Quiz: Classification of Elements & Periodicity 1

Q1: Which of the following properties generally increases along a period from left to right?

A) Atomic radius
B) Metallic character
C) Ionisation enthalpy
D) Basicity of oxides

Q2: The correct order of increasing atomic radius is:

A) F < O < N < C
B) C < N < O < F
C) N < O < C < F
D) O < F < N < C

Q3: Which of the following has the highest first ionisation enthalpy?

A) Na
B) Mg
C) Al
D) Si

Q4: The element with the most negative electron gain enthalpy is:

A) F
B) Cl
C) O
D) S

Q5: Which of the following is the largest atom?

A) Li
B) Na
C) K
D) Rb

Q6: Which element shows anomalous behaviour among alkali metals?

A) Na
B) K
C) Li
D) Rb

Q7: The correct order of increasing metallic character is:

A) Na < Mg < Al < Si
B) Si < Al < Mg < Na
C) Mg < Al < Na < Si
D) Al < Mg < Si < Na

Q8: Which of the following elements has the highest electronegativity?

A) O
B) N
C) F

D) Cl

Q9: Which of the following ions has the smallest radius?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) Si^{4+}

Q10: Which of the following elements belongs to the p-block?

A) Sc
B) Zn
C) Ga
D) Fe

Q11: The atomic radius of noble gases is generally measured as:

A) Covalent radius
B) Metallic radius
C) van der Waals radius
D) Ionic radius

Q12: Which of the following has the highest electron gain enthalpy (most negative)?

A) S
B) O
C) Cl
D) F

Q13: Which of the following is a diagonal relationship pair?

A) Li and Mg
B) Be and Al
C) B and Si
D) All of these

Q14: The correct order of increasing first ionisation enthalpy is:

A) B < Be < C < N
B) Be < B < C < N
C) B < C < Be < N
D) C < B < Be < N

Q15: Which of the following oxides is most acidic?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q16: Which of the following elements has the highest atomic volume?

A) Na
B) Mg
C) Al
D) Si

Q17: The shielding effect increases on moving:

A) Across a period
B) Down a group
C) From right to left in a period
D) From bottom to top in a group

Q18: Which of the following has the highest melting point?

A) Na
B) Mg
C) Al
D) Si

Q19: Which element has the smallest atomic radius in the second period?

A) B
B) C
C) N
D) F

Q20: Which of the following elements has the least metallic character?

A) Na
B) Mg
C) Al
D) Cl

Q21: Which of the following is the correct order of increasing electronegativity?

A) Al < Mg < Si < P
B) Mg < Al < Si < P
C) Al < Si < Mg < P
D) Si < Al < Mg < P

Q22: The element with the highest second ionisation enthalpy is:

A) Na
B) Mg
C) Al
D) Si

Q23: Which of the following pairs is isoelectronic?

A) Na+ and Ne
B) Mg2+ and Ar
C) O2- and Ne
D) All of these

Q24: Which group of elements has zero electron affinity?

A) Halogens
B) Alkali metals
C) Noble gases
D) Chalcogens

Q25: The strongest reducing agent among the following is:

A) Li
B) Na
C) K
D) Rb

Q26: Which of the following elements forms an amphoteric oxide?

A) Na
B) Mg
C) Al
D) Si

Q27: Which of the following has the highest polarising power?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) K^+

Q28: The correct order of increasing ionic radius is:

A) $F^- < O^{2-} < N^{3-}$
B) $N^{3-} < O^{2-} < F^-$
C) $O^{2-} < F^- < N^{3-}$
D) $F^- < N^{3-} < O^{2-}$

Q29: Which of the following elements shows maximum covalent character?

A) Na
B) Mg
C) Al
D) Si

Q30: Which of the following is the most reactive halogen?

A) Cl
B) Br
C) I
D) F

Q31: Which of the following elements has the highest density?

A) Na
B) Mg
C) Al
D) Si

Q32: Which of the following has the lowest first ionisation enthalpy?

A) Li
B) Na
C) K
D) Rb

Q33: The element which forms the most basic oxide is:

A) Na
B) Mg
C) Al
D) Si

Q34: Which of the following elements has the highest electron affinity?

