halogens have high electron gain enthalpies `(-Delta_H)?

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18. Which will have the maximum value of electron affinity O^x ,O^y ,O^z? (x , y and z have the values 0, -1 and -2 respectively)

A. O^x

B. O^y

C. O^z

D. All have equal

Answer:

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19. The amount of energy when million atoms of iodine are completely converted into l^- ions in the vapour state according to the question: $I(g) + e^{-(g)} \rightarrow I^{-(g)}$ is 5×10^{-13} J What would be electron gain enthalpy of iodine in terms of kj/mole

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20. Account for the large decreases in electron affinity between Li and Be despite the increases in nuclear charge.

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21. The first ionisation enthalpy values of third period elements Na , Mg and Si are respectively 496,737and 786 kj/mol whether the first ionisation enthalpy value for Al will be more close to 575 or 760 kJmol^{-1} ? Justify your answer

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22. Which of the following will have the most negative electron gain enthalpy and which the least negative ?

P , S , Cl , F

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23. Give the correct order of electronegativity of central atom in following compounds

(a) $CH_3 - CH_3$ (b) $CH_2 = CH_2$ (c] CHCH

The correct order is -

A. $a > b > c$

B. $c > a > b$

C. $c > b > a$

D. $b > c > a$

Answer: C

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24. Which of the following compound has highest value of bond length-

A. CsF

B. CsBr

C. CsI

D. CsCl

Answer: C

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25. The electronegativities of F and H are 4 and 2.1 respectively . The percent ionic character in H-F bond is

A. 43

B. 34

C. 94

D. 39

Answer: A

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26. Which of the following order is correct for acidic property:

A. $SiH_4 > PH_3 > H_2s$

B. $SiH_4 = PH_3 = H_2S$

C. $SiH_4 < PH_3 > H_2s$

D. $SiH_4 < PH_3 < H_2s$

Answer: D

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27. Calculate the electronegativity of carbon from the following data:

$E_{H-H} = 104.2 kcal mol^{-1}$, $E_{C-C} = 83.1 kcal mol^{-1}$

$E_{C-H} = 98.8 kcal mol^{-1}$ $X_H = 2.1$

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28. Arrange the following in decreasing basic nature LiOH NaOH , RbOH , CsOH.

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29. Arrange the following compounds in increasing order of acidic strength Al_2O_3 , SiO_2 , P_2O_3 and SO_2.

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30. The correct order of Van Der Waals radius of F , Cl and Br is

A. $Cl > F > Br$

B. $Br > Cl > F$

C. $F > cl > Br$

D. $Br > F > Cl$

Answer: B

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31. Which of the following series of element have most nearly the same atomic radius ?

A. Mg , Ca , Sr , Ba

B. Ca , Ge , As , Se

C. B, C , N, O

D. Cr , Mn , Fe , Co

Answer: D

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

A. $Be^{2+} > B^{3+} > Li^+$

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

C. $B^{3+} > Be^{2+} > Li^+$

D. $Li^+ > Be^{2+} > B^{3+}$

Answer: D

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33. The size of the species Pb, Pb^(2+), Pb^(4+)` decreases as

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

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

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

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

Answer: B

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34. Consider the following changes:

M(s) $\rightarrow$ M(g) (1) $M(g) \rightarrow M^{2+}(g) + 2e^{-}$ (2)

$M(g) \rightarrow M^{+}(g) + e^{-}$ (3) n : $M^{+}(g) \rightarrow M^{2+}(g) + e^{-}$

(4)

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

A. 1+2+4

B. 2-1+3

C. 3+2

D. 44230

Answer: D

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35. $\frac{N_0}{2}$ atoms of X(g) are converted into X^+ (g) by energy E_1 $\frac{N_0}{2}$ atoms of X(g) are converted into X^- (g) by energy E_2 hence ionization potential and electron affinity of X(g) are

A. $\frac{2E_1}{N_0}, \frac{2(E_1 - E_2)}{N_0}$

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

C. $\frac{E_1 - E_2}{N_0}$

D. None of these

Answer: B

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36. The value of IP_1, IP_2, IP_3 and IP_4 of an atom are respectively 7.5 eV , 25.6 eV 48.6 eV and 170.6eV . The electronic configuration of the atom will be

A. $1s^2 2s^2 2p^5 3s^1$

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

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

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

Answer: B

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37. IP_1 and IP_2 of Mg are 178 and 348 K cal mol^{-1}. The enthalpy required for the reaction $Mg \rightarrow Mg^{2+} + 2e^-$ is

A. (+170 Kcalmol^{-1})

B. (+526 Kcalmol^{-1})

C. (-170 Kcalmol^{-1})

D. (-526 Kcalmol^{-1})

Answer: B

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38. Ionization potential of Na would be numerically the same as

A. electron affinity of Na^+

B. electronegativity of Na^+

C. electron affinity of He

D. Ionisation potential of Mg

Answer: A

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39. The correct order of electron affinity is

A. $Be < B < C < N$

B. $Be < N < B < C$

C. $N < Be < C < B$

D. $N < C < B < Be$

Answer: B

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40. The order of first electron affinity of O , S and Se is

A. $O > S > Se$

B. $S > Se > O$

C. $Se > O > S$

D. $S > O > Se$

Answer: B

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41. Which of the following statement is /are correct?

A. Ti^{3+} salts are oxidizing agents

B. Ga^{+} salts are reducing agents

C. Pb^{4+} salts are better oxidizing agents

D. As^{5+} salts are oxidizing agents

Answer: B

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42. Which of the following oxides are amphoteric .

(1) BeO

(2) SnO

(3) ZnO

(4) Al_2O_3

A. BeO

B. SnO

C. ZnO

D. Al_2O_3

Answer: A

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43. Pd has exceptional valence shell electronic configuration $4d^{10}5s^0$ It is a member of

A. 5th period group 1 0

B. 4th period Group 12

C. 6th period group 10

D. 5th period group 14

Answer: A

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44. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2 3p^4$. The atomic number of the element

present just below the above element In the periodic table.

