Class :- VIII

IIT Foundation Plus

Periodic Classification - Till Mandaleev classification

Teaching Task

Q 1) Ans :- D

Solution :- Elements with both metallic and non-metallic characters are called metalloids

→ Arrangement of Elements into groups of three is called Traids

Q2) Ans :- D.

Solution :- According to Newland's law of octaves, the eighth element after lithium is Sodium

Q3) Ans :- C.

Solution :- The atomic mass of strontium is the roughly equals to arithmetic mean of the masses of calcium and barium which sum up to 177.4.

Q4) Ans :- B.

Solution :- $\frac{x+127}{2} = 81 \Rightarrow x+127 = 162$

$x = 162 - 127 = 35.$

Q5) Ans:- B.

Solution:- The achievement of the traids classification is a "Relation between only atomic weights of an element".

Q6) Ans:- D.

Solution:- Strongly Electropositive elements are alkali metals.

→ Most Electronegative elements are halogens.

→ According to lother Meyer physical properties of elements are periodic functions of their atomic masses.

Q7) Ans:- A.

Solution:- In (VIII) Group of Mendeleev's table Consists of 3 traids known as transition traids & they are

1) Fe, Co, Ni 2) Ru, Rh, Pd 3) Os, Ir, Pt.

Q8) Ans:- C.

Solution:- Eka-Silicon - Germanium.
Eka Aluminium - Gallium.

Q9) Ans:- A, B.

Solution:- 8 groups & 7 periods

→ Group 'A' is normal elements.
Group 'B' Consists transition elements.

Q10) Ans:- A, C.

Solution:-

i) Postion of hydrogen is uncertain.

ii) Isotopes have given seperate place

iii) Anomalous pairs of elements

JEE Advanced Level Questions

Q1) Ans:- A, B, C, D.

Solution:- Newlands classification a very important conclusion was made, that there is some systematic relationship blw the order of atomic mass and repetion of properties, which give rise to a new term 'periodicity'

→ Newlands octaves is best applicable for the elements upto Calcium, beyond calcium newly discovered elements could not fit into octave system.

Q2) Ans:- A, C.

Solution:- Sodium(Na) is Strongly electropositive metal. Chlorine (Cl) is strongly electronegative non-metal.

Q3) Ans:- A.

Solution:- Grouping the elements having same properties is called classification of elements, which makes easy to study.

Q4) Ans:- A.

Solution:- Mandeleev corrected the atomic weights of Be, In, Au and Pt by using formula

Atomic mass = Equivalent mass x valency.

Q5) Ans:- C.

Solution:- Newlands arranged elements in the increasing order of their atomic masses.

Q6) Ans:- B.

Solution:- Periodicity of the elements was recognised for the first time

Q7) Ans:- D.

Solution:- Newly discovered elements could not fit into the octave structures.

Matrix Matching

Q8) Ans:- a) 2 b) 3 c) 4 d) 1

Solution:-

a) The eighth element after 'F' is → 2) Chlorine.

b) The eighth element after 'O' is → 3) Sulphur.

c) The eighth element after 'B' is → 4) Aluminium.

d) The eight element after 'N' is → 1) Phosphorus.

Q9) Ans:- a) 5 b) 1 c) 2 d) 2

a) Iron, Cobalt & Nickel → 5) Transition Triad

b) Germanium → 1) Eka-silicon

c) No position to isotopes → 2) Mandeleef

d) Sc, Y, La → 2) Mandeleef

Integer Type

Q10) Ans:- 9

Solution:- 3 sets of transition Traids in VIII group.

i) Fe, Co, Ni ii) Ru, Rh, Pd iii) Os, Ir, Pt.

Learners Task

Q1) Ans:- B.

Solution:- The concept of telluric helix was developed by de-chancourois.

Q2) Ans:- A

Solution:- Dobereiner has grouped set of 3 elements with similar properties, these are called traids

Q3) Ans:- C.

Solution:- Chlorine, Bromine, Iodine.

35.5 80.0 127.0.

$$\frac{35.5 + 127}{2} = 81.25$$

Q4) Ans:- A.

Solution:- Atomic weight of Li = 7

Atomic weight of K = 39

$$\frac{7 + 39}{2} = 23.0$$

Q5) Ans:-

Solution:- Newland, noticed that every eight element had similar properties when arranged in order of increasing atomic mass

Q6) Ans:- C

Solution:- Newland arranged elements in increasing order of atomic mass.

Q7) Ans:- B.

Solution:- Mandeleev's states that "the properties of the elements are a periodic function of their atomic weights"

Q8) Ans:- B.

Solution:- Mendeleev's modern periodic table consists of nine vertical columns are called groups

Q9) Ans:- B.

Solution:- The first 3 periods of Mendeleev's periodic table are called as short periods

Q10) Ans:- C

Solution:- Mendeleev arranged all the known 63 elements in the increasing order of their atomic masses

JEE Main Level Questions

Q1) Ans:- A

Solution:- Li, Na, K have similar properties.

Q2) Ans:- A.

Solution:- In Newland's law of octaves the eighth element after fluorine is chlorine

Q3) Ans:- A.

Solution:- S, Cl are not anomalous pairs, because they are arranged according to increasing atomic weights.

Q4) Ans:- B.

Solution:- Atomic mass of 'Be' was corrected by valency.

Atomic mass = Equivalent mass × valency.

Q5) Ans:- D.

Solution:- Mandeleev corrected the atomic masses of Be, In, Au, Pt and Os.

Q6) Ans:- C.

Solution:- Co, Ni are anomalous pairs.

Q7) Ans:- C.

Solution:- Eka silicon - Germanium.

Q8) Ans:- C.

Solution:- Atomic weight = Equivalent weight × Valency.

Q9) Ans:- C

Solution:- He predicted the properties of unknown elements like scandium, Gallium, Germanium.

Q10) Ans:- A

Solution:- C, N, O mathematically fit the traid rule but do not form traid because of different chemical properties.

Q11) Ans:- B, A, C, D.

Solution:- Fe, Mn, Ni, Co, Zn and Cu are similar elements, but cannot be placed in the traids.

Q12) Ans:- C

Solution:- C, Si belongs to 14 group which have similar properties.
P, N belongs to 15 group.

Q13) Ans:- D.

Solution:- Mandoleev corrected the atomic masses of Be, In, Au, Pt and Os etc.

Q14) Ans:- D.

Solution:-
Eka Boron → Scandium.
Eka Aluminium → Gallium

Matrix Matching

Q15) Ans:- A) 3 B) 4. C) 1 D) 5

Solution:-
A) Lavoiser classified → 3) Metals & Non-metals.
B) Dobernier classified → 4) Traids
C) Dalton Classified → 1) Table of the relative weights of ultimate particle of gaseous & other bodies.
D) Mean atomic mass of Ca, Sr & Ba → 5) $\frac{40+137}{2} = 88.5 \simeq 88.1$