A) O
B) S
C) Cl
D) Br

Q35: Which element has the greatest tendency to form cations?

A) Na
B) Mg
C) Al
D) Si

Q36: Which of the following shows the greatest diagonal relationship?

A) Li and Be
B) Be and Al
C) B and C
D) C and N

Q37: Which of the following elements shows maximum non-metallic character?

A) N
B) O
C) F
D) Cl

Q38: The correct order of decreasing atomic size is:

A) Na > Mg > Al > Si
B) Mg > Na > Al > Si
C) Si > Al > Mg > Na
D) Al > Mg > Na > Si

Q39: Which of the following has the maximum lattice energy?

A) NaCl
B) MgO
C) KBr
D) CaF2

Q40: Which of the following statements is correct regarding periodic trends?

A) Electron affinity increases down a group
B) Ionisation enthalpy decreases across a period
C) Atomic radius decreases across a period
D) Metallic character increases across a period

Q41: Which of the following factors is mainly responsible for the increase in ionisation enthalpy across a period?

A) Increase in atomic radius
B) Decrease in nuclear charge
C) Increase in effective nuclear charge
D) Increase in shielding effect

Q42: Which of the following pairs represents elements with similar chemical properties?

A) Na and Mg
B) Be and Al
C) C and N
D) O and F

Q43: The correct order of decreasing first ionisation enthalpy is:

A) N > O > C > B
B) O > N > C > B
C) N > C > O > B
D) C > N > O > B

Q44: Which of the following elements has the highest electron affinity in the second period?

A) C
B) N
C) O
D) F

Q45: Which of the following ions has the largest size?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) O^{2-}

Q46: Which element shows the maximum metallic character in group 13?

A) B
B) Al
C) Ga
D) Tl

Q47: The atomic radius of elements generally increases:

A) Across a period
B) Down a group
C) From right to left in a period
D) Both B and C

Q48: Which of the following elements has the lowest electronegativity?

A) Li
B) Na
C) K
D) Cs

Q49: Which of the following oxides is amphoteric?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q50: The most acidic oxide among the following is:

A) CO_2
B) SiO_2
C) P_2O_5
D) SO_3

Q51: Which of the following elements has the highest polarising power in its cationic form?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) K^+

Q52: Which of the following species has the highest lattice energy?

A) NaCl
B) KCl
C) MgO
D) CaO

Q53: Which element shows the greatest tendency to gain electrons?

A) O
B) S
C) Cl
D) Br

Q54: Which of the following isoelectronic species has the smallest radius?

A) N^{3-}
B) O^{2-}
C) F^-
D) Ne

Q55: Which of the following elements has the highest second ionisation enthalpy?

A) Li
B) Be
C) B
D) C

Q56: The diagonal relationship is most prominent between:

A) Li and Na
B) Be and Al
C) B and C
D) Mg and Ca

Q57: Which of the following elements has the highest non-metallic character?

A) O
B) N
C) F
D) Cl

Q58: Which of the following has the lowest boiling point?

A) Ne
B) Ar
C) Kr
D) Xe

Q59: Which of the following elements has the highest atomic number?

A) Cl
B) Ar
C) K
D) Ca

Q60: The metallic character of elements generally increases:

A) Across a period
B) Down a group
C) From left to right in a period
D) From top to bottom in a period

Q61: Which of the following shows the highest covalent character in its compounds?

A) Na
B) Mg
C) Al
D) Si

Q62: Which element shows the greatest shielding effect?

A) Li
B) Na
C) K
D) Rb

Q63: Which of the following oxides is the most basic?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q64: Which of the following elements has the highest melting point?

A) Na
B) Mg
C) Al
D) Si

Q65: Which of the following has the highest density?

A) Li
B) Na
C) K
D) Cs

Q66: Which of the following ions has the highest charge density?

A) Na+
B) Mg2+
C) Al3+
D) K+

Q67: Which of the following shows the highest electron affinity?

A) F
B) Cl
C) Br
D) I

Q68: Which of the following elements has the largest atomic radius?