A. 36

B. 34

C. 33

D. 32

Answer: B

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45. A $M(2+)$ ion derived from a metal in the first transition metal series has four electrons in 3d subshell .What element might M be

A. Mn

B. Co

C. Fe

D. Cr

Answer: D

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46. Which is correct in the following:

A. Radius of Cl atom is $0.09\overset{o}{A}$ while that of Cl ion is $1.54\overset{o}{A}$

B. Radius of Na atom is $0.09\overset{o}{A}$ while that of Cl ion is $1.54\overset{o}{A}$

C. Radius of Cl atom is $0.95\overset{o}{A}$ while that of Cl^- ion is $0.81\overset{o}{A}$

D. Radius of Na atom is $0.95\overset{o}{A}$ while that of Na^+ ion is $1.54\overset{o}{A}$

Answer: B

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47. The correct order of atomic size of C N P S follows the order

A. $N < C < S < P$

B. $N < C < P < S$

C. $C < N < S < p$

D. $C < N < P < S$

Answer: A

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48. Match the following columns

i. Match list-I with list-II and select the correct answer using the codes given below

List -I Ion	List-II Radius (in pm)
(I) Li^+	(a) 216
(II) Na^+	(b) 195
(III) Br^-	(c) 60
(IV) I^-	(d) 95

A. a,b,d,c

B. b,c,a,d

C. c,d,b,a

D. d,c,b,a

Answer: C

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49. The ionic radii of N^{3-}, O^{2-} and F^{-} are respectively given by

A. 1.36 , 1.40 , 1.71

B. 1.36 , 1.71 , 1.40

C. 1.71 , 1.40 , 1.36

D. 1.71 , 1.36 , 1.40

Answer: C

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50. In which of the following compounds maganese shows maximum radius

A. MnO_2

B. $KMnO_4$

C. MnO

D. $K_3\left[Mn(CN)_6\right]$

Answer: C

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51. 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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52. The correct order of size would be

A. $Ni < Pd < Pt$

B. $Pd < Pt < Ni$

C. $Pt > Ni > Pd$

D. $Pd > Pt > Ni$

Answer: A

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53. Atomic radii of fluorine and Neon in Angstrom units are given by

A. 0.72 , 1.60

B. 1.60 , 1.60

C. 0.72 , 0.72

D. None of these

Answer: A

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54. Which of the following has largest radius

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

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

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

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

Answer: A

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55. Arrange the elements in increasing order of atomic radius Na , Rb , K , Mg

A. $Na < K < Mg < Rb$

B. $K < Na < Mg < Rb$

C. $Mg < Na < K < Rb$

D. $Rb < K < Mg < Na$

Answer: C

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56. Consider the isoelectronic series: K^+, S^{2-}, Cl^- and Ca^{2+} the radii of the ions decrease as

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

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

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

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

Answer: C

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57. Highest size will be of

A. Br^-

B. I

C. I^-

D. I^+

Answer: C

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58. Ionization potential of Na would be numerically the same as

A. electron affinity of Na^+

B. electronegativity of Na^+

C. electron affinity of He

D. Ionisation potential of Mg

Answer: C

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59. The IP_1, IP_2, IP_3, IP_4 and IP_5 of an element are 7.1 , 14.3 , 34.5 , 46.8 , 162.2 ev respectively . The element Is likely to be

A. Na

B. Si

C. F

D. Ca

Answer: B

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60. The screening effect of d-electrons is

A. Equal to the p-electrons

B. Much more than p-electrons

C. Same as f-electrons

D. Less than p-electrons

Answer: D

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61. Correct orders of IE_1 are

(i) $Li < B < Be < C$

(ii) $O < N < F$

(iii) $Be < N < Ne$

A. (i) (ii)

B. (ii) (iii)

C. (i) (iii)

D. (i) (ii) (iii)

Answer: D

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62. The maximum tendency to form unlpositive ion is for the element with the electroic configuration

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63. The second ionisation potentials in electron volts of oxygen and fluorine atoms are respectively given by

A. 35.1 , 38.3

B. 38.3 , 38.3

C. 38.3 , 35.1

D. 35.1 , 35.1

Answer: C

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64. A sudden large jump between the values of 2nd and 3rd IP of an element would be associated with the

electronic configuration:

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

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

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

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

Answer: D

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65. The ionization energy of sodium is 495 $kJmol^{-1}$ How much energy is needed to convert atoms present in 2.3 mg of sodium into sodium ions

A. 4.95 J

B. 49.5 J

C. 495 J

D. 0.495 J

Answer: B

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66. IP_1 and IP_2 of Mg are 178 and 348 K cal mol^{-1}. The enthalpy required for the reaction $Mg \rightarrow Mg^{2+} + 2e^-$ is

A. (+170 kcalmol^{-1})

B. (+526 kcalmol^{-1})

C. (-170 kcalmol^{-1})

D. (-526 kcalmol^{-1})

Answer: B

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67. The correct order of second I.P.

A. $Na < Mg > Al < Si$

B. $Na > Mg < Al > Si$

C. $Na > Mg > \ < Si$

D. $Na > Mg > Al > Si$

Answer: B

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68. In which case the energy released in minimum

A. $Cl \rightarrow Cl^-$

B. $P \rightarrow P^-$

C. $N \rightarrow N^-$

D. $C \rightarrow C^-$

Answer: C

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69. Second electron affinity of an element is

A. Always exothermic

B. Endothermic for few elements

C. Exothermic for few elements

D. Always endothermic

Answer: D

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70. The electron affinity values for the halogens shown the following trend-

A. $F < Cl > Br > I$

B. $F < Cl < Br < I$

C. $F > Cl > BrI$

D. $F < Cl > Br < I$

Answer: A

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

A. $O < S < Cl < F$

B. $O < S < F < Cl$

C. $S < O < Cl < F$

D. $S < O < F < Cl$

Answer: B

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72. Increasing order of Electron affinity for following configuration.

$1s^2$, $2s^2$, $2p^3(b)$1s^2 2s^2 2p^4$[c]$1s^2 , 2s^2 , 2p^6 , 3s^2 , 3p^4(d)1s^2 , 2s^2 , 2p^6 , 3s^2 , 3p^3`

A. $a < d < b < c$

B. $d < a < c < b$

C. $a < b < c < d$

D. $a < b < d < c$

Answer: A

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73. If electronegativity of x be 3.2 and that of y be 2.2 the percentage ionic character of xy is -

A. 19.5

B. 18.5

C. 9.5

D. 29.5

Answer: A

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74. which of the following relation is correct ?

