PREVIOUS YEARS' QUESTIONS EXERCISE-II

1. Moving from right to left in a periodic table, the atomic size is : **[JEE 1995]**

(1) increased (2) decreased

(3) remains constant (4) none of these

2. The increasing order of electronegativity in the following elements : **[JEE 1995]**

(1) C, N, Si, P (2) N, Si, C, P

(3) Si, P, C, N (4) P, Si, N, C

3. Which of the following has the maximum number of unpaired electrons ? **[JEE 1996]**

(1) Mg^{2+} (2) Ti^{3+} (3) V^{3+} (4) Fe^{2+}

4. The correct order of radii is : **[JEE 2000]**

(1) N < Be < B (2) $F^- < O^{2-} < N^{3-}$

(3) Na < Li < K (4) $Fe^{3+} < Fe^{2+} < Fe^{4+}$

5. Which of the following groupings represent a collection of isoelectronic species ?

(At. no. Cs = 55, Br = 35) **[AIEEE-2003]**

(1) N^{3-}, F^-, Na^+ (2) Be, Al^{3+}, Cl^-

(3) Ca^{2+}, Cs^+, Br (4) Na^+, Ca^{2+}, Mg^{2+}

6. According to the Periodic law of elements, the variation in properties of elements is related to their :- **[AIEEE-2003]**

(1) Nuclear masses

(2) Atomic numbers

(3) Nuclear neutron-proton number ratio

(4) Atomic masses

7. Among Al_2O_3, SiO_2, P_2O_5 and SO_3, the correct order of acid strength is :- **[AIEEE-2004]**

(1) $Al_2O_3 < SiO_2 < SO_3 < P_2O_5$

(2) $SiO_2 < SO_3 < Al_2O_3 < P_2O_5$

(3) $SO_3 < P_2O_5 < SiO_2 < Al_2O_3$

(4) $Al_2O_3 < SiO_2 < P_2O_5 < SO_3$

8. The formation of the oxide ion $O^{2-}(g)$ requires first an exothermic and then an endothermic step as shown below :- **[AIEEE-2004]**

$O(g) + e^- = O^-(g)$, $\Delta H° = -142$ kJ mol^{-1}

$O^-(g) + e^- = O^{2-}(g)$, $\Delta H° = 844$ kJ mol^{-1}

This is because :-

(1) O^- ion will tend to resist the addition of another electron

(2) Oxygen has high electron affinity

(3) Oxygen is more electronegative

(4) O^- ion has comparitively larger size than oxygen atom

9. Of the following sets which one does not contain isoelectronic species ? **[AIEEE-2005]**

(1) BO_3^{3-}, CO_3^{2-}, NO_3^- (2) SO_3^{2-}, CO_3^{2-}, NO_3^-

(3) CN^-, N_2, C_2^{2-} (4) PO_4^{3-}, SO_4^{2-}, ClO_4^-

10. In which of the following arrangements the order is NOT according to the property indicated below? **[AIEEE-2005]**

(1) $Al^{3+} < Mg^{2+} < Na^+ < F^-$ – increasing ionic size

(2) B < C < N < O - increasing first ionization enthalpy

(3) I < Br < F < Cl - increasing electron gain enthalpy (with negative sign)

(4) Li < Na < K < Rb - increasing metallic radius

11. Which of the following oxides is amphoteric in character ? **[AIEEE-2005]**

(1) SnO_2 (2) SiO_2 (3) CO_2 (4) CaO

12. Which of the following factors may be regarded as the main cause of lanthanide contraction ? **[AIEEE-2005]**

(1) poor shielding of one of 4f electron by another in the subshell

(2) effective shielding of one of 4f electrons by another in the subshell

(3) poorer shielding of 5d electrons by 4f electrons

(4) greater shielding of 5d electrons by 4f electrons

13. Which one of the following sets of ions represents a collection of isoelectronic species ? **[AIEEE-2006]**

(1) N^{3-}, O^{2-}, F^-, S^{2-} (2) Li^+, Na^+, Mg^{+2}, Ca^{+2}

(3) K^+, Cl^-, Ca^{+2}, Sc^{+3} (4) Ba^{+2}, Sr^{+2}, K^{+2}, Ca^{+2}

14. The increasing order of the first ionization enthalpies of the elements B, P, S and F (lowest first) is:- **[AIEEE-2006]**

(1) F < S < P < B (2) P < S < B < F

(3) B < P < S < F (4) B < S < P < F

15. Which one of the following constitutes a group of the isoelectronic species? **[AIEEE-2008]**

(1) C_2^{2-}, O_2^-, CO, NO (2) $NO^+, C_2^{2-}, CN^-, N_2$

(3) $CN^-, N_2, O_2^{2-}, C_2^{2-}$ (4) N_2, O_2^-, NO^+, CO

16. The set representing the correct order of ionic radius is :- **[AIEEE-2009]**

(1) $Li^+ > Na^+ > Mg^{2+} > Be^{2+}$

(2) $Mg^{2+} > Be^{2+} > Li^+ > Na^+$

(3) $Li^+ > Be^{2+} > Na^+ > Mg^{2+}$

(4) $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$

17. The correct order of electron gain enthalpy with negative sign of F, Cl, Br and I, having atomic number 9, 17, 35 and 53 respectively, is :-
[AIEEE-2011]
(1) I > Br > Cl > F (2) F > Cl > Br > I
(3) Cl > F > Br > I (4) Br > Cl > I > F