A) Be
B) Mg
C) Ca
D) Sr

Q69: Which of the following elements forms acidic oxides?

A) Na
B) Mg
C) Al
D) Cl

Q70: The element with the smallest atomic radius in group 16 is:

A) O
B) S
C) Se
D) Te

Q71: Which of the following pairs is isoelectronic?

A) Na+ and Ne
B) Mg2+ and Ne
C) F- and Ne
D) All of these

Q72: Which of the following has the lowest first ionisation enthalpy?

A) Be
B) Mg
C) Ca
D) Sr

Q73: Which of the following elements shows maximum basic character in group 2?

A) Be
B) Mg
C) Ca
D) Ba

Q74: Which of the following elements has the highest electronegativity in period 3?

A) Na
B) Mg
C) Si
D) Cl

Q75: Which of the following ions is the smallest?

A) Na+
B) Mg2+
C) Al3+
D) Si4+

Q76: Which element shows the strongest metallic bonding?

A) Na
B) Mg
C) Al
D) Si

Q77: Which of the following statements is correct?

A) Electron affinity increases down a group
B) Ionisation enthalpy increases down a group
C) Atomic radius decreases across a period
D) Metallic character increases across a period

Q78: Which of the following elements forms the strongest acidic oxide?

A) C
B) N
C) P
D) S

Q79: Which of the following has the highest hydration enthalpy?

A) Na+
B) Mg2+
C) Al3+
D) K+

Q80: Which of the following best explains periodicity in properties of elements?

A) Atomic mass
B) Atomic number
C) Valency
D) Density

Q81: Which of the following factors is primarily responsible for periodicity in properties of elements?

A) Atomic mass
B) Atomic number
C) Atomic volume
D) Density

Q82: Which element shows an exception to the general trend of first ionisation enthalpy in period 2?

A) Be
B) B
C) C
D) N

Q83: Which of the following has lower first ionisation enthalpy than oxygen?

A) Nitrogen
B) Fluorine
C) Sulfur
D) Neon

Q84: Which of the following species has the maximum size?

A) Cl^-
B) K^+
C) Ar
D) Ca^{2+}

Q85: Which of the following elements has the highest electron gain enthalpy (most negative)?

A) O
B) S
C) Cl
D) F

Q86: Which of the following groups shows the maximum variation in atomic size?

A) Group 1
B) Group 2
C) Group 17
D) Group 18

Q87: Which of the following oxides is amphoteric in nature?

A) MgO
B) Al_2O_3
C) SiO_2
D) Na_2O

Q88: Which of the following ions has the highest polarising power?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) K^+

Q89: Which element shows maximum covalent character in period 3?

A) Na
B) Mg
C) Al
D) Si

Q90: Which of the following has the lowest boiling point?

A) He
B) Ne
C) Ar
D) Kr

Q91: Which of the following elements shows the highest non-metallic character?

A) N
B) O
C) F
D) Cl

Q92: Which of the following pairs shows diagonal relationship?

A) Li and Mg
B) Be and Al
C) B and Si
D) All of these

Q93: Which of the following elements has the maximum metallic character?

A) Cs
B) Na
C) Li
D) K

Q94: Which of the following ions has the smallest radius?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) Si^{4+}

Q95: Which element has the highest second ionisation enthalpy?

A) Na
B) Mg
C) Al
D) Si

Q96: Which of the following oxides is the most acidic?

A) CO_2
B) SO_2
C) SO_3
D) P_2O_5

Q97: Which of the following elements has the highest density?

A) Li
B) Na
C) K
D) Cs

Q98: Which of the following shows maximum shielding effect?

A) Li
B) Na
C) K
D) Rb

Q99: Which of the following elements forms the strongest basic oxide?

A) Na
B) Mg
C) Al
D) Si

Q100: Which of the following has the highest lattice energy?

A) NaCl
B) KBr
C) MgO
D) CaF2

Q101: Which of the following elements shows the least electronegativity?

A) Li
B) Na
C) K
D) Rb

Q102: Which of the following elements has the smallest atomic radius in period 3?

A) Na
B) Mg
C) Si
D) Cl

Q103: Which of the following elements has the highest melting point?