A. 2IP _E.A. -EN=0

B. 2EN-IP-EA=0

C. 2EA-IP-EA=0

D. EN_IP_EA=0

Answer: B

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75. Which oxide of N is isoelectronic with CO_2

A. NO_2

B. NO

C. N_2O

D. N_2O_3

Answer: C

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76. Which of the following group does not represent the isoelectronic species?

A. CH_4, H_2O, NH_3, HF

B. PH_3, SiH_4, HS^-, Ar

C. OH^-, H_2O, NH_2^-, F^-

D. H_2S, K^+, Ar, Cl

Answer: D

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77. Which of the atoms having following electronic configuration will have the highest first ionisation energy?

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

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

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

D. [He] $2s^2 2p^3$

Answer: D

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78. The order of increasing ionisation energy for the atoms `N , Ne , Na , and P is :

A. $Na < P < N < Ne$

B. $N < Ne < Na < P$

C. $N < Na < Ne < P$

D. $Na < N < P < Ne$

Answer: A

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79. Which of the following statements about lanthanldes is an incorrect one

A. All lanthanides are highly dense metals.

B. Lanthanides have common oxidation state of +3`

C. Ionic radii of trivalent lanthanides steadily increases with increase in atomic number.

D. Lanthanides are separated from one another by ion exchange method.

Answer: C

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80. In the periodic table among the alkali metals the strongest and the weakest reducing agent are respectively:

A. Li , Cs

B. Cs , Li

C. Li , Na

D. Na , Li

Answer: C

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81. Electronegativity values for element are useful in predicting :

A. bond energy of molecule

B. Polarity of a molecule

C. nature of an oxide

D. all

Answer: D

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82. Among the atomic properties electronegativity ionisation potential and electron affinity which are affected by stable electronic configuration?

A. Only electronegativity

B. Only ionisation potential

C. both electron affinity and ionisation potential

D. all of the given properties

Answer: C

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83. Which of the following is an exothermic process?

A. $O_e^- \rightarrow O^-$

B. $O^- + e \rightarrow O^{2-}$

C. $Be + e \rightarrow Be^-$

D. all of the above

Answer: A

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84. Which of the following pairs does not contain elements with similar radii?

A. Co , Ni

B. Rh , Ir

C. Nb , Ta

D. Hf , Ti

Answer: D

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85. Stability of ions of Ge Sn and Pb will be in the order

(1) $Ge^{2+} < Sn^{2+} < Pb^{2+}$

(2) $Ge^{4+} > Sn^{4+} > Pb^{4+}$

(3) $Sn^{4+} > Sn^{2+}$

(4) $Pb^{2+} > Pb^{4+}$

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86. On moving down the group from F to I which of the properties decreases?

(1) Ionic radius

(2) Ionisation energy

(3) Oxidizing agent

(4) Electronegativity

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87. The elements which exist in liquid state at room temperature are

(1) Na

(2) Br_2

(3) Hg

(4) Ga

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88. Which of the following is/are the correct order of ionic mobility ?

(1) $Li^+ < Na^+ < K^+$

(2) $Na^+ < Mg^{2+} < Al^{3+}$

(3) $Al^{3+} < Mg^{2+} < Na^{2+}$

(4) $Li^{+} < Na^{+} < K^{+}$

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89. Stability order of +3 and +1 states of boron family element is

(1) $Ga^{3+} > In^{3+} > Tl^{3+}$

(2) Ga^+ gt In^+ gt Tl^+(3)Ga^+ lt In^+ lt Tl^+(4)Ga^(3+) gt Ga^+`

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90. Which of the following pair of elements have same number of electron in their outermost shell

(1)Na ,Sr

(2) Se , Te

(3)Mn , Fe

(4) As, Bi

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91. Select the correct statement

(1)E.A. of F more than O

(2) Electron affinity of inert gases is +ve.

(3) Electron affinity of inert gas is supposed to be zero.

(4) Electron affinity of CI is more than F

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92. Which of the following oxides are amphoteric .

(1) BeO

(2) SnO

(3) ZnO

(4) Al_2O_3

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93. Which of the following species has same number of unpaired electrons?

(1) Cr^{3+}

(2) Mn^{2+}

(3) Fe^{3+}

(4) Cu^{2+}

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94. Screening effect is the effect produced by intervening electrons between nucleus and valence electrons . They shield the nucleus from valence electron and effective nuclear charge decreases if there is less shielding effect the effective nuclear charge decreases Valence electrons are attracted by nucleus and repelled by other electrons. Net effective force on electrons under consideration = $Z - \sigma$= (Nuclear charge -screening effect) slaters formula for screening constant.

If one electron is present in outermost orbit there will be no screening in that orbital.

Each electrons contributes 0.35 (total electrons minus 1) present in outermost shell.

In penultimate energy level electrons contribute 0.85. A contribution of 1 is from remaining electrons (present in last but one energy level)

The effective nuclear charge for 4s electrons of Zn will be

A. 26.85

B. 4.35

C. 15.3

D. 10

Answer: C

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95. Screening effect is the effect produced by intervening electrons between nucleus and valence electrons . They shield the nucleus from valence electron and effective nuclear charge decreases if there is less shielding effect the effective nuclear charge decreases Valence electrons are attracted by nucleus and repelled by other electrons. Net effective force on electrons under consideration = $Z - \sigma$= (Nuclear charge -screening effect) slaters formula for screening constant.

If one electron is present in outermost orbit there will be no screening in that orbital.

Each electrons contributes 0.35 (total electrons minus 1) present in outermost shell.

In penultimate energy level electrons contribute 0.85. A contribution of 1 is from remaining electrons (present in

last but one energy level)

The effective nuclear charge for 4s electrons of Zn will be

A. 6

B. 8

C. 10

D. 4

Answer: A

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96. You have given cations A^+, B^{2+}, C^{3+} D^{3+} The radius of the cations are as given:

Cation	Radius (A°)
A^{+}	0.6
B^{2+}	1.20
C^{3+}	0.50
D^{3+}	0.80

Maximum value of ionic potential (ϕ) is for which ion

A. A_2O

B. BO

C. C_2O_3

D. D_2O_3

Answer: C

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97. You have given cations A^+, B^{2+}, C^{3+} D^{3+} The radius of the cations are as given:

Cation	Radius (A°)
A^+	0.6
B^{2+}	1.20
C^{3+}	0.50
D^{3+}	0.80

Maximum value of ionic potential (ϕ) is for which ion

A. A^+

B. B^{2+}

C. C^{+3}

D. D^{3+}

Answer: C

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98. Match the following columns

