



CHEMISTRY

BOOKS - MTG WBJEE CHEMISTRY (HINGLISH)

THE PERIODIC TABLE AND CHEMICAL FAMILIES

**Wb Jee Workout Category 1 Single Option Correct
Type**

1. In a given shell the order of screening effect is

A. $s > p > d > f$

B. $s > p > f > d$

C. $f > d > p > s$

D. $s < p < d < f$

Answer: A



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2. Which of the following elements will show only +3 oxidation state?

A. Sn

B. Tl

C. Pb

D. In

Answer: D



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3. Identify the least stable ion amongst the following .

A. Li^-

B. Be^-

C. B^-

D. C^-

Answer: B



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4. The atomic numbers of other elements which lie in same group as the tenth element in the periodic table are

A. 18, 32, 54, 86

B. 8, 18, 36, 84

C. 2, 18, 30, 36

D. 2, 18, 36, 54

Answer: D



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5. Without consulting the periodic table select from each of the following sets, the elements belonging to same group of the periodic table.

A. Z = 31, 13, 81, 50

B. Z = 12, 38, 4, 88

C. $Z = 11, 3, 20, 37$

D. $Z = 21, 39, 90, 57$

Answer: B



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6. The ionization potential of nitrogen is more than that of oxygen because of

A. the greater attraction of the electrons by the nucleus

B. the extra stability of the half filled p-orbitals.

C. the smaller size nitrogen

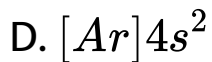
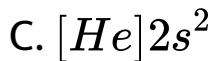
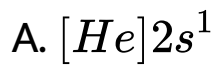
D. more penetration effect.

Answer: B



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7. Which one of the following represents the electronic configuration of the most electropositive elements?



Answer: B



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8. The maximum valency of halogen group with respect to oxygen is

A. 1

B. 5

C. 6

D. 7

Answer: D



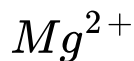
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9. Al^{3+} has a lower radius than Mg^{2+} ion because

A. Mg atom has less number of neutron than

Al

B. Al^{3+} has higher nuclear charge than



C. their electronegatives are different

D. Al has a lower ionization potential than Mg atom.

Answer: B



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10. The statement that is not correct for the periodic classification of element is

- A. the properties of the elements are the periodic function of their atomic numbers
- B. non-metallic elements are lesser in number than metallic elements
- C. the first ionization energies of elements along a period do not vary in a regular manner with increase in atomic number
- D. for transition elements the d-sub-shells are filled with elements monotonically with increase in atomic numbers.

Answer: D



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11. Eka - aluminium and Eka-silicon are known as $4d^{10}5s^0$. It belongs to

- A. gallium and germanium
- B. aluminium and silicon
- C. iron and sulphur
- D. proton and silicon

Answer: A



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12. Pd has exceptional outer electronic configuration as $4d^{10}5s^0$. It belongs to

- A. 4th period, group 11
- B. 5th period, group 10
- C. 6th period, group 9
- D. 3rd period, group 16

Answer: B



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13. Which of the following elements belong to the f-block elements?

A. W

B. Re

C. Eu

D. Ir

Answer: C



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14. Element with atomic number 56 belongs to which block?

A. s

B. p

C. d

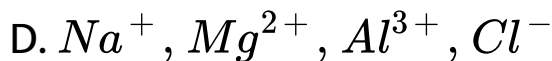
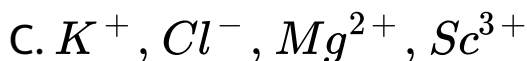
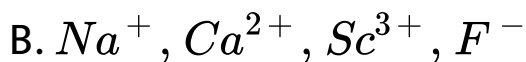
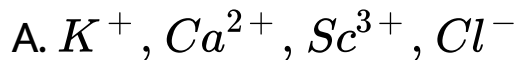
D. f