A) Na
B) Mg
C) Al
D) Si

Q104: Which of the following statements is correct?

A) Electron affinity decreases across a period
B) Atomic radius increases across a period
C) Ionisation enthalpy decreases down a group
D) Metallic character decreases down a group

Q105: Which of the following elements has maximum electron affinity?

A) F
B) Cl
C) Br
D) I

Q106: Which of the following elements forms amphoteric hydroxide?

A) Na
B) Mg
C) Al
D) Si

Q107: Which of the following ions is largest in size?

A) F-
B) Cl-
C) Br-
D) I-

Q108: Which of the following elements has the highest ionisation enthalpy?

A) He
B) Ne
C) Ar
D) Kr

Q109: Which of the following oxides is neutral?

A) CO
B) SO2
C) NO2
D) P2O5

Q110: Which of the following has the greatest tendency to form cations?

A) Na
B) Mg
C) Al
D) Si

Q111: Which of the following shows the highest covalent character in its chloride?

A) NaCl
B) MgCl2
C) AlCl3
D) SiCl4

Q112: Which element shows the strongest diagonal relationship with lithium?

A) Be
B) Mg
C) Na
D) Al

Q113: Which of the following has the maximum hydration enthalpy?

A) Na+
B) Mg2+
C) Al3+
D) K+

Q114: Which of the following elements shows the least basic oxide?

A) Na
B) Mg
C) Al
D) Si

Q115: Which of the following ions is isoelectronic with Ar?

A) Cl-
B) K+
C) Ca2+
D) All of these

Q116: Which of the following elements shows the highest shielding effect?

A) Be
B) Mg
C) Ca
D) Sr

Q117: Which of the following elements has the highest boiling point?

A) O2
B) N2
C) F2
D) Cl2

Q118: Which of the following shows maximum non-metallic character in group 16?

A) O
B) S
C) Se
D) Te

Q119: Which of the following elements has the highest density in period 3?

A) Na
B) Mg
C) Al
D) Si

Q120: Which of the following best explains the decrease in atomic radius across a period?

A) Increase in shielding effect
B) Decrease in nuclear charge
C) Increase in effective nuclear charge
D) Increase in atomic mass

Q121: Which of the following factors causes the anomalously low first ionisation enthalpy of oxygen compared to nitrogen?

A) Smaller atomic size of oxygen
B) Higher electronegativity of oxygen
C) Electron-electron repulsion in paired p-orbitals
D) Lower nuclear charge of oxygen

Q122: Which element shows the maximum jump between first and second ionisation enthalpy?

A) Na
B) Mg
C) Al
D) Si

Q123: Which of the following species has the smallest radius?

A) O^{2-}
B) F^-
C) Na^+
D) Mg^{2+}

Q124: Which of the following best explains the diagonal relationship between Li and Mg?

A) Similar atomic masses
B) Similar electronegativity
C) Similar charge density of ions
D) Same valency

Q125: Which of the following elements has the highest electron affinity among group 16 elements?

A) O
B) S
C) Se
D) Te

Q126: Which of the following trends is correct for alkali metals down the group?

A) Ionisation enthalpy increases
B) Atomic radius decreases
C) Hydration enthalpy decreases
D) Electronegativity increases

Q127: Which of the following oxides shows both acidic and basic character?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q128: Which of the following ions has the highest polarising power according to Fajan's rule?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) Ca^{2+}

Q129: Which element shows the highest non-metallic character in period 3?

A) P
B) S
C) Cl
D) Si

Q130: Which of the following has the lowest melting point?

A) Na
B) Mg
C) Al
D) Si

Q131: Which of the following species has zero electron affinity?

A) N
B) O
C) Ne
D) F

Q132: Which of the following shows the highest covalent character in its chloride?

A) NaCl
B) MgCl2
C) AlCl3
D) SiCl4

Q133: Which of the following elements forms the strongest basic hydroxide?

A) Li
B) Na
C) K
D) Cs

Q134: Which of the following ions has the highest hydration enthalpy?

A) Na+
B) Mg2+
C) Al3+
D) K+

Q135: Which of the following best explains the decrease in electronegativity down a group?