1. Match Column - I with Column - II

Column - I	Column - II
(A) $Na^+ < F^- < O^{2-} < N^{3-}$	(P) Electronegativity
(B) $Li^+ < Na^+ < K^+ < Rb^+ < Cs^+$	(Q) Mobility of hydrated ions
(C) $O < S < F < Cl$	(R) Ionisation energy
(D) $Cl^- < K^+ < Ca^{2+} < Sc^{3+}$	(S) Electron affinity
	(T) Ionic size

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99. Match the following columns

2. Match Column - I with Column - II

Column - I	Column - II
(A) Ionisation energy (IE_1)	(P) Highest in halogens in their respective periods
(B) Electron affinity (EA_1)	(Q) Highest in noble gas in their respective periods.
(C) Electronegativity	(R) Highest in alkali metals in their respective periods.
(D) Electro positive character	(S) Lowest in noble gas in their respective periods.

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100. Match the following columns

3. Match Column - I with Column - I

Column - I	Column - II
(A) Fe (III) > Fe (II)	(P) Electronegativity
(B) Al > Na	(Q) Basic character of their oxides
(C) Cl > F	(R) Electron gain enthalpy ($-\Delta_{eg}H$)
(D) N > C	(S) Degree of hydration

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101. Match the following columns

4. Match Column - I with Column - II

	Column - I		Column - II
(A)	Isoelectronic series	(P)	$A^+ + \text{energy} \rightarrow A^{++} + e^-$
(B)	Half-filled p-orbitals	(Q)	Ar, K^+, Ca^{2+}
(C)	Second ionization enethalpy	(R)	Cerium
(D)	Lanthanoid	(S)	Nitrogen

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102. Match the following columns

5. Match Column - I with Column - II

	Column - I		Column - II
(A)	s-Block	(P)	Representative elements
(B)	p-Block	(Q)	Transition elements
(C)	d-Block	(R)	Inner transition elements
(D)	f-Block	(S)	Lanthanoids and actinoids

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103. IE and EA values of an element are 13eV and 3.8 eV respectively. Its electronegativity on pauling scale is

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104. How many unpaired electron are present Co^{3+} ion?

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105. The effective nuclear charge of N atom is :

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106. The ionisation energy of lithium is 500 KJ mol^{-1} The amount of energy required to convert 70 mg of lithium atoms in gaseous state into Li^{+} ions:

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107. How many groups are occupied by P-block element in the long form of periodic table ?

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108. Why the electron gain enthalpy values of alkaline earth metals are lower or positive?

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109. Select neutral acidic basic and amphoteric oxides from the following

CO , BeO , Na_2O, N_2O_5

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110. Ionisation energy and electron affinity of fluorine are respectively 17.42 and 3.45 eV .Calculate electronegativity of fluorine atom.

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111. Match the following columns

The (IE_1) and the (IE_2) in kJ mol^{-1} of a few ele
designated by Roman numerals are shown t

	I	II	III
IE_1	403	549	1142
IE_2	2640	1060	2080

Which of the above elements is likely to be a

(a) non-metal

(b) alkali metal

(c) alkaline earth metal ?

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112. Arrange the following ions in the increasing order of their size : $Be^{2+}, Cl^{-}, S^{2-}, Na^{+}, Mg^{2+}, Br^{-}$

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113. Match the following columns

Q6. In Column-I, there are given electronic configurations of some elements. Match these with the correct metals given in Column-II :

	Column-I		Column-II
(1)	ns^2, np^5	(p)	Chromium
(2)	$(n-1)\,d^{10}, ns^1$	(q)	Copper
(3)	$(n-1)\,d^5, ns^1$	(r)	Krypton
(4)	$(n-1)\,d^{10}, ns^2, np^6$	(s)	Bromine

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114. Match the following columns

Q7. Match the particulars given in Column-I with the process/metal / species given in Column-II.

	Column-I		Column-II
(1)	Isoelectronic species	(p)	$A^+(g) + \text{energy} \rightarrow A^{++}(g) + e^-(g)$
(2)	Half filled orbital	(q)	Ar, K^+, Ca^{++}
(3)	Second ionisation energy	(r)	Lutetium
(4)	Inner transition element	(s)	Antimony

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115. Match the following columns

Q8. Match the type of elements / characteristic of the elements listed in Column-I with the correct element listed in Column-II.

	Column-I	Column-II
(1)	Highest 1^{st} ionisation energy	(p) Technitium
(2)	Highest electronegativity	(q) Lithium
(3)	Synthetic element	(r) Helium
(4)	Strongest reducing agent	(s) Fluorine

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116. As per the modern periodic law the physical and chemical properties of elements are periodic functions of their

A. Atomic volume

B. electronic configuration

C. atomic num

D. atomic size

Answer: C

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117. Which of these does not reflect the periodicity of the elements

A. Bonding behaviour

B. electronegativity

C. ionization potential

D. neutron/proton ratio

Answer: D

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118. Which of the following pairs of atomic numbers represent elements belonging to the same group

A. 11 and 20

B. 12 and 30

C. 13 and 31

D. 14 and 33

Answer: C

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119. All the elements in a group in the periodic table have the same

A. atomic mass

B. number of protons

C. mass number

D. number of electrons for bonding

Answer: D

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120. The elements in which 4f orbitals are progressively filled up are called

A. actinides

B. transition elements

C. lanthanides

D. halogens

Answer: C

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121. Which of the following elements does not belong to first transition series?

A. Fe

B. V

C. Ag

D. Cu

Answer: C

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122. The name of 'rare earths' is used for

A. lanthanides only

B. actinides only

C. both lanthanides and actinides

D. alkaline earth metals

Answer: C

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123. In genral outer electronic configuration of the elements of group ViB is

A. ns^2

B. ns^2np^4

C. $(n-1)d^4ns^2$

D. $(n-1)d^5ns^1$

Answer: D

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124. What is the group no.of an element having atomic no.105?

A. 5

B. 16

C. 15

D. 4

Answer: A

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125. Which of the following ionic radius would be maximum?