Answer: A



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



Answer: A



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16. The correct order of I^{st} ionisation potential among following elements Be, B, C, N, O is

A. B lt Be lt C lt O lt N

B. B lt Be lt C lt N lt O

C. Be lt B lt C lt N lt O

D. Be lt B lt C lt O lt N

Answer: A



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17. The set representing the correct order of first ionization potential is

A. $K > Na > Li$

B. $Be > Mg > Ca$

C. $B > C > N$

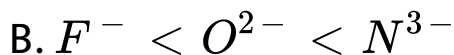
D. $Ge > Si > C$

Answer: B



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18. The correct order of radii is



Answer: B



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19. The correct statement about d-block elements is

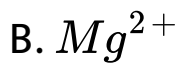
- A. they are all metals
- B. they show variable valency
- C. they form coloured ions and complex salts
- D. all the above statements are correct

Answer: D



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20. Which of the following is the smallest cation?



Answer: D



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21. The first ionisation energy of Na , Mg , Al and Si are in the order

A. $Na < Mg > Al < Si$

B. $Na > Mg > Al > Si$

C. $Na > Mg > Al > Si$

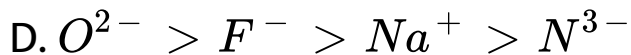
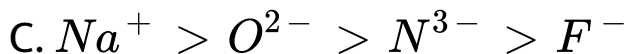
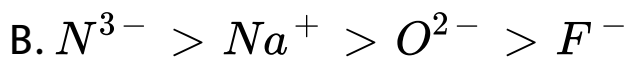
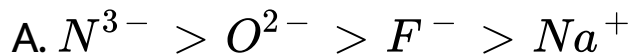
D. $Na < Mg < Al < Si$

Answer: A



View Text Solution

22. The ionic radii of N^{3-} , O^{2-} , F^{-} and Na^{+} follows the order



Answer: A



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23. The elements in which 4f-orbitals are progressively filled are called

- A. actinides
- B. transition elements
- C. lanthanides
- D. halogens

Answer: C



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24. Which of the following pairs is isoelectronic?

A. Ar and Cl

B. Na^+ and Ne

C. Na^+ and Mg

D. Mg and Ne

Answer: B



View Text Solution

25. Which of the following has least electron affinity ?

A. Oxygen

B. Argon

C. Nitrogen

D. Boron

Answer: B



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26. The first ionization energy will be maximum for

A. uranium

B. hydrogen

C. lithium

D. iron

Answer: B



View Text Solution

27. The bond length in LiF will be

A. less than that of NaF

B. equal to that of KF

C. more than that of KF

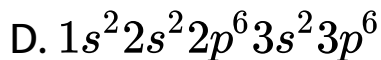
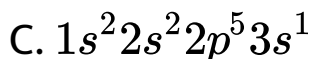
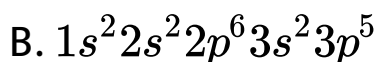
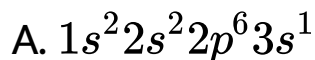
D. equal to that of NaF.

Answer: A



View Text Solution

28. Electronic configuration of most electronegative elements is



Answer: C



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29. Point out the wrong statement, in a given period of the periodic table, the s-block elements has, in general, a lower value of

- A. electronegativity
- B. Atomic radius
- C. ionization energy
- D. electron affinity

Answer: B



View Text Solution

30. Correct order of electron affinity of the halogen atoms is

A. $F < Cl < Br < I$

B. $F < Cl \sim Br > I$

C. $F > Cl > Br > I$

D. $F > Cl > Br > I$

Answer: D



View Text Solution

Wb Jee Workout Category 2 Single Option Correct Type

1. The sizes of A , A^+ and A^- follows the order

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

B. $A^- > A^+ > A$

C. $A^- > A > A^+$

D. $A > A^- > A^+$

Answer: C



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2. The incorrect statement for the long form of the periodic table is

- A. it reflects the sequence of filling the electrons in the order of sub-energy levels s, p, d and f
- B. it helps to predict the stable valency states of the elements
- C. it reflects trends in physical and chemical properties of the elements

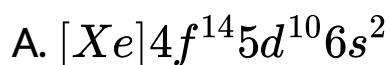
D. it helps to predict the relative ionic character of the bond between any two elements.