A) Increase in nuclear charge
B) Increase in atomic size
C) Increase in electron affinity
D) Decrease in shielding effect

Q136: Which of the following elements shows maximum diagonal relationship with aluminium?

A) Be
B) B
C) Ga
D) Mg

Q137: Which of the following elements has the highest lattice energy in its oxide?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q138: Which of the following ions is largest in size?

A) F^-
B) Cl^-
C) Br^-
D) I^-

Q139: Which of the following elements has the highest ionisation enthalpy in period 3?

A) Na
B) Mg
C) Al
D) Ar

Q140: Which of the following oxides is most acidic?

A) CO_2
B) N_2O_5
C) SO_3
D) P_4O_{10}

Q141: Which of the following best explains the increase in metallic character down a group?

A) Increase in electronegativity
B) Increase in ionisation enthalpy
C) Increase in atomic radius
D) Decrease in shielding effect

Q142: Which of the following elements forms covalent hydrides most readily?

A) Na
B) Mg
C) Al
D) Si

Q143: Which of the following elements has the maximum shielding effect in period 3?

A) Na
B) Mg
C) Al
D) Cl

Q144: Which of the following elements has the highest density in group 1?

A) Li
B) Na
C) K
D) Cs

Q145: Which of the following elements shows maximum acidic character in its oxide?

A) C
B) N
C) P
D) S

Q146: Which of the following has the smallest ionic radius?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) Si^{4+}

Q147: Which of the following elements shows anomalous behaviour in group 2?

A) Mg
B) Ca
C) Be
D) Sr

Q148: Which of the following elements has the highest boiling point in group 17?

A) F_2
B) Cl_2
C) Br_2
D) I_2

Q149: Which of the following oxides is neutral?

A) CO
B) SO_2
C) NO_2
D) P_2O_5

Q150: Which of the following ions is isoelectronic with Ne?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) All of these

Q151: Which of the following elements has the highest electron affinity in period 2?

A) C
B) N
C) O
D) F

Q152: Which of the following shows the strongest basic oxide?

A) Na_2O
B) MgO
C) Al_2O_3
D) SiO_2

Q153: Which of the following elements shows maximum metallic character in period 3?

A) Na
B) Mg
C) Al
D) Si

Q154: Which of the following factors most affects electron affinity?

A) Atomic size
B) Shielding effect
C) Nuclear charge
D) All of these

Q155: Which of the following has the highest first ionisation enthalpy?

A) Be
B) B
C) C
D) N

Q156: Which of the following ions has the lowest hydration enthalpy?

A) Li+
B) Na+
C) K+
D) Mg2+

Q157: Which of the following elements shows maximum covalent character in group 14?

A) C
B) Si
C) Ge
D) Sn

Q158: Which of the following has the maximum lattice energy?

A) NaCl
B) KCl
C) MgO
D) CaO

Q159: Which of the following best explains the periodic recurrence of properties?

A) Atomic mass
B) Atomic number
C) Valency
D) Density

Q160: Which of the following statements is correct?

A) Electron affinity decreases across a period
B) Atomic radius increases across a period
C) Ionisation enthalpy decreases down a group
D) Metallic character increases across a period

Q161: Which of the following explains why fluorine has lower electron affinity than chlorine?

A) Lower nuclear charge of fluorine
B) Smaller atomic size of fluorine
C) Greater inter-electronic repulsion in fluorine
D) Lower electronegativity of fluorine

Q162: Which element shows the maximum discontinuity in atomic radius within the same period?

A) Be to B
B) Mg to Al
C) N to O
D) All of these

Q163: Which of the following species has the smallest size?

A) O^{2-}
B) F^-
C) Ne
D) Na^+

Q164: Which of the following factors mainly stabilises the noble gas configuration?

A) Maximum atomic volume
B) Minimum nuclear charge
C) Fully filled valence shell
D) High density

Q165: Which element of group 15 has the highest electron gain enthalpy?

A) N
B) P
C) As
D) Sb

Q166: Which of the following trends is correct down group 2?