A. C^{4-}

B. N^{3-}

C. O^(2-)`

D. Mg^(+2)`

Answer: A

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126. The decreasing order of size of the following ions is

A. $Li^{+} > H^{+} > H^{-}$

B. $H^+ > H^- > Li^+$

C. $H^- > Li^+ > H^+$

D. $H^- > H^+ > Li^+$

Answer: C

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127. $Na+, Mg^{++}, Al^{+3}, Si^{+4}$ are isoelectronics the order of their ionic size is

A. $Na^+ > Mg^+ + < Al^+3 < Si^+4$

B. $Na^+ < Mg^+ + > Al^+3 > Si^+4$

C. $Na^+ > Mg^+ + > Al^+3 > Si^+4$

D. $Na^{+} < Mg^{+} + > Al^{+}3 < Si^{+}4$

Answer: C

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128. The covalent and van der waals radii of hydrogen respectively are

A. $0.37\overset{o}{A}, 1.2\overset{o}{A}$

B. $0.37\overset{o}{A}, 0.37\overset{o}{A}$

C. $1.2\overset{o}{A}, 1.2\overset{o}{A}$

D. $1.2\overset{o}{A}, 0.37\overset{o}{A}$

Answer: A

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129. which ion possessses the smallest radius?

A. I^{-}

B. Ba^{+2}

C. Cs^{+}

D. Te^{-2}

Answer: B

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

A. K^+

B. Ca^{+2}

C. Cl^-

D. S^{-2}

Answer: D

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131. The first ionization potential in electron volts of nitrogen and oxygen atoms are respectively given by

A. 14.6.13.6

B. 13.6,14.6

C. 13.6,13.6

D. 14.8,14.6

Answer: A

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132. The first ionization potential 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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133. The correct order of decreasing first ionization energy is

A. $C > B > Be > Li$

B. $C > Be > B > Li$

C. $B > C > Be > Li$

D. $Be > Li > B > C$

Answer: B

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134. The correct order of electron affinity is

A. $O > S > Se$

B. $S > O > Se$

C. $Se > O > S$

D. $S > Se > O$

Answer: D

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135. The correct ordrr of electron affinity among the following is

A. $F > Cl > Br$

B. $Br > Cl > F$

C. $Cl > F > Br$

D. $F > Br > Cl$

Answer: C

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136. The lower electron affinity of fluorine than that of chlorine is due to

A. smaller size

B. smaller nuclear charge

C. diffrence in their electronic configurations

D. its highest reactivity

Answer: A

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137. Electron affinity of inert gases is

A. high

B. low but positive

C. moderate

D. almost zero

Answer: D

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138. Which of the following has the highest electron affinity?

A. O

B. S

C. Se

D. Te

Answer: B

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139. The electronegativity follows the order

A. $F > O > Cl > Br$

B. $F > Cl > Br > O$

C. $O > F > Cl > Br$

D. $Cl > F > O > Br$

Answer: A

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140. Which of the following elements represent highly electropositive as well as highly electronegative character in its period?

A. Hydrogen

B. Nitrogen

C. Fluroine

D. None of these

Answer: A

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141. Electronegativity values for element are useful in predicting :

A. bond order

B. dipole moments

C. valency of elements

D. position in the electrochemical series

Answer: B

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142. Which of the follwing order is wrong?

A. $NH_3 < PH_3 < AsH_3$-Acidic

B. $Li < Be < B < C - IE_1$

C. $Al_2O_3 < MgO < Na_2O < K_2O$ -Basic

D. $Li^+ < Na^+ < K^+ < Cs^+$ -Ionic radius

Answer: B

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143. Gradual addition of electronic shells in the noble gases cause a decrease in their

A. ionization energy

B. atomic radius

C. boiling point

D. density

Answer: A

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144. The cause of diagonal relationship is

A. Similar electronegativities

B. similar ionic or atomic radii

C. similar effective nuclear charge

D. all of these

Answer: C

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145. In the periodic table with the increase in atomic number the metallic character of an element

A. decreases in a period anad increases in a a group

B. increases in a period and decreases in a group

C. increses both in a period and the group

D. decreases both in a period and the group

Answer: A

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146. The element with the electronic configurations as [Ar] $3d^{104}s^{24}p^3$ represents a

A. metal

B. non metal

C. metalloid

D. transition element

Answer: C

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147. Amongst the following oxides which is least acidic?

A. Al_2O_3

B. B_2O_3

C. CO_2

D. NO_2

Answer: A

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148. Ewhich of the following is the strongest acid?

A. H_2SiO_3

B. H_3PO_4

C. H_2SO_4

D. $HClO_4$

Answer: D

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149. Which is most suitable in water?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $Ca(OH)_2$

D. $Sr(OH)_2$

Answer: D

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150. Which of the following is a metalloid?

A. P

B. Bi

C. Sc

D. Ge

Answer: D

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151. If the ionic radius of $La^{+3} = 1.o6\overset{o}{A}$ then what will be th eionic radius of Lu^{+3}?(given atomic number of La=57 snd atomic number of Lu=71)

A. $0.85\overset{o}{A}$

B. $1.60\overset{o}{A}$

C. $1.40\overset{o}{A}$

D. $1.06\overset{o}{A}$

Answer: A

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152. In which of the following equations the value of delta H represents the ionisation energy of Ba?

A. $Ba(s) \rightarrow Ba^{+}(g) + e$

B. $Ba(g) \rightarrow Ba^{+2}(g) + 2e$

C. $Ba(g) \rightarrow Ba^{+}(g) + e$

D. $Ba(g) + e \rightarrow Ba^{-(g)}$

Answer: C

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153. According to the Lother Meyer periodic law properties of elements depend on which factor?

A. neutron/proton(ratio)

B. atomic weight

C. mass of nucleus

D. Atomic number

Answer: B

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154. With increasing screening effect the value of ionisation energy

A. decreases in a period anad increases in a a group

B. remains unchanged

C. becomes maximum

D. becomes minimum

Answer: A

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155. Three elenents A,B and C has electron configuration A= [Ar]$3d6104s^2$, $B = [Ar]4s^2$C=[Ar]4s^1`respectively which one has the highest electronegativity?

A. A and B have the same electronegativity

B. A

C. B

D. D

Answer: B

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156. Which is the correct order?

A. $r_c l^{\prec} r_c l$[radius]

B. $I.\ E_1 : Na < Mg < Al$first ionisation energy

C. $EA_1 : I > S > Si$[first electron affinity]

D. $r_N a^+ > r_N a$[radius]

Answer: C

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157. Out of vobalt and zinc salts which ones are attracted by magnets?

