1. Arrange the following elements in increasing order of first ionization enthalpy:
Li, Be, B, C, N
Choose the correct answer from the options given below: **(2024)**
(a) Li < B < Be < C < N
(b) Li < Be < C < B < N
(c) Li < Be < N < B < N
(d) Li < Be < B < C < N

2. Arrange the following elements in increasing order of electronegativity:
N, O, F, C, Si
Choose the correct answer from the option given below: **(2024)**
(a) Si < C < O < N < F
(b) O < F < N < C < Si
(c) F < O < N < C < Si
(d) Si < C < N < O < F

3. Which of the following is correctly matched? **(2023)**
(a) Basic oxides – In_2O_3, K_2O, SnO_2
(b) Neutral oxides – CO, NO_2, N_2O
(c) Acidic oxides – Mn_2O_7, SO_2, TeO_3
(d) Amphoteric oxides – BeO, Ga_2O_3, GeO

4. The correct sequence given below containing neutral, acidic, basic and amphoteric oxide each, respectively, is: **(2023)**
(a) NO, ZnO, CO_2, CaO
(b) ZnO, NO, CaO, CO_2
(c) NO, CO_2, ZnO, CaO
(d) NO, CO_2, CaO, ZnO

5. The correct order of first ionization enthalpy for the given four elements is: **(2022)**
(a) C < F < N < O
(b) C < N < F < O
(c) C < N < O < F
(d) C < O < N < F

6. Decreases in size from left to right in actinoid series is greater and gradual than that in lanthanoid series due to **(2022)**
(a) 5f orbitals have greater shielding effect
(b) 4f orbitals are penultimate
(c) 4f orbitals have greater shielding effect
(d) 5f orbitals have poor shielding effect

7. Fluorine is a stronger oxidising agent than chorine because:
(A) F-F bond has a low enthalpy of dissociation.
(B) Fluoride ion (F^-) has high hydration enthalpy.
(C) Electron gain enthalpy of fluorine is less negative than chlorine.
(D) Fluorine has a very small size.
Choose the most appropriate answer from the options given: **(2022)**
(a) B and C only (b) A and B only
(c) A and C only (d) A and D only

8. If first ionization enthalpies of elements X and Y are 419 kJ mol^{-1} and 590 kJ mol^{-1}, respectively and second ionization enthalpies of X and Y are 3069 kJ mol^{-1} and 1145 kJ mol^{-1}, respectively. Then correct statement is: **(2022)**
(a) Both X and Y are alkaline earth metals
(b) X is an alkali metal and Y is an alkaline earth metal
(c) X is an alkaline earth metal and Y is an alkali metal
(d) Both X and Y are alkali metals

9. The IUPAC name of an element with atomic number 119 is **(2022)**
(a) ununennium (b) unnilennium
(c) unununnium (d) ununoctium

10. Gadolinium has a low value of third ionisation enthalpy because of **(2022)**
(a) small size
(b) high exchange enthalpy
(c) high electronegativity
(d) high basic character

11. From the following pairs of ions which one is **not** an iso-electronic pair? **(2021)**
(a) Na^+, Mg^{2+} (b) Mn^{2+}, Fe^{3+}
(c) Fe^{2+}, Mn^{2+} (d) O^{2-}, F^-

12. Identify the incorrect match **(2020)**

Name		IUPAC Official Name	
A.	Unnilunium	(i)	Mendelevium
B.	Unniltrium	(ii)	Lawrencium
C.	Unnilhexium	(iii)	Seaborgium
D.	Ununnnium	(iv)	Darmstadtium

(a) B-(ii) (b) C-(iii)
(c) D-(iv) (d) A-(i)

13. For the second period elements the correct increasing order of first ionization enthalpy is : **(2019)**
(a) Li < Be < B < C < N < C < F < Ne
(b) Li < B < Be < C < O < N > F < Ne
(c) Li < B < Be < C < N < O < F < Ne
(d) Li < Be < B < C < O < N < F < Ne

14. The element Z = 114 has been discovered recently. It will belong to which of the following family group and electronic configuration? **(2017-Delhi)**
(a) Nitrogen family, $[Rn]5f^{14}6d^{10}7s^27p^6$
(b) Halogen family, $[Rn]5f^{14}6d^{10}7s^27p^5$
(c) Carbo family, $[Rn]5f^{14}6d^{10}7s^27p^2$
(d) Oxygen family, $[Rn]5f^{14}6d^{10}7s^27p^4$

15. In which of the following options the order of arrangement does not agree with the variation of property indicated against it? **(2016-I)**
(a) Li < Na < K < Rb (increasing metallic radius)
(b) $Al^{3+} < Mg^{2+} < Na^+ < F^-$ (increasing ionic size)
(c) B < C < N < O (increasing first ionization enthalpy)
(d) I < Br < Cl < F (increasing electron gain enthalpy)

16. The formation of the oxide ion, O^{2-} (g) from oxygen atom requires first and exothermic and then an endothermic step as shown below:
$O(g) + e^- \rightarrow O^-(g); \Delta_f H° = -141\ kJ\ mol^{-1}$
$O^-(g) + e^- \rightarrow O^{2-}(g); \Delta_f H° =$
$+780\ kJ\ mol^{-1}$
Thus, process of formation of O^{2-} in gas phase is unfavorable even through O^{2-} is isoelectronic with neon. It is due to the fact that,
(a) O^- ion has comparatively smaller size than oxygen atom
(b) Oxygen is more electronegative
(c) Addition of electron in oxygen results in larger size of the ion
(d) Electron repulsion outweighs the stability gained by achieving noble gas configuration

17. The number of d-electrons in Fe^{2+} (Z = 26) is not equal to the number of electrons in which one of the following? **(2015)**
(a) p-electrons in Cl (Z = 17)
(b) d-electrons in Fe (Z = 26)
(c) p-electrons in Ne (Z = 10)
(d) s-electrons in Mg (Z = 12)

18. The species Ar, K^+, Ca^{2+} contain the same number of electrons. In which order do their radii increase? **(2015)**
(a) $Ca^{2+} < Ar < K^+$ (b) $Ca^{2+} < K^+ < Ar$
(c) $K^+ < Ar < Ca^{2+}$ (d) $Ar < K^+ < Ca^{2+}$

19. Be^{2+} is isoelectronic with which of the following ions? **(2014)**
(a) Li^+ (b) Na^+
(c) Mg^{2+} (d) H^+

20. Which of the following orders of ionic radii is correctly represented? **(2014)**
(a) $Na^+ > F^- > O^{2-}$
(b) $O^{2-} > F^- > Na^+$
(c) $Al^{3+} > Mg^{2+} > N^{3-}$
(d) $H^- > H^+ > H$

21. Identify the wrong statement in the following: **(2012 Pre)**
(a) Atomic radius of the elements decreases as one moves across from left to right in the 2nd period of the periodic table
(b) Amongst isoelectronic species, smaller the positive charge on the carbon, smaller is the ionic radius
(c) Amongst isoelectronic species, greater the negative charge on the anion, larger is the ionic radius
(d) Atomic radius of the elements increases as one moves down the first group of the periodic table