18. The increasing order of the ionic radii of the given isoelectronic species is :- **[AIEEE-2012]**
(1) K^+, S^{2-}, Ca^{2+} , Cl^- (2) Cl^-, Ca^{2+}, K^+, S^{2-}
(3) S^{2-}, Cl^-, Ca^{2+}, K^+ (4) Ca^{2+}, K^+, Cl^-, S^{2-}

19. Which of the following paramagnetic ions would exhibit a magnetic moment (spin only) of the order of 5 BM ? **[JEE-MAIN, (ONLINE)-2012]**
(At. No : Mn = 25, Cr = 24, V = 23, Ti = 22)
(1) V^{2+} (2) Ti^{2+} (3) Mn^{2+} (4) Cr^{2+}

20. In which of the following arrangements, the sequence is not strictly according to the property written against it ? **[JEE-MAIN 2012(On-Line)]**
(1) $CO_2 < SiO_2 < SnO_2 < PbO_2$: increasing oxidising power
(2) B < C < O < N : increasing first ionisation enthalpy
(3) $NH_3 < PH_3 < AsH_3 < SbH_3$: increasing basic strength
(4) HF < HCl < HBr < HI : increasing acid strength

21. Which pair of elements with the given atomic numbers is expected to have similar properties
[AIEEE- 2012 (Online)]
(1) 11, 12 (2) 40, 72
(3) 20, 36 (4) 10, 28

22. Which of the following represents the correct order of increasing first ionization enthalpy for Ca, Ba, S, Se and Ar ? **[JEE-MAIN-2013]**
(1) Ca < S < Ba < Se < Ar
(2) S < Se < Ca < Ba < Ar
(3) Ba < Ca < Se < S < Ar
(4) Ca < Ba S < Se < Ar

23. The first ionisation potential of Na is 5.1 eV. The value of electron gain enthalpy of Na^+ will be :-
[JEE-MAIN-2013]
(1) – 2.55 eV (2) – 5.1 eV
(3) – 10.2 eV (4) + 2.55 eV

24. Electron gain enthalpy with negative sign of fluorine is less than that of chlorine due to :
[JEE-MAIN 2013 (On-Line)]
(1) Smaller size of chlorine atom
(2) Bigger size of 2p orbital of fluorine
(3) High ionization enthalpy ol fluorine
(4) Smaller size of fluorine atom

25. The order of increasing sizes of atomic radii among the elements O, S, Se and As is :
[JEE-MAIN 2013 (On-Line)]
(1) As < S < O < Se (2) O < S < As < Se
(3) Se < S < As < O (4) O < S < Se < As

26. Which is the correct order of second ionization potential of C, N, O and F in the following ?
[JEE-MAIN 2013 (On-Line)]
(1) O > F > N > C (2) O > N > F > C
(3) C > N > O > F (4) F > O > N > C

27. Which of the following series correctly represents relations between the elements from X to Y ? **[JEE-MAIN 2014 (On-Line)]**

X ⟶ Y

(1) $_{18}Ar \rightarrow {}_{54}Xe$ Noble character increases
(2) $_{3}Li \rightarrow {}_{19}K$ Ionization enthalpy increases
(3) $_{6}C \rightarrow {}_{32}Ge$ Atomic radii increases
(4) $_{9}F \rightarrow {}_{35}Br$ Electron gain enthalpy with negative sign increases

28. The ionic radii (in Å) of N^{3-}, O^{2-} and F^- are respectively :- **[JEE-MAIN 2015]**
(1) 1.71, 1.40 and 1.36 (2) 1.71, 1.36 and 1.40
(3) 1.36, 1.40 and 1.71 (4) 1.36, 1.71 and 1.40

29. In the following reactions, ZnO is respectively acting as a/an : **[JEE(Main) 2017]**
(a) $ZnO + Na_2O \rightarrow Na_2ZnO_2$
(b) $ZnO + CO_2 \rightarrow ZnCO_3$
(1) base and acid (2) base and base
(3) acid and acid (4) acid and base

30. The group having isoelectronic species is :-
[JEE(Main) 2017]
(1) O^{2-} , F^-, Na^+ , Mg^{2+}
(2) O^- , F^-, Na , Mg^+
(3) O^{2-} , F^-, Na , Mg^{2+}
(4) O^- , F^-, Na^+ , Mg^{2+}

PREVIOUS YEARS QUESTIONS				ANSWER KEY						Exercise-II
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	**1**	**3**	**4**	**2**	**1**	**2**	**4**	**1**	**2**	**2**
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	**1**	**3**	**3**	**4**	**2**	**4**	**3**	**4**	**3**	**3**
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	**2**	**3**	**2**	**4**	**4**	**1**	**3**	**1**	**4**	**1**