A. cobalt salts

B. zinc salts

C. both cobalt and zinc salts

D. None of these

Answer: A

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158. The order of ionic radius of N^{3-}, O^{2-}, F^{-} and Na^{+} Is

A. $N^{3-} > O^{2-} > F^{-} > Na^{+}$

B. $N^{3-} > Na^{+} > O^{2-} > F^{-}$

C. $1Na^{+} > O^{2-} > N^{3-} > F^{-}$

D. $O^{2-} > F > Na^{+} > N^{3-}$

Answer: A

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159. With increase in 's' character of hybrid orbital

A. $E.\ A_1$ will increase

B. $E.\ A_2$ will increase

C. both $E.\ A_1$ and $E.\ A_2$ will decrease

D. both $E.\ A_1$ and $E.\ A_2$ remain same

Answer: A

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160. Which of the following is/are correct?

A. $Mg^{+2}(size) > Li^{+}(size)$

B. $S(E.A.) > O(E.A)$

C. $Hg(I.E.) > Cd(I.E)$

D. $P(I.E.) > S(I.E)$

Answer:

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161. Which of the following staements is true about electronegativity?

A. electronegativity of an element depends upon its eggective nuclear charge

B. electronegativity of a cation is porportional to charge on the cation

C. electronegativity increases as the s character in hybrid orbital increases

D. electronegativity of a anion is porportional to charge on the anion

Answer:

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162. The firstionisation 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:

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163. Choose the correct statements

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 greter than that of hydrated Na^+

D. He atom is having highest I.E. in the periodic table

Answer:

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164. Correct order of electron affinity is/are

A. $S > O$

B. $Al > B$

C. $Mg > Na$

D. $P > N$

Answer:

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165. Which of the followingstatements(s) is/are correct?

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

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

C. `(n-2)f^7(n-1)d^1ns^2(n=6)

D.

Answer:

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166. Which of the following properties among halogens decreses (s)from fluorine to iodine?

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 electron gain enthalpy of the anion of the eelment

Answer:

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167. Give an example of oil in water type emulsion.

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168. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:Be resembles Al

Statement-II: Be^{+2} has almost same charge density as Al^{3+}

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 3

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169. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:Licl is predominantly a covalent compound

Statement-II:electronegativity diffrence between Li and Ci is too small

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 1

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170. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:noble gases have highest ionization enthalpies in their respective period

Statement-II:noble gases have stable closed shell electronic configuration

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 2

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171. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:The first ionization enthalpy of aluminium is lower than that of magnesium

Statement-II:ionic radius of aluminium is smaller than that of magnesium

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 1

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172. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:vander walls radius of an element is always larger than its covalent radius

Statement-II:vander walls radius is one half of the distance between the nuclei of two non bonded isolate atoms

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 3

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173. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I:The first ionization enthalpy of Be I sgreater than that of B

Statement-II:2 p orbital is lower in energy than 2s orbital

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 3

174. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I: electron gain enthalpy of oxygen is less negative than that of flourine but more -ve than that of nitrogen

Statement-II:ionization enthalpy is as follows N>O>F

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 3

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175. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I: Zinc is not a transitional element

Statement-II:zinc does not form coordination compounds

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 3

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176. This question has statement I and statement II of the four choices given after the statements choose the one that best describes the two statements

Statement -I: The second electron gain enthalpy of an element I staken as positive

Statement-II:energy i sreleased when an electron is added to the atom

A. Statement-I Is true statement II is true,statement -II is a correct explanation of statement -I

B. Statement -I is true statement -II is true .statement -II is not a correct explantion of statement-I

C. Statement -I is true statement II is false

D. statement I is false statement II is true

Answer: 1

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177. What happens when Selenium monochloride undergoes disproportionation reaction?

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178. The periodicity is related to the electronic configuration that is all chemical and physical properties are a manifestation of the electronic configuration of the elements.the atomic and ionic radii genreally decrease in a period from left to right as a consequence the ionization enthalpies genrally increase and electron gain enthalpies

become more negative across a period in other words the ionization enthalpy of the extreme left element element in a period is the least and the electron gain enthalpy of the element on the extreme right is the highest negative.this results into highly chemical reactivity at the two extremes and the lowest in the centre similarly down the group the increase in atomic and ionic radii result in gradual decrease in ionization enthalpies and a regular decrease (with exception in some third period elements)in electron gain enthalpies in the csea of main group elements.

reducing and oxidizing behaviour of the elements

metallic and non metallic character of elements

acidic,basic,amphoteric and neutral charcter of the oxides of the elements

The correct order of the metallic character is

A. $B > C > Si > N > F$

B. $Si > C > B > N > F$

C. $F > N > C > B > Si$

D. $F > N > C > Si > B$

Answer: 1

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179. What happens when iodine reacts with concentrated nitric acid?

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180. Give the common method of preparation of N_2O_5.

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181. Element A has two electrons in its valence shell and its principle quantum number for last electron is 2 element B has four electrons in its valence shell and its principle quantum number for lastb electron is 2 element X has threee electrons in its valence shell and principle quantum number for last electron is 3

compounds XB and AB on hydrolysis give

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182. Match column I and column II

1. Match **Column - I** with **Column - II**

Column - I		Column - II	
(A)	ns^2, np^5	(P)	Chromium
(B)	$(n-1)\, d^{10}, ns^1$	(Q)	Copper
(C)	$(n-1)\, d^5, ns^1$	(R)	Krypton
(D)	$(n-1)\, d^{10}, ns^2, np^6$	(S)	Bromine

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183. Match column I and column II

2. Match **Column - I** with **Column - II**

Column - I	Column - II
(A) Metalloid	(P) Sulphur
(B) Radioactive	(Q) Gold
(C) Transition metal	(R) Arsenic
(D) Chalcogen	(S) Uranium

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184. Match column I and column II

. Match Column - I with Column - II

Column - I		Column - II	
(A)	Representative element	(P)	Cerium
(B)	Lanthanide	(Q)	Aluminium
(C)	Coinage metal	(R)	Thorium
(D)	Actinide	(S)	Gold

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185. Match column I and column II

4. Match **Column - I** with **Column - II**

Column - I		Column - II	
(A)	Isoelectronic species	(P)	$A^{+}(g) + \text{energy} \rightarrow A^{++}(g) + e^{-}(g)$
(B)	Half filled orbital	(Q)	Ar, K^{+}, Ca^{++}
(C)	Second ionisation energy	(R)	Lutetium
(D)	Inner transition element	(S)	Antimony

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186. Match column I and column II

5. Match Column - I with Column - II

Column - I	Column - II
(A) Highest 1st ionisation energy	(P) Technitium
(B) Highest electro-negativity	(Q) Lithium
(C) Synthetic element	(R) Helium
(D) Strongest reducing agent	(S) Fluorine

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187. Select total no.of the acidic compounds out of the given

$CsOH, SO_2(OH)_2, Sr(OH)_2, Ca(OH)_2, Ba(OH)_2, NaOH$

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188. Draw the structure of Furfural.