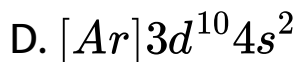
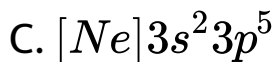
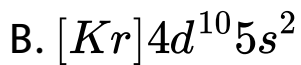
Answer: D



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3. The electronic configuration of four elements are given below. Which element does not belong to the same family as others?





Answer: C



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4. In a period, elements are arranged strictly in sequence of

A. decreasing charges in the nucleus

B. increasing charges in the nucleus

C. constant charges in the nucleus

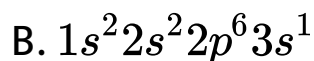
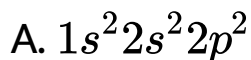
D. equal charges in the nucleus

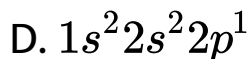
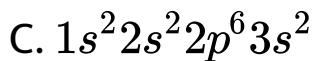
Answer: B



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5. Which of the following structures is associated with the biggest jump between the second and third ionization energies?



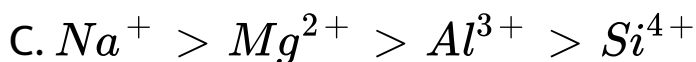
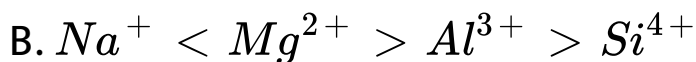
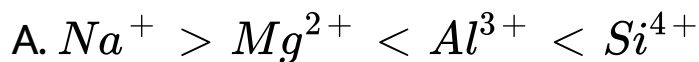


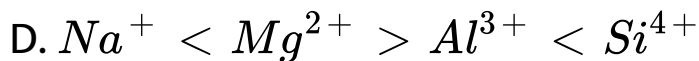
Answer: C



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6. Na^+ , Mg^{2+} , Al^{3+} and Si^{4+} are isoelectronic. The order of their ionic size is





Answer: C



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7. Mercury is the one metal which is liquid at room temperature. This is due to its

- A. very high ionization energy and weak metallic bond
- B. low ionization potential
- C. high atomic weight

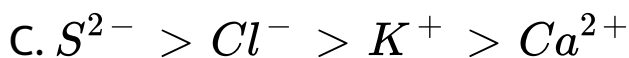
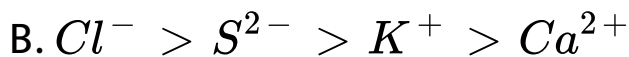
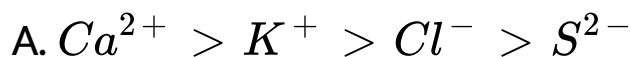
D. high vapour pressure

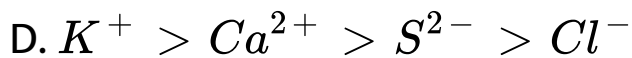
Answer: A



View Text Solution

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





Answer: C



View Text Solution

9. Consider the following statements :

I. The radius of an atom anion is larger than that of the parent atom .

II. The ionization energy generally increases with increasing atomic number in a period.

III. The electronegativity of an element is the tendency of an isolated atom to attract an

electron.

Which of the above statement is/are correct?

