

NEET Exam Study Material – Chemistry

3. Classification of Elements and Periodicity in Properties

- Increasing order of atomic weights was violated (anomalous pairs) in the case of
(1) Te, I (2) Ar, K
(3) Co, Ni (4) All
- Which of the following statement is false?
(1) In modern periodic table the elements are arranged in increasing order of atomic number.
(2) The number of periods in the long form periodic table is 7.
(3) The long form periodic table is nothing but just a graphical representation of Pauli's principle.
(4) Elements of III period are called typical elements.
- What is the atomic number of the element, which is in the same group of periodic table in which the element with atomic number 15 is present?
(1) 5 (2) 7 (3) 11 (4) 17
- The statement that is not correct for the periodic classification of elements is
(1) The properties of elements are the periodic functions of their outer electronic configurations.
(2) Non-metallic elements are lesser in number than metallic elements.
(3) For transition elements the d-subshells are filled with electrons monotonically with increase in atomic number.
(4) In the periodic table metallic elements appear in the right-hand columns.
- Which pair has both members from the same period of periodic table?
(1) Mg, Ba (2) Mg, Na (3) Mg, Cu (4) K, Cl

14. In Mendeleev's periodic table Fe, Co, Ni are placed in
(1) same period (2) same group
(3) both (4) none
15. The maximum atomic radius exists for
(1) Mg (2) N (3) Si (4) P
16. Which relation represent the correct relationship of the radius of an atom, its cation and its anion?
(1) atom = cation = anion (2) atom > cation > anion
(3) atom > cation < anion (4) atom < cation > anion
17. Atomic radii of fluorine and neon in angstrom units are respectively given by
(1) 0.72; 1.60 (2) 1.60; 1.60
(3) 1.60; 0.72 (4) 0.72; 0.72
18. Which one of the following is the smallest in size?
(1) N^{3-} (2) O^{2-} (3) F^- (4) Na^+
19. Na^+ is smaller than Na atom because
(1) Nucleus in each case contains different nucleons.
(2) Sodium atom has an electron lesser than sodium ion.
(3) Sodium atom has 11 electrons and sodium ion has 10 electrons.
(4) The force of attraction is less in Na^+ than in Na atoms.
20. The correct ionic radii order is
(1) $N^{3-} > O^{2-} > F^- > Na^+$ (2) $N^{3-} > Na^+ > O^{2-} > F^-$
(3) $Na^+ > O^{2-} > N^{3-} > F^-$ (4) $O^{2-} > F^- > Na^+ > N^{3-}$
21. If the ionic radii of K^+ and F^- are about 1.34 Å each, then the expected values of atomic radii of K and F should be respectively
(1) 1.34 and 1.34 Å (2) 2.31 and 0.61 Å
(3) 0.64 and 2.31 Å (4) 2.31 and 1.34 Å

22. Which one of the following indicates the correct order of atomic size?
(1) $\text{Be} > \text{F} > \text{C} > \text{Ne}$ (2) $\text{Be} < \text{C} < \text{F} < \text{Ne}$
(3) $\text{Be} > \text{C} > \text{F} < \text{Ne}$ (4) $\text{F} < \text{Ne} < \text{Be} < \text{C}$
23. The element with the following atomic number may be bigger than aluminium atom.
(1) 12 (2) 14 (3) 16 (4) 17
24. O^{2-} and Si^{4+} are isoelectronic ions. If the ionic radius of O^{2-} is 1.4 Å units, the ionic radius of Si^{4+} is
(1) 1.4 Å (2) 0.41 Å (3) 2.8 Å (4) 1.5 Å
25. The ionization energy of nitrogen is more than oxygen because
(1) more attraction of electrons by the nucleus
(2) the extra stability of half – filled p-orbitals
(3) the size of nitrogen atom is smaller
(4) more penetrating effect
26. The first ionization energy of sodium is 500 KJ mol⁻¹. This denotes the energy.
(1) Given out when 1 mole of sodium atoms dissolve in water to form sodium ions
(2) Required to remove one electron to infinity from one atom of sodium
(3) Required to raise the electron in one mole of gaseous sodium atoms to a higher energy level
(4) Required to change one mole of gaseous sodium atoms into gaseous ions (Na^+)
27. The first ionization potential in electron volts of nitrogen and oxygen atoms are respectively given as
(1) 14.61; 13.67 (2) 13.61; 14.6
(3) 13.6; 13.6 (4) 14.6; 14.6