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189. How many elements are possible for 1st period of periodic table if azimuthal quantum number can have integral values from 0,1,2_____(n-1)?

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190. Write the approximate Ea Of atom X in eV/atom unit using the data given I.E. OF X=13.0 Ev/atom ,E.N of X=3.05 (on paulling scale)

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191. Choose the number of correct statement(s) form the following:

ist ionization potential of B is higher than that of Be

electron affinity of O is higher than that of S

[Ar] $4s^{23}d^3$ is the electronic configuration of Mn^{+2}

Iind ionisation potential of Na>ist ionisation potential of Na

1st ionisation potential of N>IInd ionisation potential of N

electronegativity of Cl>electronegativity of F

$C \rightarrow C^+2$ change is called IInd ionisation potential of carbon

energy is required to convert $He \rightarrow He^-$

conversion of $o \rightarrow o^{2`}$ exothermic

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192. For the gaseous phase reaction $K + F \rightarrow K^+ + F^-$,delta H was calculated to be 19 kcal/mole under conditions where the cations and anions were prevented by elerctrostatc separation from combining with each other the ionisation energy of K is 4.3eV what is electron affinity of fluorine?

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193. 1g of Mg atoms in the vapour phase absorbs 50.0KJ of energy find the percentage composition ofMg^+ and

Mg^{+2} formed as a result of absorption of energy IE_1 and IE_2 for Mg are 740 and $1450 kjmol^{-1}$ respectively

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194. The first ionisation energy of H and He are 13.6eV and 24.6eV respectively how much energy would be given out during the formation of ground state of He atom from $He^{2}+$ nucleus if combines with two electrons?

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195. The ionisation energy of lithium is 5.40eV if ionisation energy of H is 13.6 eV then calculate the effective charge action upon outermost electron of Li

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196. Calculate the electronegativity of fluorine from the following data $E_H - H = 104.2 K calmol^{-1}$, $E_F - F = 36.6 K calmol^{-1}$, $E_H - F = 134.6 K calmol^{)} - 1\Big)$

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197. Calculate the electronegativity gamma of silicon using alfred rochow eqaution:$\gamma = 0.359 \frac{Z}{r^2}(A) + 0.744$ where Z is Z_effective calculated on the basis of Slater's rule taking all the electrons covalent radius of Si=$1.175 \overset{o}{A}$

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198. In BI_3 molecule distance between two I atoms is found to be $3.54\overset{o}{A}$ also BI_3 has sp^2 hybridised Boron atom if radius of covalently bonded I atom is 1.33 what will be the covalent radius of Boron?

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199. Atomic radius of F_g and $F^-\_(g)$ are 72 and 136 pm respectively calculate the ratio and percentage increase I terms of volume during the formation of$F^-_(g)$ from `F_(g).

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200. Calculate the electronegativity value of chlorine in Muliken's scale given that IE_1 of Cl atom =13.0 eV and EA_1 of Cl atom=4.0eV

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201. The electron affinity of chlorine atom is 3.7eV how much energy in Kcal is released when 2g of chlorine is completely converted to Cl^- ion in a gaseous state?

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202. The ionic radii (in $\overset{o}{A}$)of N^{3-},O^{2-} and F^- are respectively

A. 1.36,1.71,and 1.40

B. 1.71,1.40 and 1.36

C. 1.71,1.36 and 1.40

D. 1.36,1.40 and 1.71

Answer:

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203. Amongst Be,B,Mg and Al the second ionization potential is maximum for

A. B

B. Be

C. Mg

D. Al

Answer:

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204. Ionization potential values of noble gases decrease down the group with increase in atomic size Xenon froms binary fluorides by the direct reaction of elements identify the correct statement(s) from below

A. only the heavier noble gases from such compounds

B. it happens because the noble gases have higher ionization energies

C. it happens because the compounds are formed with electronegativity ligands

D. octet of electrons provide the stable arrangements

Answer:

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205. The formation of the oxide ion $O^2 - (g)$ from oxygen atom requires first an exothermic and then an endothermic step as shown below: $O(g) + e^{\rightarrow} O^{-(g)}, \delta_t H = -1.41 kJmol^{-1}$, $O^{-(g)} + e^{-\rightarrow} O^2 - (g), \delta_t H = +1780 kjmol^{-1}$ thus process of formation of $O^2 -$ in gas phase is

unfavourable even though O^{2-} is isoelectronic with neon it is due to the fact that

A. electron repulsion outweighs the stability gained by achieving noble gas configuration

B. O^{-} ion has comparatively smaller size than oxygen atom

C. oxygen is more electronegative

D. Addition of electron in oxygen results in larger size of the ion

Answer:

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206. The correct arrrangement for the ions in the incresaing 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:

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207. For the properties mentioned below the correct trend for the different species is

A. strength as lewis acid-$BCl_3 > AlCl_3 > GaCl_3$

B. inert pair effect-$Al > Ga > In$

C. oxidising property-$Al^{3+} > In^{3+} > TI^{3+}$

D. first ionization enthalpy-$B > Al > TI$

Answer:

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208. Which of the following is a transition element as per the ground state electronic configuration?

A. Hg

B. Au

C. Cd

D. Zn

Answer:

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209. Which of the following option is the correct order for the basic strength of metallic hydroxides ?

A. $Ca(OH)_2 < Al(OH)_3 < Lu(OH)_3 < Ce(OH)_3$

B. $Al(OH)_3 < Lu(OH)_3 < Ce(OH)_3 < Ca(OH)_2$

C. $Lu(OH)_3 < Ce(OH)_3 < Al(OH)_3 < Ca(OH)_2$

D. $Lu(OH)_3 < Ce(OH)_3 < Ca(OH)_2 < Al(OH)_3$

Answer:

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210. The plot of square root of frequency of X ray emitted against atomic number led to suggestion of which law/rule?