A. I alone

B. II alone

C. I and II

D. II and III

Answer: C



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10. The ionization enthalpies of lithium and sodium are 520kJmol^{-1} and 495kJmol^{-1} respectively. The energy required to convert all the atoms present in 7 mg of lithium vapours and 23 mg of sodium vapours of their respective gaseous cations respectively are

A. 52 J, 49.5 J

B. 520 J, 495 J

C. 49.5 J, 52 J

D. 495 J, 520 J

Answer: B



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11. The first ionisation potential of Mg , Al , P and S follows the order

A. $Mg < Al < P < S$

B. $Al < Mg < P < S$

C. $Al < Mg < S < P$

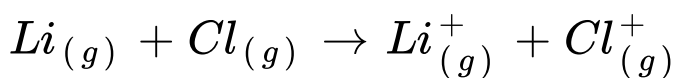
D. $Mg < Al < S < P$

Answer: C



[View Text Solution](#)

12. The first ionisation energy for Li is $5.4eV$ and electron affinity of Cl is $3.61 eV$. The ΔH (in kJ/mol) for the reaction,



If the resulting ions do not combine with each other is ($1eV = 1.6 \times 10^{-19} J$)

- A. 70
- B. 100.5
- C. 172.5
- D. 270

Answer: C



View Text Solution

13. Two elements whose electronegativities are 1.2 and 3.0 and the bond formed between them would be

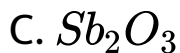
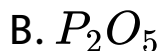
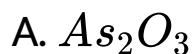
- A. ionic
- B. covalent
- C. coordinate
- D. metallic

Answer: A



View Text Solution

14. Of the following compounds the most acidic is



Answer: B



View Text Solution

15. In a periodic table the basic character of oxides

A. increases from left to right and decreases from top to bottom

B. decreases from right to left and increase from top to bottom

C. decreases from left to right and increases from top to bottom

D. decreases from left to right and increases from bottom to top.

Answer: C



View Text Solution

Wb Jee Workout Category 3 One Or More Than One Option Correct Type

1. Elements X, Y and Z have atomic numbers 19,37 and 55 respectively. Which of the following statements is/are true about them ?

- A. Their ionization potential would increase with increasing atomic number
- B. Y would have an ionization potential between those of X and Z
- C. Z would have the highest ionization potential
- D. Y would have the highest ionization potential.

Answer: B



View Text Solution

2. Aqueous solutions of two compounds $M - O - H$ and $M' - O - H$ have been prepared in two different beakers. If the electronegativity of $M = 3.5$, $M' = 1.72$, $O = 3.0$ and $H = 2.1$, then the solution respectively are

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

Answer: B



3. The incorrect statement(s) among the following is/are

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

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

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

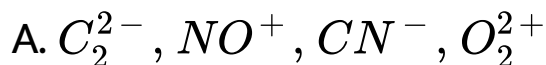
D. The third ionization potential of Mg is greater than the third ionization potential of Al.

Answer: B



View Text Solution

4. Set containing isoelectronic species is/are



C. CO_2 , NO_2 , O_2 , N_2O_5

D. CO , CO_2 , NO , NO_2

Answer: A



View Text Solution

5. The electronic configuration elements A, B and C are $[He]2s^1$, $[Ne]3s^1$ and $[Ar]4s^1$ respectively.

Which one of the following order is/are correct

for. I. E_1 . (in $kgmol^{-1}$) of A, B and C ?

A. A gt B gt C

B. $C > B > A$

C. $B > C > A$

D. $C > A > B$

Answer: A



View Text Solution

6. Sodium sulphate is soluble in water whereas barium sulphate is sparingly soluble because

A. the hydration energy of sodium sulphate is more than its lattice energy

B. the lattice energy of barium sulphate is more than its hydration energy

C. the lattice energy has no role to play in solubility

D. the hydration energy of sodium sulphate is less than its lattice energy

Answer: A::B



View Text Solution

7. Mark out the correct options:

A. First ionisation energy : $Ca > K$

B. Second ionisation energy , $Mg > Al$

C. Electron affinity : $S > O$

D. Ionic radius : $Sc^{3+} > K^+$

Answer: A::C



View Text Solution

8. The elements whose valency is not 7 would be

A. V

B. Mn

C. Cr

D. C

Answer: A::C::D



View Text Solution

9. Which of the following elements not belongs to the d-block elements?

A. Pr

B. Pb

C. Tb

D. Ho

Answer: A::B::C::D



View Text Solution

10. Mark out the correct statement(s) :

A. Atomic radii is a periodic property

B. On moving down the group, metallic character decreases and thus ionisation

energy increases.