28. The correct order of second ionization potential of C, N, O and F is
(1) $C > N > O > F$ (2) $O > N > F > C$
(3) $O > F > N > C$ (4) $F > O > N > C$
29. Which of the following isoelectronic ions has lower first IP value?
(1) K^+ (2) Ca^{2+} (3) S^{2-} (4) Cl^-
30. The decreasing order of second ionization potential of K, Ca and Ba is
(1) $K > Ca > Ba$ (2) $Ca > Ba > K$
(3) $Ba > K > Ca$ (4) $K > Ba > Ca$
31. Which of the following elements shown as pairs with their atomic numbers belong to the same period?
(1) $Z = 19$ and $Z = 38$ (2) $Z = 12$ and $Z = 17$
(3) $Z = 11$ and $Z = 21$ (4) $Z = 16$ and $Z = 35$
32. What is the name and symbol of the element with atomic number 112?
(1) Ununbium, Uub (2) Unnilbium, Unb
(3) Ununillium, Uun (4) Ununtrium, Uut
33. Which of the following ions contains minimum number of unpaired electrons?
(1) Fe^{2+} (2) Fe^{3+} (3) Co^{2+} (4) Co^{3+}
34. Which of the properties of isotopes of an element is different?
(1) First ionization enthalpy (2) Effective nuclear charge
(3) Electron affinity (4) Melting point and boiling point
35. Predict the formula of a compound formed by aluminum and sulphur.
(1) Al_2S_2 (2) Al_3S_2 (3) Al_2S_3 (4) AlS
36. Which of the following is not a periodic property for the elements?
(1) Electro negativity (2) Atomic size
(3) Occurrence in nature (4) Ionization energy

37. The elements in which electrons are progressively filled in 4f orbital are called
- (1) actinoids (2) transition elements
(3) lanthanoids (4) halogens.
38. Which of the following sets of oxides is amphoteric in nature?
- (1) Al_2O_3 , As_2O_3 , ZnO (2) CO , NO , N_2O
(3) SO_3 , SO_2 , Cl_2O_7 (4) Na_2O , MgO , BaO
39. What is common between given cations and anions, O^{2-} , F^- , Na^+ , Mg^{2+} , Al^{3+} ?
- (1) All have same ionic radii
(2) All are isoelectronic species having 10 electrons.
(3) All of them belong to the third period.
(4) The nature of oxides of all the ions is basic.
40. An element with atomic number 117 is known as
- (1) nihonium (2) flerovium
(3) tennessine (4) roentgenium
41. The periodic table of today owes its development to two chemists namely
- (1) Rutherford and Moseley
(2) Alexander Newlands and Dobereiner
(3) Dmitri Mendeleev and Lothar Meyer
(4) de Broglie and Neil Bohr.
42. Few general names are given along with their valence shell configurations. Mark the incorrect name.
- (1) $ns^2 np^6$ – Noble gases (2) $ns^2 np^5$ – Halogens
(3) ns^1 – Alkali metals (4) $ns^2 np^2$ – Chalcogens
43. Atomic number of few elements are given below.
Which of the pairs belongs to s-block?
- (1) 7, 14 (2) 3, 20 (3) 8, 15 (4) 9, 17

44. Which of the following have the same number of electrons in outermost shell?
- (1) Elements with atomic numbers 30, 48, 80
 - (2) Elements with atomic numbers 14, 15, 16
 - (3) Elements with atomic numbers 20, 30, 50
 - (4) Elements with atomic numbers 10, 18, 26
45. Electronic configuration of four elements is given below. Which of the following does not belong to the same group?
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|---|--|
| (1) [Kr] 4d ¹⁰ 5s ² | (2) [Ar] 3d ¹⁰ 4s ² |
| (3) [Xe] 5p ⁶ 6s ² | (4) [Xe] 4f ¹⁷ 5d ¹⁰ 6s ² |
46. Indicate the wrong statement on the basis of the periodic table.
- (1) The most electronegative element in the periodic table is fluorine.
 - (2) Scandium is the first transition element and belongs to fourth period.
 - (3) There are three transition series in the periodic table each containing 10 elements.
 - (4) Along a period halogens have maximum negative electron gain enthalpy.
47. Which of the following transitions will involve maximum amount of energy?
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|---------------------------------------|------------------------------------|
| (1) $M \rightarrow M^+ + e^-$ | (2) $M^- \rightarrow M^+ + 2e^-$ |
| (3) $M^{2+} \rightarrow M^{3+} + e^-$ | (4) $M^+ \rightarrow M^{2+} + e^-$ |
48. Which of the following statements regarding an anion is not true?
- (1) The gain of an electron leads to the formation of an anion.
 - (2) The radius of the anion is larger than the atomic radius of its parent atom.
 - (3) The effective nuclear charge increases when an anion is formed.
 - (4) Electron cloud expands due to increased repulsion among the electrons.
49. There are many elements in the periodic table which exhibit variable valency. This is a particular characteristic of
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|-----------------------------|-------------------------|
| (1) representative elements | (2) transition elements |
| (3) noble gases | (4) non-metals. |

50. What is the common property of the oxides CO, NO and N₂O?
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|----------------------------|-------------------------------|
| (1) All are acidic oxides | (2) All are basic oxides |
| (3) All are neutral oxides | (4) All are amphoteric oxides |

**Thanks to Mr. A. Moorthy,
NEET Exam Trainer,
Chennai.**