A. periodic law

B. modern periodic law

C. Hund's rule

D. Newland's law

Answer:

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211. Amongst the following select the element having highest ionization enthalpy

A. sodium

B. potassium

C. berylium

D. magnesium

Answer:

Watch Video Solution

212. 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:

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213. Smallest among these species is

A. lithium

B. lithium ion

C. hydrogen

D. helium

Answer:

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214. Which among the following has the highest ionisation potential?

A. B

B. Li

C. Ne

D. F

Answer:

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215. Order of electron affinity of F,Cl,Br and I is

A. $F < Cl < Br < I$

B. $F < Cl < Br < I$

C. $F < Cl < Br < I$

D. $F > Cl < Br > I$

Answer:

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216. The correct order of electronegativity 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:

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217. The electron affinity of Be is almost similar to that of

A. Li

B. B

C. Na

D. Ne

Answer:

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218. bond order of 1.5 is shown by

A. O_2^+

B. O_2^-

C. O_2^{2-}

D. O_2

Answer:

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219. Which of the following species contains three bond pairs and one lone pair around the central atom?

A. H_2O

B. BF_3

C. NH_2^-

D. PCl_3

Answer:

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220. The pair of species with the same bond order is

A. $O_2^2 - , B_2$

B. O_2^+ , NO^+

C. NO,CO

D. N_2, O_2

Answer:

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221. Four diatomic species are listed identify the correct order in which the bond order is increasing in them

A. $NO < O_2^{\prec} C_2^2 \prec He_2^+$

B. $O_2 < NO < C_2^2 < He_2^+$

C. $C_2^2 \prec He_2^+ < O_2^\prec NO$

D. $He^+ < O_2^\prec NO < C_2^2 -$

Answer:

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

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

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

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

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

Answer:

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223. the strongest base of the following is

A. NaOH

B. KOH

C. LiOH

D. CsOH

Answer:

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224. The correct order of acidic strength is

A. $K_2O > CaO > Mgo$

B. $CO_2 > N_2O_5 > SO_3$

C. $Na_2O > MgO > AL_2O_3$

D. $Cl_2O_7 > SO_2 > P_4O_{10}$

Answer:

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225. Which of the following is not a periodic property?

A. atomic mass

B. atomic volume

C. covalent radii

D. electronegativity

Answer:

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226. The correct order of electronegativity of N,O,F and P is

A. $F > O > P > N$

B. $F > O > P > N$

C. $N > O > F > P$

D. $F > N > P > O$

Answer:

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227. The correct order of ionisation energy of C,N,O and F is

A. $C < N < O < F$

B. $C < O < N < F$

C. $N < C < O < F$

D. $C < N < F < O$

Answer:

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228. Berylium shows diagonal relationship with

A. B

B. Mg

C. Al

D. Na

Answer:

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229. Which of the following have the largest ionic size?

A. F^-

B. O^{2-}

C. Na^+`

D. Mg^{2+}

Answer:

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230. Which of the following is correct?

A. Radius of $Ca^{2+} < Cl^{-} < S^{2-}$

B. Radius of $Cl^{-} < S^{2-} < Ca^{2+}$

C. radius of $S^{2-} = Cl^{-} = Ca^{2+}$

D. radius of $S^{2-} < Cl^{-} < Ca^{2+}$

Answer:

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231. The electron affinity of halogens are F=322 Cl=349 Br=324,I=295kJ mol^{-1} the higher value for Cl as compared to that of F is due to

A. weaker electron electron repulsion in Cl

B. higher atomic radius of F

C. smaller electrnegativity of F

D. more vacant p subshell in Cl

Answer:

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232. Which on of the following pairs is isostructural (i.e.having the same shape and hybridisation)?

A. $[BCl_3 \text{ and } BrCl_3]$

B. $[NH_3 \text{ and } NO_3^-]$

C. $[NF_3 \text{ and } BF_3]$

D. $\left[BF_4^- \text{ and } NH_4^-\right]$

Answer:

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233. Which of the following statement is wrong?

A. the stability of hydrides increases from NH_3 to BiH_3` in group 15 of the periodic table

B. nitrogen can not form d pi -p pi bond

C. single N-N bond is weaker than the single P-P bond

D. N_2O_4 has two resonance structure

Answer:

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234. Which one of the following orders presents to the correct sequences of the increasing basic nature of the given oxides

A. $Al_2O_3 < MgO < Na_2O < K_2O$

B. $MgO < K_2O < Al_2O_3 < Na_2O$

C. $Na_2O < K_2O < MgO < Al_2O_3$

D. $K_2O < Na_2O < Al_2O_3 < MgO$

Answer:

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235. The correct order of electron gain enthalpy with negatives sign of F,Cl,br and I having atomic number 9,17,35 and 53 respectively is

A. $Cl > F > Br > I$

B. $F > Cl > Br > I$

C. $I > Br > Cl > F$

D. $I > Br > F > Cl$

Answer:

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236. Be and Al exhibit diagonal relationship which of the following statements about them is/are not true

A. both react with HCl to liberate H_2

B. They are made passive by HNO_3

C. their carbides given acetylene on treatment with water

D. their oxides are amphoteric

Answer:

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237. The correct decreasing order of first ionisation enthalpies of five elements of the second period is

A. $Be > B > C > N > F$

B. $N > F > C > B > Be$

C. $F > N > C > Be > B$

D. $N > F > B > C > Be$

Answer:

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238. The number of naturally occuring p block elements that are diamagnetic is

A. 18

B. 6

C. 5

D. 7

Answer:

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239. Which one of the following has the lowest ionisation energy?

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

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

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

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

Answer:

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240. The bond enthalpy is the highest for

A. F_2

B. Cl_2

C. Br_2

D. I_2

Answer:

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241. The increasing order of the density of alkali metals is

A. $Li < K < Na < Rb < Cs$

B. $Li < Na < K < Rb < Cs$

C. $Cs < Rb < Na < K < Li$

D. $Cs < Rb < K < Na < Li$

Answer:

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242. The correct order of decreasing electronegativity values among the element I-beryllium,II-oxygen III-nitrogen and IV-magnesium is

A. $II > III > I > IV$

B. $III > IV > II > I$

C. $I > II > III > IV$

D. $I > II > IV > III$

Answer:

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