C. On moving across the period, effective nuclear charge increases and thus ionisation energy increases.

D. Atomic volume of alkali metals are highest in the respective periods.

Answer: A::C::D



View Text Solution

11. In halogens, which of the following increases from iodine to fluorine?

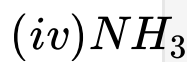
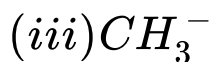
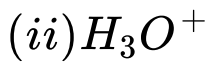
- A. bond length
- B. electronegativity
- C. the ionization energy of the element
- D. oxidising power

Answer: B::C::D



View Text Solution

12. Which of the following have isoelectronic structure?



A. (i) and (ii)

B. (i) and (iii)

C. (iii) and (iv)

D. (ii), (iii) and (iv)

Answer: C::D



View Text Solution

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

A. electropositive character increases down the groups

B. reactivity decreases from top to bottom in these groups

C. atomic radii increases as the atomic number increases

D. electronegativity decreases on moving down a group

Answer: A::C::D



View Text Solution

14. The elements which are radioactive and have been named after the names of planets are

A. Hg

B. Np

C. Pu

D. Ra

Answer: B::C



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15. Which of the following elements are present in group 16 of the periodic table?

A. Sulphur

B. Arsenic

C. Tellurium

D. Silicon

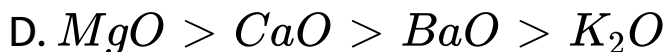
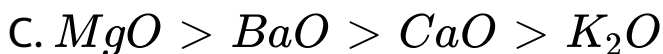
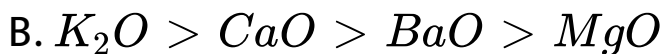
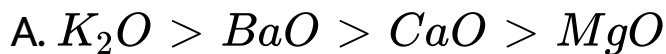
Answer: A::C



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Wb Jee Previous Years Questions Category 1 Single Option Correct Type

1. The decreasing order of basic character of K_2O , BaO , CaO and MgO is



Answer: A



[View Text Solution](#)

2. An element X belongs to fourth period and fifteenth group of the periodic table. Which of the following statements is true?

- A. It has a completely filled s-orbital and a partially filled d-orbital
- B. It has completely filled s- and p- orbitals and a partially filled d-orbital
- C. It has completely filled s- and p- orbitals and a half filled d-orbital.

D. It has a half-filled p-orbital and completely filled s- and d-orbitals.

Answer: D



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3. Which of the following atoms should have the highest 1st electron affinity?

A. F

B. O

C. N

D. C

Answer: A



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4. The second ionisation energy of the following elements follows the order



Answer: A



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5. The first electron affinity of C, N and O will be of the order

A. C It N It O

B. N It C It O

C. C It O It N

D. O It N It C

Answer: B



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Wb Jee Previous Years Questions Category 2 Single Option Correct Type

1. The hydrides of the first elements in groups 15-17, namely NH_3 , H_2O and HF respectively show abnormally high values for melting and boiling points. This is due to

A. Small size of N, O and F

- B. the ability to form extensive intermolecular H-bonding
- C. the ability to form extensive intramolecular H - bonding
- D. effectiv van der Waals'interaction.

Answer: B



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2. 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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Wb Jee Previous Years Questions Category 3 One Or More Than One Option Correct Type

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

A. Only the heavier noble gases form such compounds

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

C. It happens because the compounds are formed with electronegative ligands.

D. Octet of electrons provide the stable arrangements.

Answer:



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