A) Ionisation enthalpy increases
B) Atomic radius decreases
C) Basicity of hydroxides increases
D) Covalent character increases

Q167: Which oxide shows maximum amphoteric character?

A) BeO
B) MgO
C) Al_2O_3
D) ZnO

Q168: Which ion has the maximum polarising power?

A) Na^+
B) Mg^{2+}
C) Al^{3+}
D) Be^{2+}

Q169: Which of the following elements shows maximum metallic character in period 4?

A) K
B) Ca
C) Sc
D) Ti

Q170: Which of the following has the lowest hydration enthalpy?

A) Li+
B) Na+
C) K+
D) Mg2+

Q171: Which of the following has the highest ionisation enthalpy in period 2?

A) B
B) C
C) N
D) O

Q172: Which of the following elements forms the most acidic oxide?

A) C
B) N
C) S
D) P

Q173: Which of the following species is isoelectronic with Ar?

A) Cl-
B) K+
C) Ca2+
D) All of these

Q174: Which element shows the greatest deviation from periodic trend of ionisation enthalpy?

A) B
B) O
C) Al
D) All of these

Q175: Which element has the highest atomic radius in period 3?

A) Na
B) Mg
C) Al
D) Si

Q176: Which of the following elements shows maximum non-metallic character in group 17?

A) F
B) Cl
C) Br
D) I

Q177: Which of the following ions has the greatest charge density?

A) Na+
B) Mg2+
C) Al3+
D) Be2+

Q178: Which oxide is the least basic?

A) Na2O
B) MgO
C) Al2O3
D) SiO2

Q179: Which of the following shows maximum lattice energy?

A) NaCl
B) MgO
C) CaF2
D) KBr

Q180: Which of the following elements has the highest density in period 4?

A) K
B) Ca
C) Sc
D) Zn

Q181: Which of the following best explains the periodic law?

A) Properties depend on atomic mass
B) Properties depend on atomic number
C) Properties depend on atomic volume
D) Properties depend on density

Q182: Which of the following elements has the highest melting point in period 3?

A) Na
B) Mg
C) Al
D) Si

Q183: Which of the following elements forms the weakest base in group 1?

A) Li
B) Na
C) K
D) Cs

Q184: Which element shows maximum diagonal relationship with silicon?

A) Al
B) B
C) C
D) P

Q185: Which of the following has the highest electron affinity?

A) F
B) Cl
C) Br
D) I

Q186: Which of the following shows the strongest reducing nature in aqueous solution?

A) Li
B) Na
C) K
D) Rb

Q187: Which of the following elements forms covalent hydrides?

A) Na
B) Mg
C) Al
D) Si

Q188: Which ion has the smallest hydration enthalpy?

A) Li+
B) Na+
C) K+
D) Mg2+

Q189: Which element shows maximum acidic character in group 16?

A) O
B) S
C) Se
D) Te

Q190: Which of the following oxides is neutral?

A) CO
B) SO2
C) NO2
D) P2O5

Q191: Which of the following elements has the lowest electronegativity?

A) Li
B) Na
C) K
D) Cs

Q192: Which of the following elements has the highest ionisation enthalpy?

A) He
B) Ne
C) Ar
D) Kr

Q193: Which of the following ions is largest in size?

A) Na+
B) Mg2+
C) Al3+
D) Si4+

Q194: Which element shows maximum covalent character in group 13?

A) B
B) Al
C) Ga
D) In

Q195: Which of the following has the highest boiling point among noble gases?

A) Ne
B) Ar
C) Kr
D) Xe

Q196: Which factor is mainly responsible for diagonal relationship?

A) Same valency
B) Similar atomic size
C) Similar charge density
D) Same atomic mass

Q197: Which element has the highest hydration enthalpy?

A) Li+
B) Na+
C) K+
D) Rb+

Q198: Which oxide has the strongest acidic nature?

A) CO2
B) SO2
C) SO3
D) N2O5

Q199: Which element shows the greatest tendency to form anions?

A) O
B) S
C) Cl
D) F

Q200: Which of the following best explains the cause of periodicity?

A) Atomic mass
B) Atomic number
C) Valence electrons
D) Nuclear charge